



THE PROBLEMS OF SECOND GENERATION SETTLERS IN LAND  
SETTLEMENT SCHEMES: THE CASE OF SRI LANKA

BY

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## ABSTRACT

Land settlement has been a major development strategy followed by successive governments in Sri Lanka since Independence and involving large investments of scarce resources. Previous research on land settlement schemes in Sri Lanka has not attempted to make any comprehensive evaluation of the problems confronted by the second generation of children born to the initial settlers in such schemes, despite the fact that many settlement schemes have reached a mature stage of development. The objectives of the present study are to explore the nature and causes of the problems confronted by the second generation children of pioneer settlers, as well as to understand the adaptation strategies pursued by this second generation in overcoming those problems. The study also draws out implications for the development of policy relating to existing and new settlements.

The analysis is based upon an in depth field study carried out in three locations in settlement and non-settlement areas. The study establishes the relationship between the characteristics of the population selected for participation in land settlement schemes and the specific nature of the pressures experienced by settlement communities. The study further shows that the difficulties encountered by the second generation settlers are particularly manifested in problems pertaining to land and employment. A number of demographic and economic responses followed by the second generation to overcome these pressures are identified. The study contributes to the understanding of the second generation problems in the settlement process more generally and it is maintained that the results have wider applicability to tropical land settlement schemes across the developing world. The study also attempts to enhance the wider theoretical knowledge of the behaviour of second generation migrants in general.

### DECLARATION

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no materials previously published or written by another person, except where due reference has been made in the text.

I give my consent to this copy of my thesis, when deposited in the University Library, being available for loan and photocopying.

Ranbandara Senaka-Arachchi.

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## CHAPTER ONE

### INTRODUCTION

#### 1.1 Introduction

Land settlement programmes<sup>1</sup> involving the planned movement of people into rural areas to settle and cultivate undeveloped land under government auspices, have been a common feature in government programmes for the development of the rural sector of Third World countries for several decades. They have been seen as a potential solution to a complex set of problems including population maldistribution, food scarcity, growing unemployment, regional disparities and landlessness (Oberai 1988 : 7-22; Jones and Richter 1982 : 3-4; World Bank 1978: 13-14). Such pioneering schemes occur in many Less Developed Countries (LDCs) and differ in their aims and approaches. However, they generally seek to ease agrarian pressure and contribute to agricultural development. A perception of an unbalanced population distribution has been one of the major justifications for initiating land settlements in Indonesia, Nepal, Sri Lanka, the Philippines, Brazil and Peru (Oberai 1988). The Malaysian settlement programme was aimed at facilitating regional development by way of providing land to the rural landless and improving the rural economy overall (Bahrin 1984 : 206). One important aspect of the Brazilian colonisation programme was to achieve regional development through the opening up of the Amazon frontier (Findley 1988 : 272-275). Almost all settlement schemes have economic objectives such as increasing production and

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<sup>1</sup> Land settlement is generally defined as the planned or spontaneous movement of people to unutilized land areas with agricultural potential. The movement ranges from schemes under government auspices with massive development of infrastructure and extensive social welfare components to spontaneous movement of people with virtually no government help (World Bank 1978 : 14; MacAndrews 1979 : 117-118).

providing employment. Yet, social objectives have also been important in many schemes as they have targeted the most disadvantaged groups in the society. In Nepal, settlement schemes have involved landless and displaced persons and landslide victims (Kansakar 1984 : 292). In the Philippines, such programmes are targeted at displaced farmers and landless tenants (Montemayor 1976; Paderanga 1988 : 130). The landless, unemployed and underprivileged rural peasants have been given priority in Sri Lankan settlement schemes (Farmer 1957 : 200-207). Social welfare was also given major emphasis in the Indonesian transmigration programme as the bulk of transmigrants were selected from the poorest of the poor in the inner islands of Java and Bali (Oey and Astika 1978). Security has also been an objective of establishing settlement schemes in areas of territorial significance in the developing world. The settlement projects in border areas of Nepal, Vietnam, Thailand and some outer islands of Indonesia have involved the transplanting of ex-servicemen or population loyal to the government in an attempt to prevent security threats or illegal immigration (Kansakar 1984 : 292; Desbarats 1990 : 7; Oey and Astika 1978 : 43).

Despite the complexities in aims and objectives, land settlement has continued to be a fashionable development instrument in many developing countries (Oberai 1988 : 7-22; Nelson 1973; Bahrin 1984 : 206-210). The programmes have also secured persistent support from multilateral and bilateral aid agencies despite the fact that many of the schemes have not performed well (World Bank 1978 : 42-46). The case of Sri Lanka, which is the major concern of this thesis conforms to this pattern. Successive governments since Independence have followed a policy of using land settlement as a major development instrument. Further, the development of irrigated settlement has received a major share of public investment since Independence. Settlement related new irrigation construction alone took nearly 40 percent of the total public investment or nearly 10 percent of the Government

budget (Rs 907 million) during 1950. Investment surged to a new record with the commencement of the Accelerated Mahaweli Development Programme in 1978 bringing the share of irrigation investment up to more than 20 percent of the total public investment (Rs 3023 million) in 1980 (Aluwihare and Kikuchi 1991: 12-14).

Land settlement in Sri Lanka has attracted a great deal of research attention and there is a large body of literature dealing with various aspects of the settlement schemes, however such research has dealt almost exclusively with either the initial stages of settlement or with the experience of the first generation of settlers. There has been no attempt to make a comprehensive evaluation of problems confronting the second generation children of the original settlers, despite the fact that a growing number of settlement schemes have reached a mature stage of development. The only study available on the second generation problems of settlers of a Sri Lankan settlement scheme was of a fact-finding nature and focused largely in its analysis on the second generation impact on land and water resources in the Gal Oya scheme (Abeyratne 1982).

## **1.2 Study Objectives**

The present study seeks to shed light on the nature and causes of problems confronting the second generation children of pioneer settlers and the various measures taken to overcome those problems. The second generation are defined as the children of pioneer migrants in settlement schemes and their problems are studied by carefully selecting a few Sri Lankan settlement schemes as case study locations. The study's more specific objectives are as follows:

- (1) To identify and analyse the current problems encountered by the second generation settlers of land settlement schemes.
- (2) To understand the underlying conditions and factors responsible for these problems.

- (3) To classify and understand the adaptation strategies pursued by second generation members in overcoming their problems.
- (4) To make viable policy recommendations for overcoming the problems encountered by second generation settlers in existing settlement schemes as well as the planning of settlement programmes in the future.
- (5) Finally, to contribute to the wider understanding of the "second generation problem" in the settlement process generally in tropical land settlement schemes in the developing world and enhance the theoretical knowledge of the behaviour of second generation migrants.

### **1.3 The Country Setting**

To address the objectives outlined above, it is necessary to provide some details of the context in which the land settlement schemes have been established. Accordingly, the present section briefly describes the geography, history, demography and economy of Sri Lanka in order to place this study in a proper context.

#### **1.3.1 Geography**

Located on the Indian Ocean close to the south eastern tip of India, Sri Lanka occupies an area of 65610 sq km and is smaller than Tasmania or Scotland (Figure 1.1). Topographically three quarters of the island consist of undulating lowlands with an average elevation of 75 m above the sea level. The land rises steeply south centrally forming a mountain massif with an elevation up to 2500 m (Figure 1.2). The mountainous south central area and their south central slopes are known as the Wet Zone of the country with an annual rainfall varying from 2500 mm to over 5000 mm. The south west monsoon which extends from late May to late September brings the heaviest precipitation to the south western lowlands in the Wet Zone. The broad plains in the north and east are known as the Dry Zone of the country. The annual rainfall in this part of the country ranges between 1250-1900 mm and the bulk of the precipitation occurs during the north east monsoon period

Figure 1.1 Location of Sri Lanka.

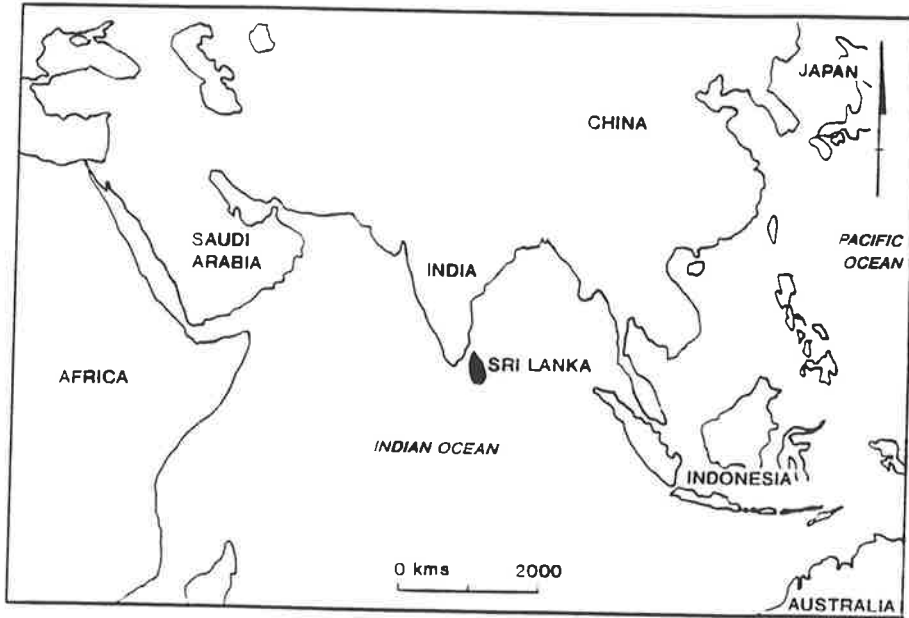
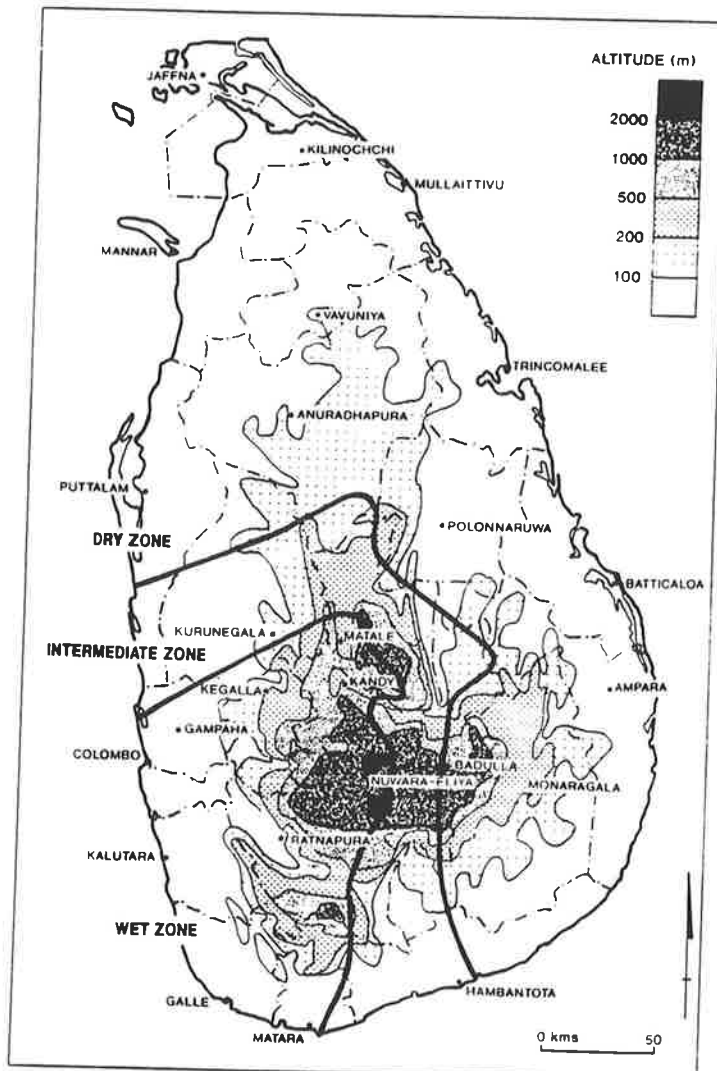


Figure 1.2 Relief and Climatic Zones in Sri Lanka.



from November to February. Considering the amount of rainfall, the term "Dry Zone" could be considered a misnomer (Government of Sri Lanka 1990 : 48). Yet, water remains one of the crucial problems in the area due to strong seasonality in the annual rainfall pattern. Between the Dry Zone and the Wet Zone is the Intermediate Zone with an annual rainfall of 1900 - 2500 mm. Sri Lanka experiences generally temperate climatic condition. The humidity is very high in all parts of the country except around the peaks of central massif.

The Wet Zone and Intermediate Zone together make up 37 percent of the total land area in the country but account for 68 percent of the island's population. The remaining land area is sparsely populated accommodating only 32 percent of the population. The country is administratively divided into 25 districts. The Dry Zone districts contain the bulk of the settlement projects established since the 1930s.

### **1.3.2 History**

The history of the hydraulic civilisation founded in the Dry Zone by ancient Sinhalese kings dates back over two millenia. The major feature of this civilisation was the construction of an intricate system of reservoirs (tanks) for storing water for irrigated agriculture. The undulating landscape of the Dry Zone was converted into rice fields by way of providing irrigation water through a sophisticated network of canal irrigation systems. The technology involved the construction of weirs and dams across perennial rivers and the diversion of water into storage tanks and later into minuscule rice fields through a system of distributory and field canals (De Silva 1981 : 27-34; De Silva 1987 : 45-49). The number of ancient reservoirs built in varying time periods scattered over the different parts of the Dry Zone amount to over 10,000. The capacities of the reservoirs vary from a few acre feet to 100,000 acre feet of water (Irrigation Department, 1975). The prosperity of this ancient

hydraulic civilisation and its subsequent decay has been documented by historians (Gunawardana 1971 : 3-27; Siriweera 1971 : 89-98). Many of these reservoirs have been restored in modern times and are in operation irrigating some 290,000 ha of agricultural land (DCS 1988b : 65).

Sri Lanka claims to have one of the oldest continuous written histories in the world giving detailed accounts of the reigns of different rulers who had their administrative base in the Dry Zone kingdoms of Anuradhapura and Polonnaruwa (Kiribamune 1978 : 125-136). The following citation on Sri Lanka's history suffices to put the historical background of the country in a single paragraph.

"Although there is some evidence that the island was inhabited since pre historic time, it is believed that the advent of Vijaya, a Bengali prince with his seven hundred followers, circa 540 B.C, laid the foundation of the Sinhalese race, which constitutes the majority of the present population in the island. Sri Lanka since that time had remained Sinhala territory until about the fifth century A.D when the Dravidian rulers from South India gained control over the Northern part of it for a short period. Thereafter, there had been invasions by the South Indians and counter invasions by the Sinhalese until the arrival of the Portuguese in Ceylon in 1505 A.D. The Portuguese conquered certain maritime parts of the country and held these possessions until they were ousted by the Dutch, who ruled the possessions from 1640 A.D. In 1796 A.D the Dutch too yielded their possessions to the English. In 1815 A.D the Sinhalese surrendered their territories to the British. The island regained its independence in 1948" (DCS 1974 : 1).

### **1.3.3 Composition of People**

Historical factors have contributed to making the Sri Lankan population pluralistic in terms of ethnicity and religion. The ethnic majority are the Sinhalese (74 percent) followed by the Tamil (18 percent) who comprise both Sri Lankan and Indian Tamils. Both Tamil groups trace their origins to South India, however, the latter group came to the island more recently during the British colonial period as plantation workers. The exact timing of the arrival of Sri Lankan Tamil is not clear, yet they have been traditionally concentrated in the northern and eastern parts of the island. The Muslims or Moors are believed to be the decendents of Arabic traders, are Tamil speaking and form the next largest (7 percent) ethnic group.

There are also a small group of Burghers (Eurasians of mixed descent), Malays, Chinese and a tiny remnant of aboriginal Veddha population. These groups remain as distinct ethnic groups making up less than one percent of the total population (DCS 1988b : 14).

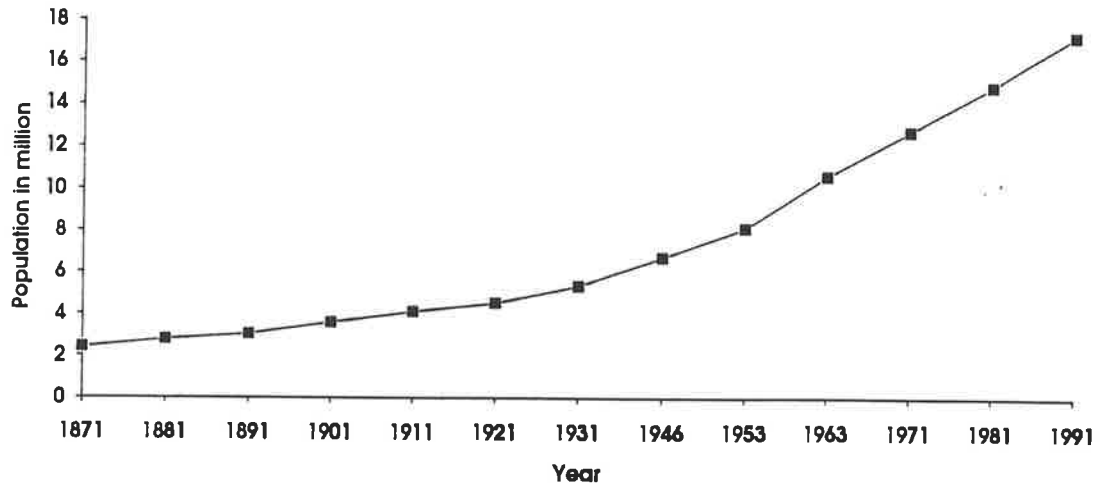
Sri Lanka is also a multilingual society. Sinhalese is the language spoken by the major ethnic group of Sinhalese. Tamil is spoken by both communities of Tamils and Moors in the north and the east and also parts of the central hills. The use of English is widespread among the urban population, the educated classes and certain ethnic minorities, while it also serves as a link language between different linguistic groups.

The population is also divided along the religious faiths of the community which parallel the linguistic divisions. The majority of the Sinhalese are Buddhists (69 percent) and Tamils are predominantly Hindus (15 percent). The balance is equally divided between Muslims (8 percent) and Christians (8 percent) (DCS 1988b : 12).

#### **1.3.4 Demography**

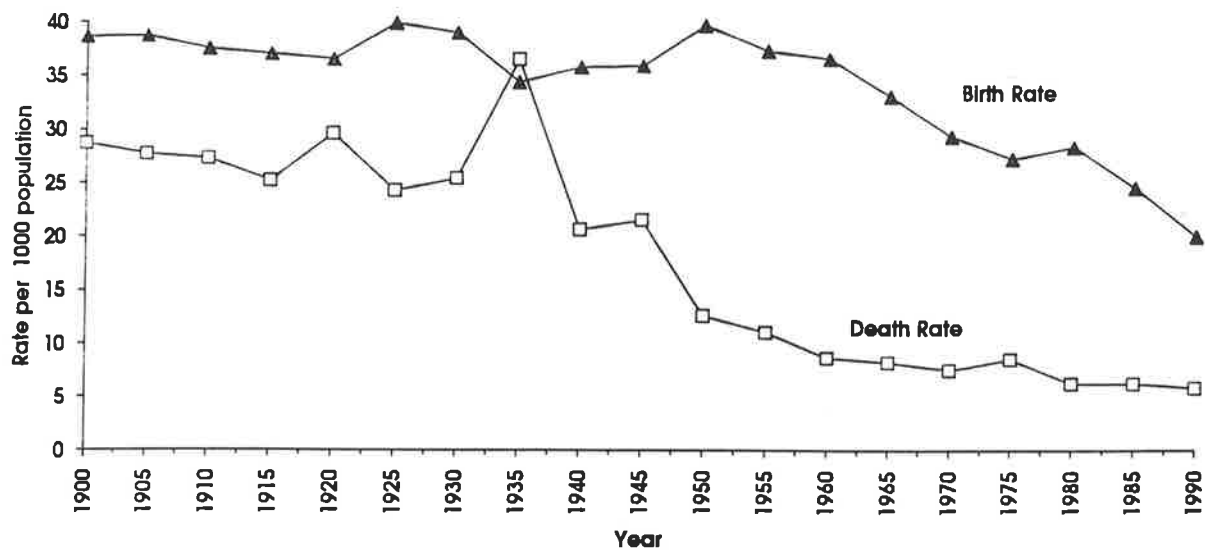
The total population enumerated in Sri Lanka at the latest census in 1981 was 14.8 million people and in 1993 it was estimated to be 17.6 million (CBS 1994). The population has grown rapidly until recently, doubling in the first three decades after independence in 1948 (Figure 1.3). During the 1971-1981 intercensal period, the population increased at an average annual rate of 1.7 percent. This is a sharp reduction from the peak growth rate of 2.8 per annum reported during the 1946-1953 intercensal period. The rate of population growth has slowed significantly in recent years and by 1992 the country had one of Asia's lowest population growth rates amounting to 1 percent per annum (CBS 1993 : 1).

Figure 1.3 Population Growth in Sri Lanka 1871-1991



Source: Population Division, Ministry of Health & Women Affairs, 1992

Figure 1.4 Trends in Crude Death Rate and Crude Birth Rate in Sri Lanka 1900-1990



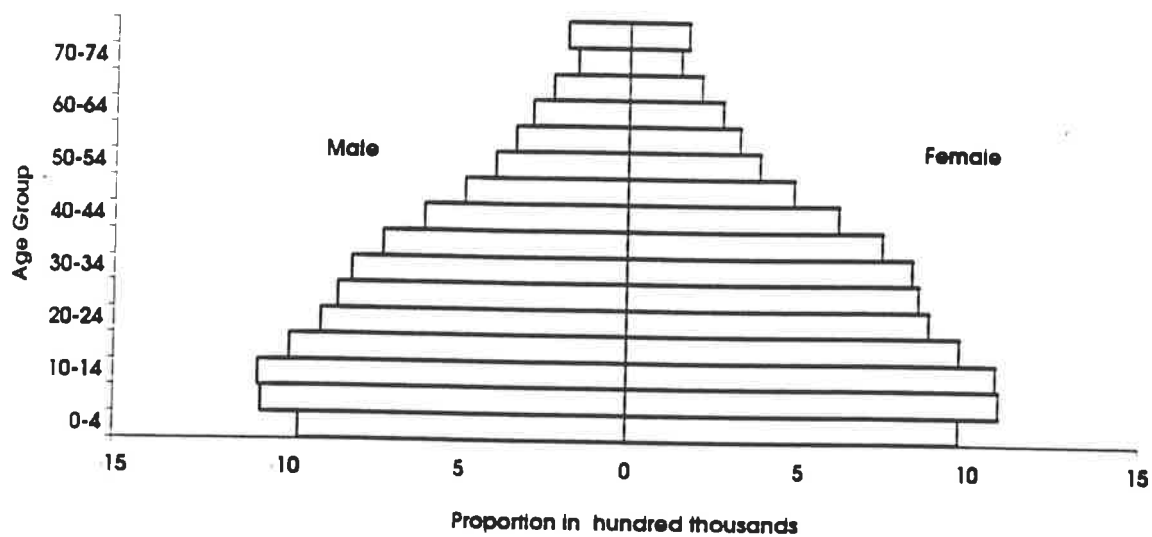
Source: Records of the Registrar General Office

The drop in the population growth rate during the 1960s and 1970s could be attributed to the dramatic decline in both births and deaths in the country as a result of the government policy measures directed towards improving the living standard of the people. The Crude Birth Rate (CBR) has fluctuated between 38-40 per thousand in the first few decades of the twentieth century and the estimated CBR has declined to a level of 20 per thousand in 1992 (Figure 1.4). The crude death rate remained at a high level of around 30 per thousand at the beginning of the century due to widespread deaths from infectious disease and inadequate curative and preventive health services. The success of the malaria eradication programme and the improvement of health infrastructure led to a decline in the crude death rate from 20 per thousand to 14 per thousand between 1946 and 1947. As shown in Figure 1.4, the death rate had fallen to 6 per thousand by 1990 which could be comparable with the mortality levels in many of the developed countries (CBS 1992b : 11).

The Total Fertility Rate (TFR) was estimated at 5.3 in 1953, but had declined to 2.8 in 1987 and it has further dropped to 2.3 in the 1988-1993 period (DCS 1994). Although, Sri Lanka was expected to achieve replacement level fertility by the year 2000, it has been widely speculated that the country has already achieved this target (De Silva 1994 : 18-19).

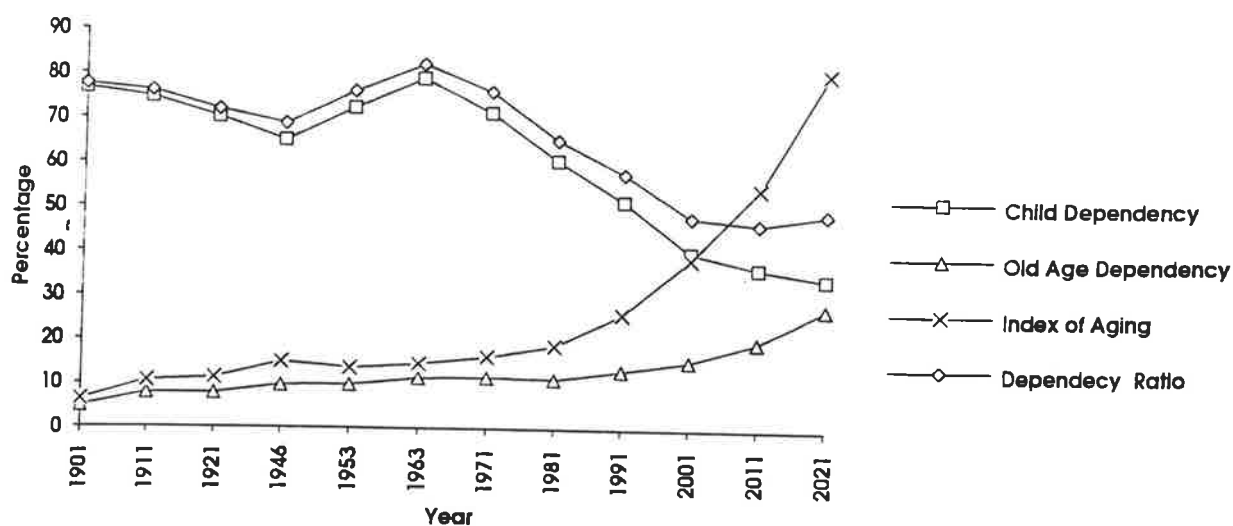
The life expectancy at birth has also greatly increased from the level of 44 years for males and 42 years for females in 1946 to 70 for males and 75 for females in 1991 (MHWA 1992 : 22). The reductions in the infant and maternal mortality have also been substantial over the years. The infant mortality level dropped from 140 per thousand in 1945 to 19 per thousand in 1990. The maternal mortality has dropped from 16.5 per thousand in 1945 to only 0.5 per thousand in 1986 (MHWA 1992 : 21). Hence, Sri Lanka is well advanced in the demographic transition (Dangalle 1978 : 1-29; Sandaratne 1975 : 157-189).

Figure 1.5 Age Pyramid for Population of Sri Lanka



Source: Records of the Registrar General Office.

Figure 1.6 Youth Dependency, Old Age Dependency, Population Dependency and Index of Aging for Sri Lanka 1901-2021



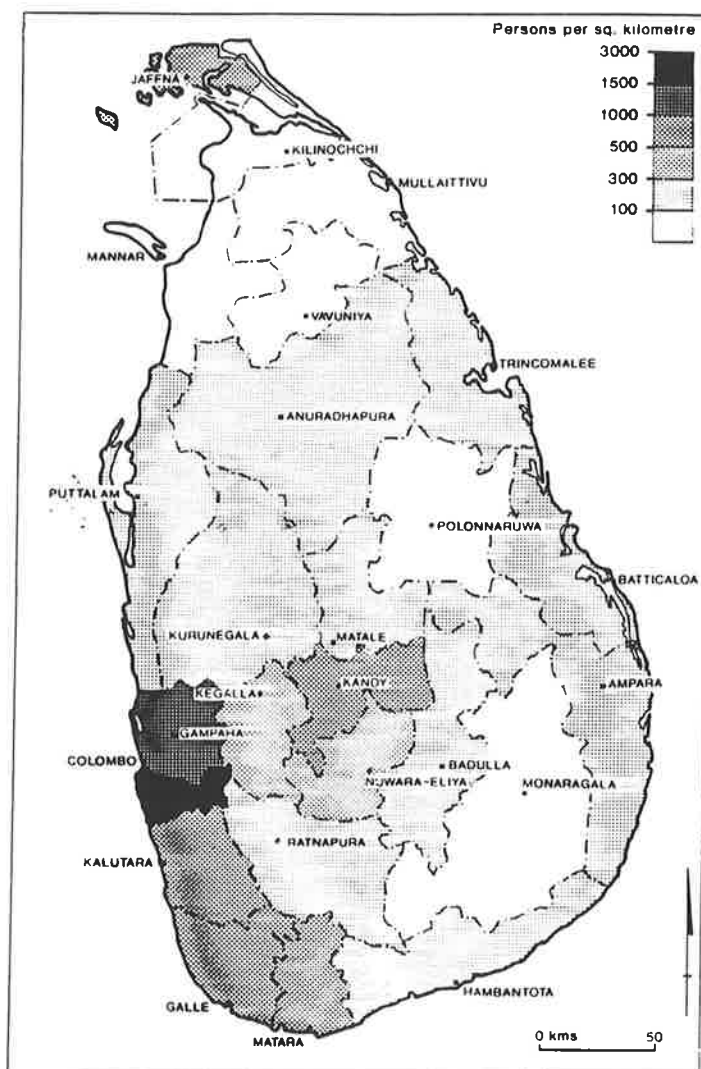
Source: Population Division, Ministry of Health & Women Affairs, 1992

The rapid changes in the fertility and mortality levels has meant that Sri Lanka has a relatively youthful population. The broad age distribution of the population shows a large concentration of the population within the younger age groups (Figure 1.5), but the decline in fertility has led to a stabilisation in the very young ages. Hence Figure 1.6 shows that youth dependency ratio was 71 in 1971 and thereafter has gradually declined to an estimated 51 in 1990 (MHWA 1992 : 8). As a result, overall dependency levels in the nation have come down from the peak level of 82 in 1963 to 58 in 1991, demonstrating a gradual increase in the population in the productive age categories in relation to the very young and very old. Although child dependency has shown a declining trend since 1963, the elderly dependency rate has been consistently rising due to the overall ageing of the population (Figure 1.6) (MHWA 1992 : 7).

The majority of the Sri Lankan population live in villages. Despite the consistent flow of migrants from rural to urban areas, the urban component of the population has virtually remained constant. The estimate of the urban population at the 1981 census was only 21.5 percent. Giving allowances for natural growth and migration, the current urban population could be estimated to be around 25 percent of the total population (MEPA 1991 : 17). Unlike many other Southeast Asian countries, rural-urban drift in Sri Lanka has been modest as a result of the government policy measures towards encouraging people to remain in rural areas (Perera 1992 : 1-15). The small size of the country and the existence of a good network of roads and the subsidised public transportation system have also facilitated a large degree of commuting that does not warrant permanent migration (Indraratna et al 1983 : 128). The development of rural infrastructure, social welfare measures and land settlement schemes specifically designed to shift the population from densely populated Wet Zone areas to sparsely populated Dry Zone areas, together with the

slow rate of urban industrial development have kept the urbanisation rate at a modest level.

Figure 1.7 Sri Lanka Population Density, 1991



Source: Population Division, Ministry of Health & Women Affairs, 1992

In terms of the density of population, Sri Lanka remains one of the most closely populated countries in the region, second only to Bangladesh. However, the population distribution is uneven with a heavy concentration in the southwest, central and Jaffna peninsular regions. The Dry Zone areas still remain sparsely

populated in spite of state aided land settlement schemes initiated in recent decades. Although the average density of the population in the country was 263 persons per square km in 1990, it varied between regions from 36 persons to 2945 persons per square km. The highest population densities are in the districts of Colombo and Gampaha in the south western region, whereas the lowest densities have been registered in the northern districts of Vavuniya and Mullaitivu (Figure 1.7). The disparities in population distribution have been somewhat reduced since Independence due partly to inter-provincial and inter-district migration and the peasant resettlement schemes in the Dry Zone (Kearney and Miller 1987 : 3-14).

### **1.3.5 The Economy**

Sri Lanka is still predominantly an agricultural economy although less than a quarter of the Gross Domestic Product (GDP) is generated by the agricultural sector. Around 45 percent of the country's labour force is employed in agriculture and the sector contributes 70 percent of export earnings and a significant share in the government revenue (CBS 1990). Activity in the service sector is to a large extent associated with agriculture and contributes the largest share (44 percent) to the GDP (CBS 1993). Hence, the role of agriculture in the economy is of some major importance. In recent years government efforts to diversify the structure of the economic base have reduced the share of agriculture in GDP from 35 percent in 1970 to 23 percent in 1991 (CBS 1992a : 17). The percentage of the labour force employed in agriculture has also dropped significantly from 55 percent in the 1950s to the current level of 45 percent.

The agriculture in Sri Lanka traditionally has been described as being dualistic in character implying the existence, side by side, of a highly developed commercially organised plantation sector alongside a backward subsistence oriented and traditional peasant sector (Peiris 1977 : 215). The plantation or estate sector

involves the cultivation of commercial crops such as tea, rubber and coconut mainly for the export market. During the past two decades the plantation sector has performed poorly. Investment has been insufficient to maintain production levels attained in the 1960s. Although the export of tea has remained more or less constant over three decades, rubber exports have fallen by half. Due to increasing domestic demand, export of coconut products has also fallen (CBS 1993 : 36-41).

The peasant sector is synonymous with the small holding sector and produces food crops consisting of mainly paddy, subsidiary food crops<sup>2</sup> and vegetables for domestic consumption and limited quantities for the local market. The peasant sector of the economy has achieved remarkable growth in output over the years mainly due to the Green Revolution and other technological breakthroughs. The achievements in the paddy sector particularly have been remarkable over the past two or three decades. The total output has increased both due to expansion of the area cropped and increases in yield per unit of land area (Hameed et al 1977; ILO/ARTEP 1986). Sri Lanka is currently on the threshold of achieving self sufficiency in rice production (Dangalle 1982 : 1-16; EUI 1993 : 21).

So far as industrial development is concerned, historically it has been given relatively less attention in the economy (Peiris 1993c : 231). Import substitution and state sponsored industrialisation continued throughout the 1950s and 1960s. A major shift in government policy toward industrial development began with the introduction of liberalised trade after 1977. Under this policy most import controls that were in operation since the 1960s were lifted and the private sector was encouraged to play a key role in the economy. State monopolies of the import and distribution of a number of commodities were withdrawn and a wide range of

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<sup>2</sup> Subsidiary food crops include a wide range of crops such as maize, finger millets, green gram, black gram, chillies, onion, oil crops, and tubers. They are mainly grown in the Dry Zone and the intermediate zone on rainfed land under shifting cultivation or on stabilised farms.

incentives for private investment were introduced (Herring 1987 : 328). The attraction of direct foreign investment is also a key element in the industrialisation policy. Foreign investments were actively promoted through the establishment of Investment Promotion Zones (IPZ) in 1978.

The industrial sector, however, suffers from a number of problems and constraints for further development. On the supply side, the major constraints are associated with the lack of capital, entrepreneurship, technology, skills and inadequacy in physical infrastructure. On the demand side, the limited size of the local market and growing protectionism in international markets continue to prevent expansion (MPPI 1992 : 56).

The liberalisation policies have also encouraged a mass exodus of people for employment to the West Asian oil rich countries. This has brought a new financial element into the country in the form of remittances which now rank second only to tea as a foreign exchange earner in Sri Lanka (Rodrigo and Attanayake 1988 : 17).

Although the post-1977 reforms have resulted in favourable economic growth and the creation of new job opportunities, the initial momentum of growth has not been able to be sustained (People's Bank 1995 : 30). The Sri Lankan economy is still heavily dependent on export earnings to purchase most of its import requirements. The declining export earnings and the growing volume of imports which include most essential food items, investment and intermediate goods have resulted in a weakening of the terms of trade leading to considerable pressure on the balance of payments (CBS 1993). The widening budget deficit has compelled the government to depend upon foreign aid and external and internal borrowing to finance the gap which has fuelled the rate of inflation. Economic instability has been caused in recent times by both external and internal shocks due to the world recession in 1980s, the on-going war in the north and east of the country and the unrest in the

south in late 1980s. The country has not recovered from these adversities to realise a real economic growth (People's Bank 1995 : 8).

Insufficient growth of the economy has led to the twin problems of unemployment and poverty. According to 1993 estimates, 14 and 15 percent of the rural and urban population respectively are unemployed (DCS 1994). However, it has been shown that poverty is mainly due to inadequate earnings rather than the lack of employment (World Bank 1990). According to 1990 estimates, one quarter of the population in the country live below the poverty line (People's Bank 1995 : 23). In the absence of welfare policies initiated by the government, the incidence of poverty would have been much greater.

### **1.3.6 Government Welfare Policies**

Even before Independence, Sri Lanka was committed to a welfare state (Peiris 1993a : 180). The main components of welfare policies were free education from kindergarten to tertiary level, provision of free health care on a universal basis, a subsidised system of public transport encompassing even the remotest parts of the island, a food ration scheme which provided a substantial amount of rice and other basic commodities either free or at subsidised rates to the entire population and the provision of a plot of state land mainly for homesteads and also for crop cultivation among the rural landless poor (Fernando 1986 : 60-78; Peiris 1993b : 192-218).

With a growing population, successive governments have found it increasingly difficult to continue with this massive social expenditure in the face of adverse balance of payments and inelastic government revenues. The welfare policies therefore have subsequently been targeted to include only the poorest of the poor (Gunaratne 1987 : 256).

**Table 1.1 Some Comparative Indicators of Economic and Social Development in Sri Lanka**

Indicator		Sri Lanka	Low Income Economies		High Income Economies
			All	Excluding China and India	
GNP per capita (US \$)	1992	540	390	370	22160
Percent annual growth in GNP percapita	1980-1992	2.6	3.9	1.2	2.3
Agriculture as a percent of GDP	1970	28	-	-	4
	1992	26	29	30	-
Percent of population living in urban area	1970	22	18	18	74
	1992	22	27	27	78
Life expectancy at birth (years)	1992	72	62	56	77
Secondary school enrollment (as percentage of age group)	1970	47	21	13	73
	1991	74	41	28	93
Adult Illiteracy					
Female	1990	17	52	56	0
All	1990	12	40	45	0
Percent annual growth in population	1970-1980	1.6	2.2	2.6	0.8
	1980-1992	1.4	2.0	2.6	0.7
	1992-2000	1.1	1.7	2.3	0.5
Crude birth rate (per 1000)	1970	29	39	45	18
	1992	21	28	37	13
Crude death rate (per 1000)	1970	8	14	19	10
	1992	6	10	12	9
Infant mortality per 100 live births)	1970	53	114	139	20
	1992	18	73	91	7
Total fertility rate	1970	4.3	6.0	6.3	2.4
	1992	2.5	3.4	4.9	1.7
	2000	2.1	3.1	4.4	1.8

Source: World Bank (1994)

Note: Low income countries : GNP per capita US\$ 675 or less includes 55 countries, High income countries : GNP per capita US\$ 8356 or more includes 40 countries  
 Estimates of low income countries are shown with and without China and India, the two largest countries as the averages have been weighted by population

Nevertheless, Sri Lanka has emerged as a unique example of a developing country whose level of social progress has been quite high in relation to the per capita income of the country which was only US \$ 550 in 1993. Sri Lanka ranked very highly (82 in the 1970s) among both developed and less developed countries in terms of the Physical Quality of Life Index (PQLI) which measured the performance of meeting basic needs (Isenman 1980 : 238). The welfare measures have also been able to achieve a more egalitarian income distribution in the country than elsewhere, and for the same reason, the rural poor have not been pushed out of villages by complete landlessness and destitution at the same rate as elsewhere in Asia.

A comparison of the economic indicators of Sri Lanka such as per capita GNP, annual growth of GDP etc. with other low income and high income economies shows that Sri Lanka is well above the average for low income economies in most indicators (Table 1.1), yet it still remains as one of the poorer countries in the world. With regard to social development, relative to its low income level, Sri Lanka performs well on indicators such as life expectancy, crude death rate, school enrollments and adult literacy where the Sri Lankan levels are remarkably close to those of some high income economies.

#### **1.4 Rationale for Selecting Sri Lanka for the Study.**

The selection of Sri Lanka for the present study was prompted by two major reasons. Firstly, Sri Lanka has had a long history of state-aided settlement projects dating back to the eighteenth century. The breakdown of the settlement schemes by period since their establishment reveals that over 50 percent of the schemes are older than 30 years (Table 1.2) so that a substantially sized second generation will have been born to the pioneer settlers and many of them will be in the adult ages. In addition, there is a wealth of literature both published and unpublished dealing

with settlement experience. The long history of settlement and the invaluable sources provide an ideal background for a study of the second generation problem in a country where the problem has so far not been addressed in a systematic manner.

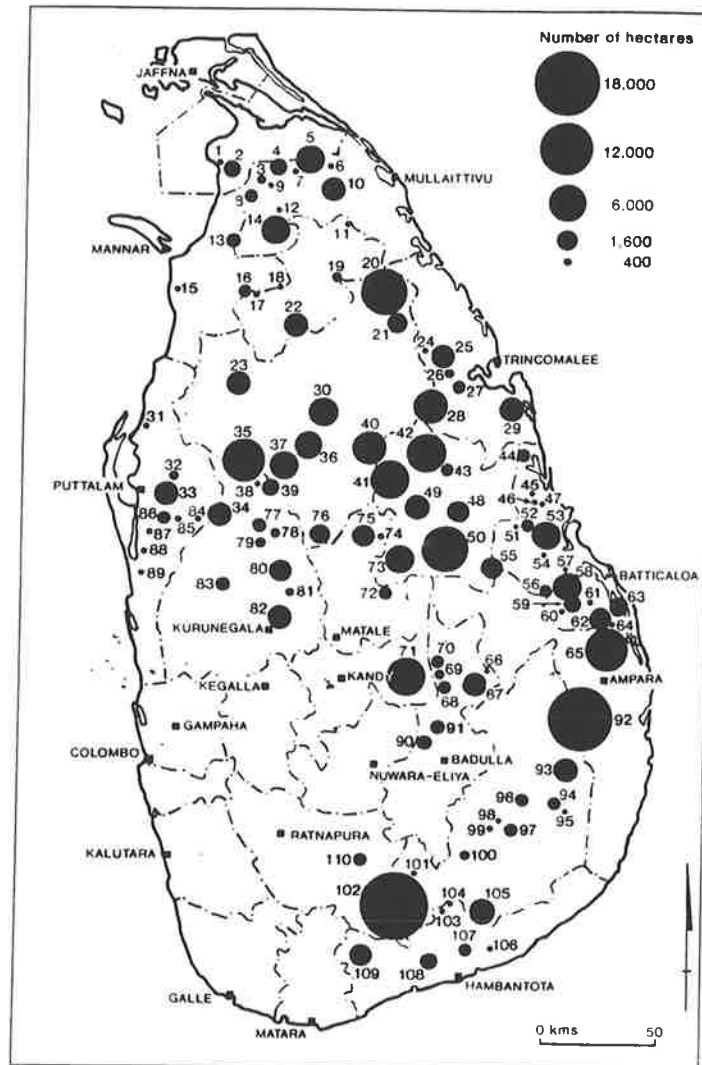
**Table 1.2 Distribution of Settlement Schemes in Sri Lanka by Period Since Establishment up to 1991.**

Years Since Established	Number of schemes	Percentage	Cumulative percentage	Number of families
20 Less	12	11	11	3328
21-30	42	38	49	28988
31-40	41	37	86	45259
41-50	10	09	95	6407
51-60	03	03	98	12858
60+	02	02	100	2848
All	110	100	100	99688

Source: Annual Reports of the Department of Land Commissioner Various Issues

Secondly, the government of Sri Lanka so far has established 110 major settlement schemes of different scales in the Dry Zone (Figure 1.8) settling nearly 100,000 farm families. The large scale Mahaweli irrigation and settlement programme which commenced in the 1970s is expected to settle a further 260,000 farm families by the time it is completed (MLLD 1983). By 1993 the total number of farm families settled under Mahaweli amounted to 88,917 (CBS, 1993 :78). With the completion of the Mahaweli Development Programme, it is likely that there will be no further development of irrigated settlements in Sri Lanka. Consequently, government emphasis is gradually moving away from the construction and toward the management of settlement schemes (Kikuchi and Wijyaratne 1991 : 3). A full understanding of the role of the second generation is imperative at this stage as they can be expected to take over the responsibilities of the management of settlement land from their parents' generation over the next few decades. The study of their problems in the context of Sri Lanka is therefore timely and could contribute

Figure 1.8 Major Irrigation and Settlement Schemes.



- |                         |                             |                        |                        |
|-------------------------|-----------------------------|------------------------|------------------------|
| 1. Vannerikulam         | 26. Wan Ela                 | 55. Pimburattewa       | 84. Mahauswewa         |
| 2. Kariyalaimagapaduwan | 27. Galmetiyyawa            | 56. Kitulwewa          | 85. Uniyawa            |
| 3. Ambelaperumalkulam   | 28. Kantale                 | 57. Karadian Tank      | 86. Kottukachchiya     |
| 4. Akkarayankulam       | 29. Allai                   | 58. Rugam              | 87. Mahakumbukkadawala |
| 5. Ganeshapuram         | 30. Mahakanadarawa          | 59. Unnichchai         | 88. Siyambalakitowa    |
| 6. Udayarkattukulam     | 31. Gambingawewa            | 60. Weligahakandiya    | 89. Katupata           |
| 7. Kanagambikaikulam    | 32. Pahariya                | 61. Adaichakal         | 90. Bathmeddilla       |
| 8. Tenniyankulam        | 33. Tabbowa                 | 62. Pulukunava         | 91. Badulu Oya         |
| 9. Koddakaddinakulam    | 34. Inginitiya              | 63. Kadukkamunai       | 92. Gal Oya            |
| 10. Muthuyankaddu       | 35. Rajangane               | 64. Tumpankeni         | 93. Muthukandiya       |
| 11. Muruthankulam       | 36. Nachchaduwa             | 65. Navakiri           | 94. Eithimale          |
| 12. Kollanvilankulam    | 37. Kagama Katiyawa         | 66. Dehigama           | 95. Kotiyagala         |
| 13. Periyamadhu         | 38. Siyambalangamuwa        | 67. Nagadcepa Mahawewa | 96. Hulandawa          |
| 14. Vavunikulam         | 39. Usgala Siyambalangamuwa | 68. Mapakadawewa       | 97. Okkampitiya        |
| 15. Mullikulam          | 40. Huruluwewa              | 69. Damburawa          | 98. Katugahagalge      |
| 16. Pandisunchchan      | 41. Minneriya               | 70. Horabora           | 99. Yudaganawa         |
| 17. Periyahampanai      | 42. Kauduluwewa             | 71. Minipe             | 100. Weherayaya        |
| 18. Kalmadu             | 43. Ambagaswewa             | 72. Hatitota Anicut    | 101. Hambegamuwa       |
| 19. Chemamadu           | 44. Kaddumirivukulam        | 73. Elahera            | 102. Udawalawe         |
| 20. Padawiya            | 45. Mathurankemi            | 74. Wewajawewa         | 103. Mahawewa          |
| 21. Wahakada            | 46. Kirimechchai            | 75. Kandalama          | 104. Mahagalwana       |
| 22. Pawakkulam          | 47. Anaisuddakaddu          | 76. Dewahuwa           | 105. Lunugamwehera     |
| 23. Mahawilachchiya     | 48. Galamuna                | 77. Palukadawatta      | 106. Debarawewa        |
| 24. Mahadiwulwewa       | 49. Giritale                | 78. Attaragalla        | 107. Badagiriya        |
| 25. Morawewa            | 50. Parakrama Samudra       | 79. Ambakolawewa       | 108. Ridiyagala        |
|                         | 51. Wadumunai               | 80. Hakwetuna Oya      | 109. Murutewela        |
|                         | 52. Punanai Anicut          | 81. Kimbulwana Oya     | 110. Uggalkaltota      |
|                         | 53. Vakaneri                | 82. Batalagoda         |                        |
|                         | 54. Tharavaikulam           | 83. Ridibedi Ela       |                        |

tremendously in formulating viable policies for future economic and social development of the communities living in these schemes.

### **1.5 Theoretical Background**

The importance of studying settlement projects as areas which change over time has been highlighted by a number of scholars (Chambers 1969 : 226; Nelson 1973; Scudder 1981 : 97). They have taken the stance that the settlement project should evolve through stages and phases in order to become economically and socially viable communities. Chambers (1969) first put forward this idea and it was later expanded upon by Scudder (1981) who developed it into a more comprehensive model. By comparing the Ghanian Volta resettlement programme with the Kenyan Mwea irrigation scheme, Chambers identifies three major stages of settlement: the first stage involves pre-settlement issues, the second is the settlement process itself which includes activities such as organisation, welfare and production, and the third involves the withdrawal of government authority and devolution of activities to the local agencies (Chambers 1969). Nelson (1973) in his analysis of Latin American colonisation also identifies three stages and termed them as "pioneer", "consolidation" and "growth" in much of the same way as suggested by Chambers. Scudder (1981 : 97; 1985 : 130-131) however postulates a four stage model in his global evaluation of settlement projects. The stages identified by him include: (1) pre-settlement (2) transition (3) economic and social development and (4) handing over and incorporation. Scudder (1981, 1985) has discussed the issues and problems associated with each of these stages and unlike the other models has taken the second generation into consideration in his analysis. However, he does not give any consideration to the crucial demographic differences between each stage and his primary emphasis is upon economic, social and psychological issues associated with the settler.

The pre-settlement stage of Scudder's model consists of the planning and design of the scheme and the problems at this stage are exclusively planning-related. The second stage involves the actual transfer of settlers into the new habitat and Scudder has placed much emphasis on the stress associated with settlers adjusting to the new habitat in this stage. He suggests that the settlers are risk averse and primarily attempt to cope with the strain and uncertainty associated with the new environment. The leaving of the scheme by those who cannot cope with this initial stress and excessive dependency upon the settlement authority are the major problems associated with this stage. In the third stage, economic and social development occur as the settlers tend to take more risks and make investments in a diverse range of economic activities. In the final stage, the second generation who have grown up in the area assume command of activities in the settlement. Handing over to the second generation and incorporation of political and administrative functions into the local authorities in the encompassing region take place during this stage. Scudder assumes that settlement schemes may not become economically or socially viable if they do not pass through all four stages or the order of progression into each stage is disturbed. The unwillingness of the second generation to take over from their parents is shown by him to be a problem at this final stage. The Scudder model particularly emphasises that the last two stages are crucial if living standards and productivity are to rise and continuity and development are to be maintained (Scudder 1981 : 13). The model suggests that the second generation are no longer a problem where settlements have achieved high levels of economic growth and have been successfully incorporated into the encompassing region. However, the model does not incorporate any consideration of the initial characteristics of settlers and their contribution to the success or failure of settlement schemes.

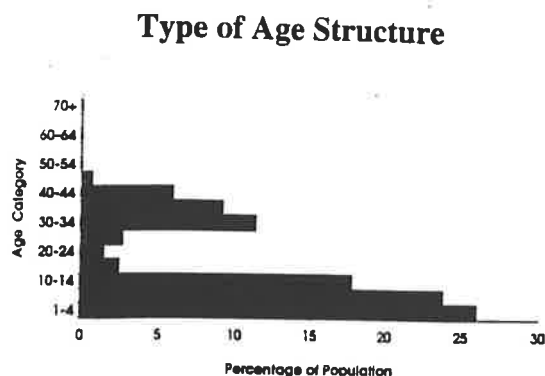
The particular characteristics of settlers drawn into any frontier settlement schemes have implications for production growth, consumption patterns, household and family networks, political power and other aspects of the social, political and economic existence of the settlement community. The demographic characteristics of the initial population in settlement schemes particularly, has repercussions for future generations. When the settlers are first recruited, they tend to be young, working age couples very often in their thirties or early forties with a number of young children. Indeed other groups are often excluded from participation in sponsored land settlement schemes (Abeysekara 1984; Soeratnam et al 1977 : 10; Chan & Lean 1981; Gosling 1982 : 68, 72) . In the early phase of settlement, naturally many of them suffer from serious labour shortages as the children are still young (Soeratnam et al 1977 : 13, 37; Oey and Astika 1978 : 109, 156; Amunugama 1965; Bulankulama 1984: 344). In some cases it is suggested that fertility levels increases among settlers in response to demand (Oey 1975 : 234-237). When the children grow up, marry and have their own children, the supply of labour expands beyond the absorption capacity of the family holding (Wanigaratne 1984). Unless the settlements are properly planned to absorb this influx of second generation men and women into the labour force within 10 to 20 years after the initial settlement, the problem of unemployment among the second generation is unavoidable. Moreover differences in the aspirations and expectations of the respective generation become wider as time goes on. Settler children are likely to have higher or different aspirations than their parents. With higher levels of education, the factors that have satisfied the expectations and aspirations of the first generation may not be as attractive to the second generation. Further, the expectations and aspirations of the first generation can also change with the passage of time. Chan and Richter (1982) shows that in contrast to the first generation, working the land is no longer attractive to the more educated second generation members of the Malaysian FELDA schemes. This makes the problems of the

**Figure 1.9 A Simplified Model of the Life Cycle of Settlers in Land Settlement Schemes**

### Stage and Characteristics

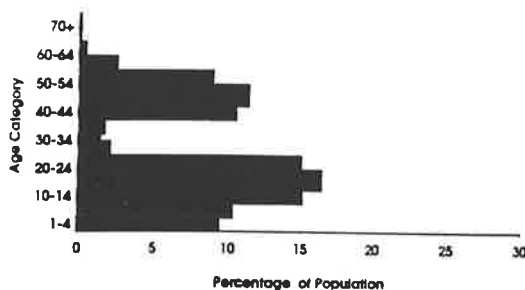
#### 1. First Stage (at the time of settlement)

Heavy concentration of adult population in the working age, lack of elderly people, large number of dependent children in the young age groups



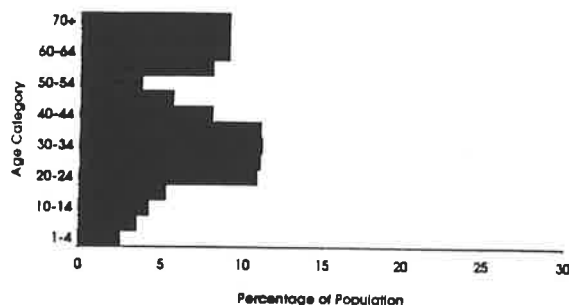
#### 2. Second Stage (1-10 years)

Population grow rapidly due to effect of fertility and continuous in-migration of both settlers and non-settlers, age structure continues to be bimodal pattern with heavy concentration of the population in very young and working ages



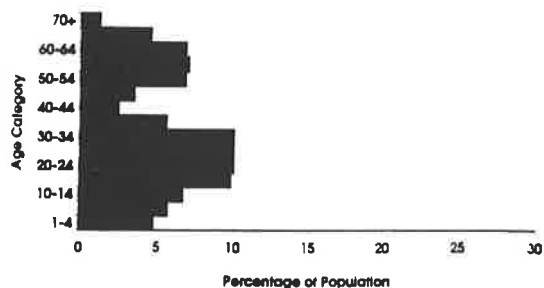
#### 3. Third Stage (11-20 years)

Population growth slows down as the couples complete child bearing, vacant land area no longer exists due to illegal occupation, in-migration virtually halts. Population concentration in working ages become greater due to the maturing of the second generation into the work force age groups



#### 4. Forth Stage (21-30 years)

The second generation takes command of the activities, Some members migrate out. The first generation is no longer active in the labour force, they are either deceased or in the retired ages. Third generation is represented in the youngest age categories



second generation more complex and severe. It is important to establish that the stage of the life cycle of settler families selected for the settlement scheme is crucial in interpreting the extent of the second generation problems expected to occur in frontier areas. There are marked similarities among this group not only in their age structure, but also in other characteristics due to the adoption of specific criteria in their selection for settlement. In the case of Sri Lanka the settlers selected for the early settlement schemes were from the poorest group of the agrarian society. They were landless and had large families (Farmer 1957 : 200-220), and therefore it is common to have a very high representation of children in the young age groups (less than 10 years old) in the initial stage of settlement. The evolution of changes in the age structure of the population of the land settlement schemes could be generalised into a model representing the typical stages in the first thirty years or so of settlement, since the initial settlers tend to be drawn from a particular sub-set of age categories. A simple model along these lines is presented in Figure 1.9.

The age structure of the population in the initial stage of settlement of any frontier settlement scheme tends to have particular characteristics. There is a concentration of the adult population in the young adult working ages and a lack of older people. There tends to be more males than females in this adult group and there is a very large number of children in the dependent child age categories. This stage is depicted in the first diagram in Figure 1.9.

The second stage of settlement relates to some ten years after the initial moving in of the pioneer settlers. This is a stage of very rapid growth. New settlers as well as friends and relatives moving into the scheme via a process of chain migration contribute to this group, as does the fertility of the young adult initial settlers. Indeed some studies suggest that the fertility of such settlers is higher than that of their counterparts in their home areas in response to the lack of population pressure

in the settlement area (Oey 1975 : 221-222). In addition to the authorised settler-related in-migration, there tends to be an influx also of business people of one kind or another as well as sometime land grabbers and speculators who wants to reap the benefits from the unsettled nature of settlers in the initial phase. In some cases, large scale unauthorised occupation on state land by spontaneous migrant families within settlement projects also increased the total population. Accordingly, the age structure of the settlement continues to show a bimodal pattern with heavy concentration of the population in the very young adult, working ages and the dependent child age groups.

The third stage of settlement depicted in Figure 1.9 tends to coincide roughly with the second decade in the history of the land settlement scheme. During this phase population growth begins to slow down as in-migration is reduced due to all the available land being taken up by both legitimate settlers and their children and some cases squatters. Moreover, the initial settlers are beginning to complete their child bearing at this time. The original settlers are now beginning to move into the older working ages, the second generation of their children are moving into the young working ages and there is the beginning of a third generation at the base of the age pyramid as the second generation begin family formation. It is during this stage that land and employment become significant problems for the second generation as most of them are now in the working ages and the majority of them have got married and formed separate households. Subdivision of original land allotments begins at this stage, and some second generation couples firmly establish their housing on encroached land already acquired by their parents or by themselves. Out-migration also occurs due to the extreme population pressure on settlement resources.

By the fourth stage (21 to 30 years from the time of initial settlement) a number of the second generation have left the settlement project and many of them have

formed separate households within the settlement project. The first generation are generally no longer active in the work force and some will have died. In contrast to the initial phase, the population comprises a substantial proportion of elderly members. The second generation has taken control of most of the activities in the

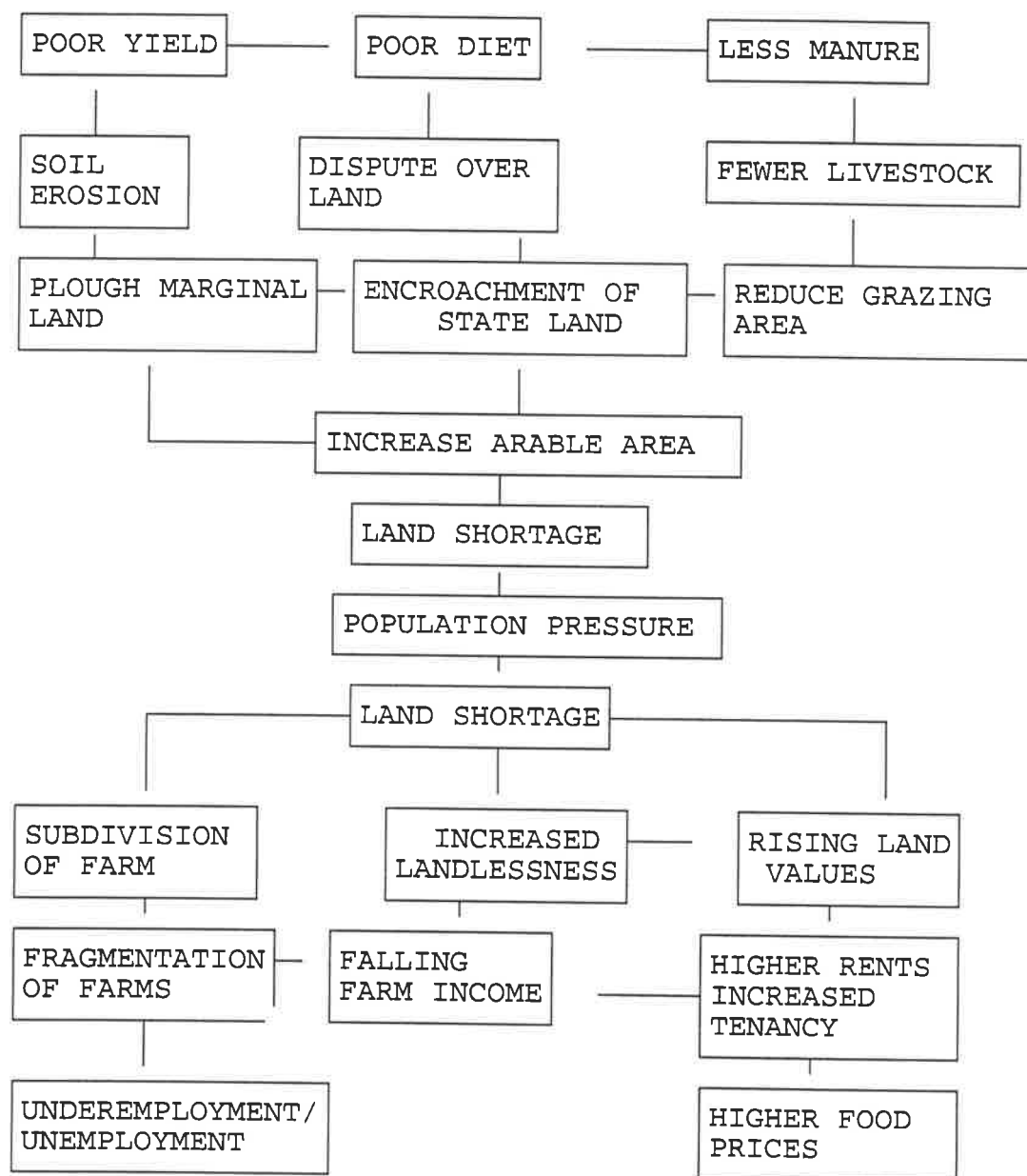


Figure 1.10 Symptoms of Over-population (Adopted from Grigg 1980 : 63)

settlement project. The population continue to grow but with reduced pace, as most of the second generation members are now married and have started childbearing. The population pressure continues to exist throughout the fourth stage. The problems in land settlement schemes in the last two stages of the model reflect the symptoms of population pressure. A schematic representation of the ranges of problems likely to occur as a result of population pressure are presented in Figure 1.10.

As a population grows and there is no possibility of extending the area of land under cultivation, subdivision and fragmentation of existing land tends to occur and this may result in uneconomic land holdings being of uneconomic size. Landlessness and near-landlessness are a major outcome of continual land subdivision. Land fragmentation also generally results in falling farm incomes, together with unemployment or underemployment among the agricultural population. The escalation of prices of land also leads to increasing land rent and higher food prices. The cultivation of marginal land in order to increase the area of available arable land may be an adverse consequence of population pressure. The cultivation of marginal land may increase soil erosion, land degradation and reduce crop yields. The encroachment of grazing land and forest reserves also reduces the grazing ground available, while in turn leads to a fall in the number of livestock maintained and less manure being available as fertilizer for crop cultivation.

Communities faced with population pressure tend to adopt one or several strategies to overcome the problem. These strategies include demographic, economic and "economic-demographic" responses (Bilsborrow 1987 : 185). These are discussed in the next section which essentially provides the analytical framework adopted in this study to analyse strategies adopted by the second generation to deal with the pressure of population on land resources in land settlement schemes.

## 1.6 Concept of Population Pressure

The Malthusian perspective defines population pressure in terms of environmental carrying capacity (James 1989 : 9-15). According to this perspective, population pressure is assumed to exist when the existing (or growing) population of a given environment cannot be adequately supported by its carrying capacity (Overbeek 1974 : 41). Malthus assumes that population would always tend to increase at a geometric rate, whereas food production can only be increased at an arithmetic rate. Therefore over-population occurs when the exploitation of resources fails to keep pace with population growth. There are two basic assumptions underlying the Malthusian conceptualisation. Firstly, that resources are scarce and distributed fairly evenly among the population. Secondly, agricultural technology, which is usually defined in terms of improvements in farming techniques and plant genetics remains constant. History however, has shown that the Malthusian theory is unrealistic in the real world. Particularly, it has failed to foresee the massive growth in food production due to technological breakthroughs (Peters and Larkin 1993 : 104). The theory has subsequently redefined most of this incorporating optimum theory (Minami 1961; Moes 1958). The optimum population is defined as the number of people that is just sufficient to make the best possible use of available resources (Sauvy 1969 : 16-29). It is a condition that guarantees the highest productive ratio between population and resources. Over-population therefore disturbs the equilibrium between labour and other factors of production, and as a result per capita output starts to decline. Optimum theory is also a static theory, as it assumes that technology or resources remain constant as the population increases (Grigg 1976 : 140). Some researchers have suggested that optimum population is incalculable (Sauvy 1969 : 36-64; Robinson 1981 : 57). The economic, social and political realities in the modern world are considered as much more complex than the simplistic meaning of this theory.

There have also been some attempts to construct measurements of over-population. One measurement designates an area as over-populated if it contains more people than what can be maintained at a given standard of living as measured by minimum calorie requirements (Gupta 1970 : 424-441). A second approach is to measure the amount of labour required to undertake agricultural tasks in a specific area within a given period of time and compares that with the available labour force. Any surplus of labour is considered as a measurement of the extent of over-population (Moore 1945 : 299). Nurkse (1953) has used this argument to show that the agricultural population who are either unemployed or underemployed in many developing countries can be withdrawn from the agricultural labour force without any drop in the total agricultural output. This proposition generated a large body of literature dealing with both the theoretical aspects of underemployment and its measurement (Schultz 1964; Desai and Mazumdar 1970). Infant mortality rates, sex ratios and total dependency ratios have also been suggested as comparative measures of population pressure (Van de walle 1965 : 91-93; Marker 1967 : 336-338). However, none of these measures proved to be convincing as measures of over-population. Despite difficulties in the definition and the measurement of over-population, there exists some general agreement over the presence of symptoms of over-population in agricultural communities (Robertson 1939 : 11-70; Mabogunje 1970 : 114-127).

The present study assumes that the problems of the second generation originate from the unusual nature of population pressure experienced by the communities in land settlement schemes. These problems tend to be manifested by symptoms of population pressure. The second generation adopt diverse strategies to deal with their problems. The first are possible demographic responses which would reduce the numbers dependent on the land. The second are economic responses which

would enhance the per capita output and income among families. A schematic representation of possible responses is given in Figure 1.11.

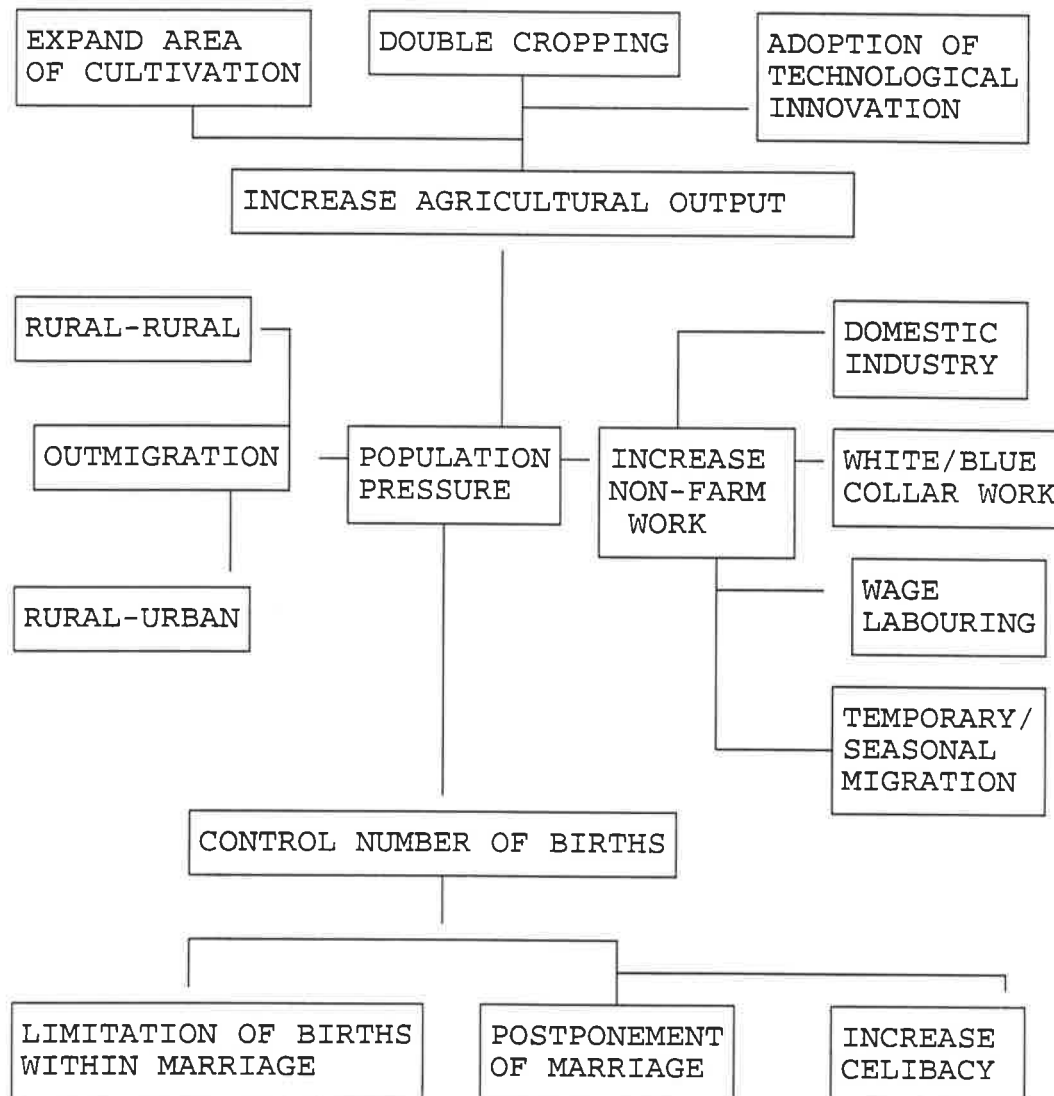


Figure 1.11 Schematic Representation of Responses to Population Pressure (Modified from Grigg 1980 : 64).

### 1.7 Demographic Responses to Population Pressure

Societies faced with the problem of over-population can take a number of demographic measures to address the problem. Even for pre-industrial societies there is evidence of groups limiting the number of births when economic conditions

are deteriorating (Grigg 1976 : 143). Hajnal (1953) has shown that the rise in the age at marriage and the increase in the proportion of never married women in Europe were a response to population pressure long before a fall in marital fertility occurred. Coale (1973) also identified postponement of marriage of females and declining fertility as major components in the demographic transition in Europe. A well known example from Europe is the case of Ireland where the delay in marriage was the major contributory factor to the decline in fertility until marital fertility began to decline in 1930 (Coale and Watkins 1986).

Davis (1963 : 345-366) in his "Theory of Multiphasic Response" asserts that in societies faced with a persistent rate of population increase (due in part to the success in controlling mortality) families tend to use every demographic means possible to avoid a decline in their accustomed standard of living or to increase the economic opportunities arising from modernisation. He based his theory on observations of responses to the persistent rise in population growth in Japan and Western Europe. With respect to Japan, he wrote:

"Within a brief period they quickly postponed marriage, embraced contraception, began sterilization, utilized abortion and migrated outward. It was a determined, **multiphasic response**, and it was extremely effective with respect to fertility" (Davis 1963 : 349)

With regard to northwestern European countries he came to the same conclusion:

"Since the northwest European countries, years ahead of Japan, also had a sustained natural increase, did they manifest a similar multiphasic response? The answer is undeniably yes. Although generally overlooked because of our pre-occupation with the contraceptive issue, the fact is that every country in northwest Europe reacted to its persistent excess of births over deaths with virtually the entire range of possible responses. Regardless of nationality, language, and religion, each industrializing nation tended to postpone marriage, to increase celibacy, to resort to abortion, to practice contraception in some form, and to emigrate overseas. (Davis 1963 : 350-351)

Friedlander (1983) empirically tested and found support for Davis's proposition in an examination of demographic behaviour in nineteenth century England and

Wales. In the context of the developing world, supportive evidence for the multiphasic response theory has been established in South India and Sri Lanka by micro-demographic research conducted by Caldwell and his collaborators (Caldwell et al 1982; 1983; and 1989).

On the basis of this theoretical insight, the present study intends to answer the most important question of whether the second generation members are responding to the growing population in settlement schemes in every demographic manner as suggested by the theory. They can control their birth by not marrying, delaying marriage or controlling births within marriage. Outward migration tends to be another possibility. The initial settlers themselves migrated out of their traditional villages into land settlement schemes due to the landlessness and unemployment at the origin and the possibilities of becoming land owners at the destination (Abeysekara 1984 : 116-148; Chan and Lean 1981 : 206-253; Guinness 1982). The present study however attempts to understand the use of migration by their children as a coping strategy to population pressure.

It is important here to make a distinction between temporary and permanent migration. The possible temporary movements include seasonal movements during the slack season into rural and urban destinations as well as migration to overseas destinations for temporary labour activities. Permanent migration on the other hand could occur into both rural and urban destinations.

Migration is likely to occur from communities with low opportunities for subsistence relative to pressure of population (Findley 1982 : 280). Among agricultural communities lack of accessibility to land, particularly productive land, due to intense pressure of population encourages migration of various kinds (Connell et al 1976; Gardiner and Oey-Gradiner 1990 : 215). As explained by Oberai and Singh (1983 : 30) the pressure of population has led to a high

people:land ratio resulting in landlessness, underemployment and poverty among rural people. This process has been widely hypothesised as one of the major causes of out-migration from rural areas (Rogers and Williamson 1982; Oberai and Singh 1983 : 30). Most developing countries, particularly in Asia, are characterised by a highly unequal distribution of land, coupled with land fragmentation and inadequate access to income generating lands (fertile lands). Landlessness and near-landlessness have increased at an alarming rate as a result of land concentration and land fragmentation and this ultimately has led to out-migration (ILO 1977)

Although outmigration is a common response to population pressure, outmigration from land settlement villages occurs as a result of other factors as well. The neo-classical economic equilibrium perspective explains the causes of internal migration as a response to the spatial imbalance in the distribution of land, labour, capital and natural resources (Hugo et al 1987 : 209). According to this perspective, people move from places where labour is abundant and capital is scarce to labour deficient and capital abundant areas (Wood 1982 : 300). This process will eventually lead to equilibrium between areas of origin and destination correcting rural-urban and inter-regional imbalances (Lipton 1980; Wood 1982 : 300; Hugo 1985 : 8). The historical structural perspective is critical of this neo-classical view as the latter pays more attention to individual choices disregarding the more important macro-structural forces which induce migration. According to Wood (1982 : 300) these structural forces include,

"the emergence and uneven expansion of the capitalist mode of production....the style of development that is pursued....a country's role in the international division of labour.....the unequal development within and between countries.....the articulation of capitalist and non capitalist formations as it affects the distribution of the maintenance and reproduction cost of labour.....and the cost lowering analytical functions of a migrant labour force".

Therefore, this approach stresses the point that the underlying structural factors rather than individual motives cause migration among communities.

The causes of migration are explained by the neo-classical economic theory of migration on the basis of famous "push" and "pull" factors (Lee 1966 : 47-57; Todaro 1976). The migration models (such as the labour force adjustment model and the human capital model) based on this theory emphasise the point that the decision to migrate depends on the expected higher wages and successfully obtaining employment at the destination (Sajaastad 1962; Todaro 1976). In addition to higher wages, better employment opportunities, perceived upward social mobility, higher living standards and modern life style, relatives and friends at the destination are treated as major pull factors for migration. The major criticism directed towards these models is that they basically represent micro-level individual decision making characteristics leaving out macro-level contextual structural factors. Further, these models have also been criticised for their emphasis on economic factors and disregard for the socio-cultural factors.

The major push factors outlined in the literature are related to economic, social, demographic and also some technological variables. Major economic push factors include agricultural unemployment, underemployment, lack of land and general rural poverty (Rhoda 1980 : 13; Nam et al 1990 : 12). The major demographic push factor includes a rapidly increasing population and labour force (Kebschull 1986; Gardiner and Oey-Gardiner 1990 : 215). The social factors include escape from rural violence or war, marriage, natural disasters and the changing social institutions (Rhoda 1980 : 13; Micklin 1990 : 181).

The tendency to migrate also increases with the acquisition of educational qualifications (Shaw 1975; Premi and Tom 1985 : 93; Premi 1990 : 200). People with secondary and higher education will be more inclined to migrate in order to

find work or continue schooling in urban areas (Connell et al 1976; Fuller 1990 : 365). The promotion of educational facilities has stimulated outmigration of the more educated rural youth. Some of them migrate to improve their skills while others leave dissatisfied with the prospect of rural life. Lipton (1980 : 5) citing migration data from a number of studies shows that education attainment is a major factor behind migration. However studies carried out in Latin American countries have shown that rural to rural movements are associated with illiteracy and low education (Simmons et al 1977; Findley 1977).

The decision to migrate from rural areas tends to be associated with a variety of factors. The present study therefore intends to study the significance of outmigration as a coping strategy toward growing population pressure in the settlement villages.

### **1.8 Economic Responses to Population Pressure**

As shown in the analytical framework (Figure 1.11), economic responses to population pressure include those associated with increasing agricultural output and increasing non-agricultural (off-farm) work. Agricultural output can be increased by expansion of the cultivated area, more frequent cropping of existing arable land, intensification of labour inputs, substitution of high yielding crops and adoption of other technological innovations. Non-farm work on the other hand could also be increased by resorting to other economic activities such as undertaking small scale industrial activities at home, migrating seasonally to other areas for both farm and non-farm activities and seeking wage labour activities both inside and outside of the home village (Grigg 1976 : 147-153). The extent to which the second generation have taken part in related activities is spelled out in the analysis.

The Boserup theory recognises that population growth is the major force in determining agricultural change (Boserup 1965). According to her theory,

population growth forces the adoption of more intensive methods of farming. If this were the case, high population densities would reduce the outflow of migrants.

As shown by Boserup (1965) population pressure encourages people to crop existing agricultural land more frequently. She postulated a succession of intensive agricultural practices as population growth continued, ranging from forest fallow to bush fallow, through short fallow and annual cropping to multiple cropping. These changes in land use can be accompanied by changes in the implements used on the farm and in the land tenure system. More specifically, in her analysis population growth has eight principal effects: (1) it reduces the fallow period, (2) it increases investment in land, (3) it encourages that shift from hand hoe cultivation to animal traction, (4) it encourages soil fertility maintenance via manuring, (5) it reduces the average cost of infrastructure, (6) it permits more specialisation in production activities, (7) it reduces a change from general to specific land rights and, (8) it reduces the per capita availability of common property resources.

Although Boserup's theory was subjected to numerous comments, it had a wide impact on the development of subsequent theories on technological innovations (Goldman 1993 : 47-49). Grigg (1979 : 79) commented on possible other responses which Boserup did not consider in her theory.

"Few would agree that an increase in the frequency of cropping is the only possible response to population pressure, the extensive margin can be extended, higher yielding crops adopted and methods that increase yields introduced independently of increase in the frequency of cropping. Population pressure may be relieved by emigration or the control of numbers, intensification can also occur without population pressure, under the stimulus of urban growth or the development of trade."

Application of more labour using existing methods is another possible agricultural response to population pressure. The intensification of land use clearly involves considerable increases in labour input. Output can also be raised by adopting careful crop management systems which involve the intensive use of labour.

Geertz (1963 : 80) explained the effectiveness of this approach through his agricultural involution theory. His definition of involution implies a historical process of absorption of population increase in Java into traditional production systems of rice which involve the steady increase of intensification without reducing per worker output. However, the validity of the involution theory has been questioned by many scholars (Collier 1981; Alexander and Alexander 1979, 1982; White 1983).

The adoption of high yielding crops is another obvious way of increasing food output under population pressure. In settlement schemes with land becoming increasingly scarce and expensive, the use of biological and chemical technology is the most efficient way to promote agricultural growth. The Green Revolution experienced in East, South East and South Asia provides ample evidence of the success of increasing agricultural output by the adoption of biological and chemical technology (Ruttan and Binswanger 1978; Farmer 1986 : 176-186; Barker et al 1985; Herdt 1987 : 330). The main success of the Green Revolution however has been achieved in areas with a regular supply of irrigation water, favourable soil and climatic conditions, revealing the potential limitations of this strategy (Pearse 1977 : 135-136; Rigg 1989 : 376; Lipton and Longhurst 1989). The involvement of the second generation in the Green Revolution and other technological innovations in their attempt to increase agricultural production as a potential way of increasing crop output to population pressure, is the other most important economic response taken into consideration in the analysis.

### **1.9 Organisation of the Thesis**

This thesis is divided into eleven chapters. The first chapter provides an introduction to the study by outlining the objectives of the study and justifying the importance of the study in the context of present stage of settlement development in

The present chapter describes the theoretical framework of the study and provides essential background information on the context of the study.

Chapter Two deals with the methodology of the study and outlines the strategies and processes of data collection. The chapter seeks to provide background information with regard to the sample size, sample locations and limitations of the study. As this study is based mainly upon primary data collected from particular sample locations, major emphasis has been given to the explanation of the data collection strategy and the description of study locations in this chapter.

Chapter Three provides a detailed account of the evolution of the settlement policy in Sri Lanka. This chapter provides historical information that has shaped the settlement policies of the country and the factors that have potentially contributed to the present day problems of the second generation.

Chapter four provides an extensive review of literature available on the problems of land settlements around the world. The chapter compares the experiences of land settlement in many schemes across the world and factors that have contributed to the success or failure of these schemes. The main objective of this chapter is to identify the link between second generation problems and other problems associated with land settlement schemes.

The main empirical analysis of the thesis is given in Chapters Five, Six, Seven, Eight, Nine and Ten. Chapter Five compares the differences with regard to socio-economic and demographic variables between first and second generation members in the sample locations in order to highlight the distinctive characteristics of the second generation. Chapter Six provides an analysis of major problems encountered by the second generation members by study locations and their basic characteristics. Chapter Seven discusses the involvement of the first generation in relieving the problems encountered by their offspring. Chapter Eight analyses the

economic responses of the second generation towards population pressure in settlement schemes, while Chapter Nine and Ten provide a detailed analysis of the demographic responses pursued by the second generation in sample areas. The concluding Chapter Eleven provides a summary of major findings and discusses some policy implications. This chapter also recommends directions for further research.

## **CHAPTER TWO**

### **DATA SOURCES AND FIELD WORK METHODOLOGY**

#### **2.1 Introduction**

The aim of this chapter is to discuss the nature, strengths and limitations of the data used in subsequent chapters of this thesis. The discussion is focused primarily on outlining the nature of the sources of data accessed in the study and to describe the stages of field data collection. The latter includes a presentation of the criteria for selection of the study locations, the method of sampling and the field work procedure carried out. The strengths and limitations of the data used in the study are also critically assessed.

Since the objectives of this study included the need to provide both macro and micro perspectives on issues related to the problems of second generation settlers, both secondary and primary data sources are employed in the analysis to take advantage of the strengths of both types of data and through combining them, minimising their respective weaknesses. The first part of this chapter deals with the types and sources of secondary level data used in the thesis and the second part describes the basic strategies followed in the collection of primary data.

#### **2.2 Secondary Level Data Sources**

The secondary level data were collected from published sources, archives and records maintained by national government ministries and departments. These sources were used in order to gain an understanding of the evolution of policy relating to land settlement and in particular, its contribution to present day second generation problems. Among the departmental records, the annual administration

reports published by the Land Commissioner since 1933 were found to be particularly useful, especially in providing some insight into changes in overall settlement policy. The information in these reports includes procedures for selecting settlers, size of land allotment and subsidies given to settlers and the progress of on-going settlement activities during the year under review. The policy changes introduced from time to time and the rationale behind such changes can also be understood from these reports. The early administration reports provide particularly extensive coverage of the views expressed by the administrators on policy matters.

In addition to those reports, a wide range of data pertaining to selected settlement schemes were obtained from the administrative files maintained by the Department of Land Commissioner. These files contain problems reported by farmers and administrative matters referred to the head office by the field level officials with respect to each scheme.

Apart from the records of the Land Commissioner Department, the single most important source of information on settlement policy is the reports of the land commissions. A wealth of information on the evolution of settlement policy is available in the land commission reports published at different times. The first land commission was appointed during the period of colonial rule in 1927. There are two subsequent commission reports prepared by commissions appointed in 1955 and 1987 (Government Ceylon 1929,1958; Government of Sri Lanka 1990). These reports provide a comprehensive evaluation of the question of land, the existing settlement and land policy, prevailing land laws, tenurial issues and problems of encroachment, in addition to a wide spectrum of interrelated subjects and issues on land. The commissions finally make several conclusions and recommendations about future planning and the implementation of programmes.

The evaluation studies carried out by international agencies such as FAO (Food and Agriculture Organisation) and IBRD (International Bank for Reconstruction and Development or World Bank) on irrigation and settlement sector investments were referred to in order to gain an insight into the failures and successes of existing settlement policies (IBRD 1952; Hartough 1968). In addition, a number of feasibility studies undertaken with regard to the Mahaweli Development Programme by the consultants of UNDP/FAO, French consultancy team SOGREAH and the Dutch consultancy firm NEDECO were found to be useful as they provide valuable information of the previous experiences on settlement programmes and the implementation of future strategies (NEDECO 1979; UNDP/FAO 1969; MDB/SOGREAH 1972).

The parliamentary debates on settlement policy reported in Hansard were also referred to as they proved to be useful in understanding the general thinking about land policy during the pre and post colonial periods. The contents of the prevailing land laws of the country were consulted in order to understand their impact on social, economic and environmental conditions in the country.

Data on more recent Mahaweli settlement schemes were obtained from the publications of the Planning and Monitoring Unit of the Mahaweli Development Authority. A number of research reports and consultancy papers published in different time periods of Mahaweli settlements were consulted in order to understand the problems encountered by settlers at different stages of settlement development. Among these the reports published by the Research Department of the People's Bank (Siriwardena 1981; Thilakasiri 1981, 1986) and the consultancy papers prepared by Scudder (1979) and Scudder and Vimaladharma(1989) that were based on their longitudinal surveys in Mahaweli proved to be very useful.

**Table 2.1 Summary of the Macro Level Information and Data Sources**

Major Source	Year Available	Nature of Data	Data Quality
Administration Report of Land Commissioner	From 1933 to present	Progress of settlement activities, Information on settlement policies and achievements	Except data on crop production others in good quality
Administrative File of the Department of Land Commissioner	From the date of commencement	Administrative matters and problems reported by farmers and officials	-
Reports of Land Commissions	1927, 1955, 1987	Settlement policy, Land laws and issues related to problems recommendations for future planning	Good
Reports of Visiting Missions FAO/IBRD, UNDP/FAO, MDB/SOGREAH NEDECO	1952, 1968, 1969 1972, 1979	Appraisal of settlement schemes Feasibility of implementation Future implementation strategies	Good
Research Institutions			
a) Agrarian Research & Training Institute	1973	Various socio-economic issues	Good
b) Research Department of People's Bank	1978	Progress and problems in early Mahaweli settlements	Good

The publications of the Agrarian Research and Training Institute (ARTI) which deal with a variety of research problems pertaining to settlement schemes were also consulted. Much of this research has focused on the rehabilitation of irrigation infrastructure in settlement projects, organisations of farmers for better resource management, costs of production and various other socio-economic issues related to settlement projects.

Unfortunately the population census data cannot be used extensively in this study for two reasons. Firstly, the census data with relating to settlement land cannot be separated out from the overall district figures, as the enumeration has been taken on the basis of different administrative boundaries which cut across both settlement and non-settlement areas. Secondly, no census enumeration has been taken in the country since 1981 due to the Civil War in the Northern and Eastern regions. The latest available census does not really reflect the changes that have occurred in more recent years. A summary of the macro level data sources used in this thesis is given in Table 2.1.

### **2.3 Primary Data Sources**

Much of the study is based upon the primary data collected from three villages. The micro level data collection methods employed in this study comprised structured in-depth interviews with a sample of individuals and unstructured group interviews with key informants. The participatory observation method was employed for the collection of data during the entire field work period. This method comprises the sharing of life and activities of the community, observing and supplementing the knowledge by conversation and interviews (Schatzman and Strauss 1973 : 52-66; Kellehear 1993 : 115-138). A series of focus group interviews conducted in each study location was part of the strategy of collecting

data by the group interview method (Krueger 1994 : 16-17; Morgan and Krueger 1993 : 3-34).

The aim of the fieldwork was to collect information from a sample of original settlers, as well as their offspring from each chosen settlement scheme. In addition, one sample site from a migrant source area in one of the Wet Zone districts was selected as a "control group". The reason for this was to highlight the peculiar characteristics of the second generation in recently created communities in the Dry Zone settlements.

Before the selection of the areas for intensive field investigation, consideration had to be given to the representativeness of the sample. It was recognised that it would be futile to randomly select locations from all settlement schemes, since the small number of locations proposed for field investigation would be inadequate to represent the full range of variations among settlement schemes. The stage of development of the settlement projects and their geographical location were other important factors requiring consideration in the selection of the sample areas. Therefore, purposive selection was the only feasible method to select suitable sample settlement sites.

#### **2.4 Selection of Study Area in the Dry Zone Settlement**

It was necessary to resolve the questions of which districts in the Dry Zone should be included in the study and which land settlement schemes should be purposively selected from the districts included. According to the latest Administration Report of the Land Commissioner, there are 110 major irrigation schemes scattered among all districts of Sri Lanka (Figure 1.8 in Chapter One). Out of these, 71 schemes are located in the Dry Zone districts and include Anuradhapura, Hambantota, Polonnaruwa, Ampara, Batticaloa, Trincomalee, Mannar, Vavuniya and Jaffna. Of these districts, the last three are exclusively Tamil speaking areas and are located in

the northern part of the country. The districts of Ampara, Batticaloa and Trincomalee have a mixed population of Sinhalese, Tamil and Moors and are located in the eastern part of the country. The unsettled political environment due to fighting between government forces and Tamil rebels precluded research in the settlement schemes within the eastern and northern provinces of the country during the time of the survey, and hence were excluded. The bias introduced by this decision is limited since most pioneer settlement schemes are located in other parts of the country. With the resources available for this study, it was possible to select two settlement schemes as survey sites, however, it was not possible to take into account the socio-economic and geographical variations in every district where settlement schemes are located. In view of these limitations, the sample sites from the Dry Zone districts had to be selected from the districts of Hambantota, Anuradhapura, Polonnaruwa and Kurunegala.

The district of Hambantota was excluded from this group as it is not a major area of land settlement compared with the remaining districts. Subsequently, it was decided to select one settlement scheme either from Anuradhapura or Polonnaruwa, and the district of Anuradhapura was finally selected out of the two after considering the significance of the district due to the presence of a large number of pioneer settlement schemes interspersed with Purana villages and the recent acceleration of the Mahaweli settlement activities within the district. It was decided to select the second sample site from Kurunegala as this district is located next to the Anuradhapura from where the first sample site was chosen. The Kurunegala district is divided into all three agro-ecological zones, i.e Wet, Intermediate and Dry Zone. However, the majority of the settlement schemes are located in the drier part of the Kurunegala district and it was decided to select one location from that area. The district of Kegalle was the obvious choice for a Wet

Zone sample site as many of the early Dry Zone settlers originated from this district.

Different sets of criteria had to be adopted in the selection of settlement schemes for sampling within the identified districts. A number of factors were taken to consideration in their selection and include year of establishment of the settlement scheme, the timing of completion of the settlement process, and the total number of settlers initially settled. The origin of the settlers was also considered as important. The size of land allotments allocated and the extent of state support given to the settlers such as housing, developed infrastructure, subsidies and supervision were also considered in the identification of suitable schemes for sampling. The extent of state land encroachment within the settlement schemes by outsiders and the second generation of the original settler was also taken into consideration. The present status of irrigated agriculture, adequacy of water, types of crop cultivated, cropping intensities and the extent of crop diversification are some other economic factors which were given due consideration in the selection of settlement schemes. It was also decided that any recently established Mahaweli settlement schemes were not to be included in the sample as it was thought to be premature to evaluate the second generation problems in those schemes.

The more detailed information on the characteristics of the settlement schemes and their settlers in each of the selected districts had to be obtained through personal interviews with officers attached to district level government departments. Initial contact with the officers of the Department of Land Commissioner and Irrigation Management Division headquarters in Colombo enabled the researcher to organize a series of discussions with district and project level officers in each of the selected districts. Having outlined the study design, their advice was sought in selecting appropriate settlement schemes for the field survey. The two sample settlement schemes to be selected were expected to have the following characteristics.

- 1) One settlement scheme with initial settler population exceeding 5000 settlers (large scale) and one with less than 1000 settlers (small scale).
- 2) To be able to have respondents of both first and second generation, with the time span of the settlement scheme since its establishment being in the range of 25-35 years.
- 3) One settlement scheme with settlers originating from surrounding areas or within the district and one scheme with settlers originating from different parts of the country.
- 4) One settlement scheme which has received considerable state support such as the development of infrastructure, housing and other subsidies and one scheme established with less state support.
- 5) One settlement scheme with adequate irrigation facilities and regular crop cultivation and one settlement scheme with irregular crop cultivation and limited irrigation.

The information provided by district level officials was helpful in identifying four settlement schemes with the aforesaid characteristics. The next step was to visit the settlement schemes and have direct contact with settlement officials and the settlers themselves. The Colonisation Officers in charge of land matters in settlement schemes (The field level officer attached to the Department of Land Commissioner) and the Project Managers of the Irrigation Management Division whose duty is to coordinate the activities of different government departments within the settlement schemes were interviewed in order to obtain an intimate knowledge of the four settlement schemes identified in the two districts. Having completed a reconnaissance survey in each of the identified settlement schemes, it was decided

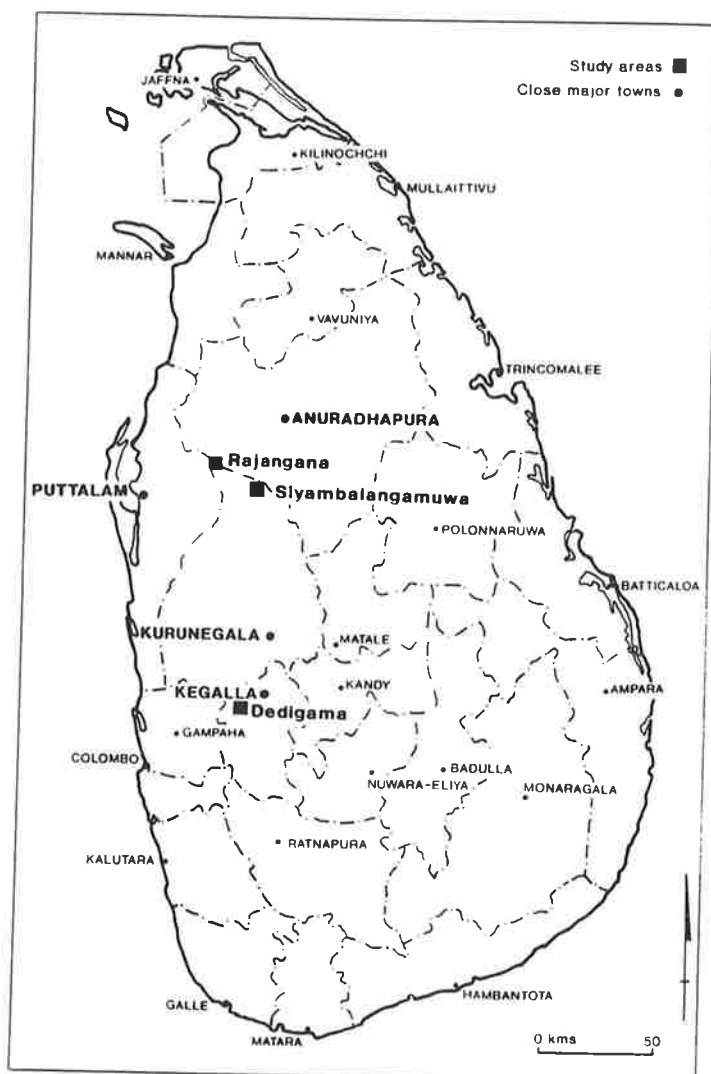
to select Rajangana (Right Bank) scheme from the Anuradhapura district and Usgala Siyambalangamuwa from the Kurunegala district.

## 2.4.1 Description of the Dry Zone Study Areas

### 2.4.1.1 Rajangana

The Rajangana irrigation and settlement scheme is located in the North Central province of Sri Lanka and is about 48 km south west of the historic city of Anuradhapura (Figure 2.1). The project area cuts across three districts. The Left

Figure 2.1 Study Areas and Principal Towns.

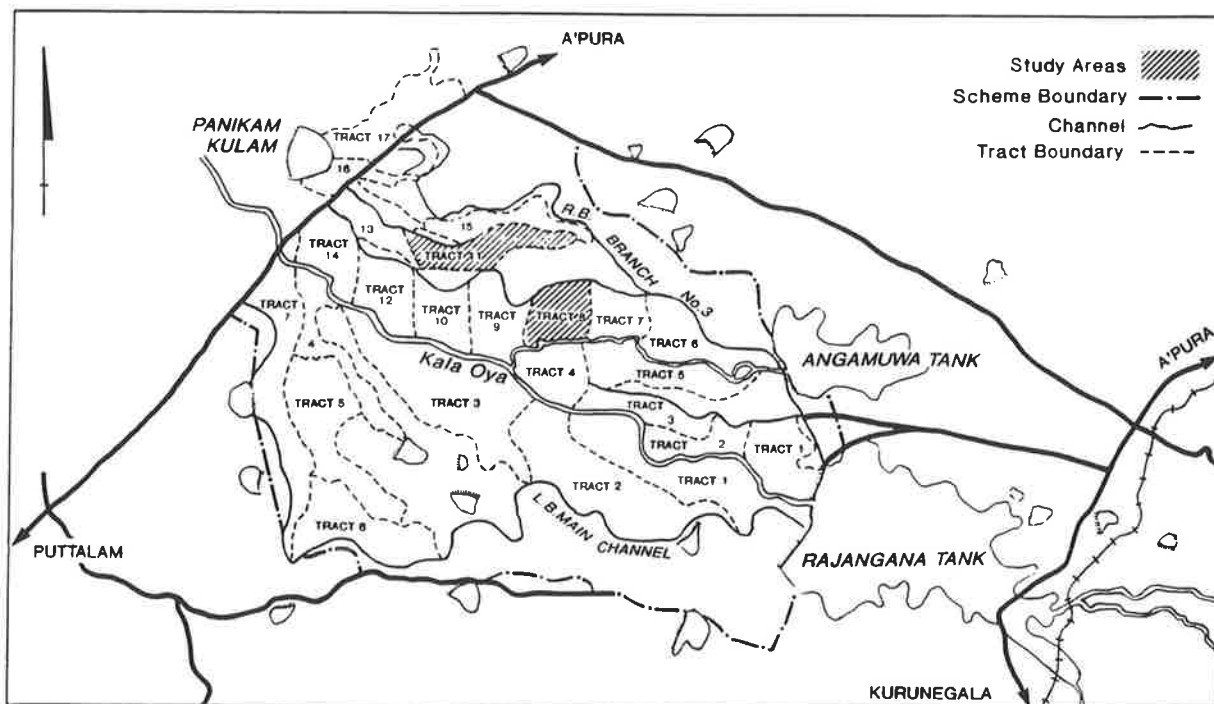


Bank of the scheme falls within the district of Kurunegala, whereas the Right Bank scheme is predominantly within the district of Anuradhapura, although a part of it is also in the Puttlam district.

The catchment area of the scheme receives an annual rainfall ranging from 500 mm to 1800 mm. Two peaks of high rainfall occur during the south east monsoon period from mid March to mid May and during the north east monsoon period from October to March. About 75 percent of the rain occurs during the latter period. Most of the project area has moderately steep slopes and the important soil groups found in the area consist of reddish brown earth, low humic gley soils and alluvial soils.

The irrigation system of the scheme consists of two reservoirs, Rajangana and Angamuwa (Figure 2.2). These two reservoirs are linked by a canal. The Rajangana reservoir was built on the Kala Oya which flowed from the semi Wet

Figure 2.2 Rajangana Irrigation and Settlement Scheme.



Source: Department of Irrigation, Colombo.

Zone through the north central province into the sea. Since ancient times, the waters of the upper reaches of the river have been impounded in the Kala Wewa which is now managed by the Mahaweli Authority. A major portion of the water fed into the Rajangana reservoir through the Kala Oya is drainage water collected from cultivated lands of the Mahaweli area. Even during a drought year, enough water usually flows into the reservoir to provide adequate water for the settlement area. The Angamuwa reservoir was an ancient tank constructed on the Lunu Oya, a small tributary of the Kala Oya. This was in a state of disrepair and was restored prior to the completion of the Rajangana reservoir. This is also supplied by the return flows from the Mahaweli "H" area.

The irrigation system of the Rajangana project is divided into the Left Bank and the Right Bank. The Angamuwa reservoir is located on the Right Bank of the system. The water distribution system consists of main and branch canals and distributory and field canals. The Right Bank irrigation system commands an extent of approximately 4000 hectares. An additional 750 hectares is supplied by lift irrigation from 10 pump stations with 35 diesel pumps. The Left Bank irrigation system commands approximately 2600 hectares under gravity flow and an additional 850 hectares by lift irrigation from 13 pump stations with 44 diesel pumps.

For administrative purposes the scheme is divided into a number of small areas called tracts. There are 17 tracts in the Right Bank of the scheme, whereas the Left Bank area is divided into 7 tracts. These tracts have been planned to be reasonably self contained in terms of essential services required by the local community. Each is settled by 150 to 200 households, although they vary greatly in terms of land area. Each tract contains lowland for paddy cultivation and highland for the homesteads and other crop cultivation. Some land has also been set aside for community purposes. Educational, medical and socio-cultural needs of the

community have also been provided either for each tract or for several tracts together.

The settlers in the area represent a range of diverse groups. The first settlers were families displaced within the development area and the catchment area above the dam of the Rajangana reservoir. This area was previously covered by medium to high scrub and there had been isolated village settlements (Purana villages) inhabited by traditional villagers who had eked out their living primarily by slash and burn agriculture (Chena agriculture) or by paddy cultivation during the wet season with supplementary irrigation from small village tanks scattered around the area. These people were first settled in the Right Bank Tracts of 6 and 7 which are located below the Angamuwa reservoir. Other settlers were selected from various districts of the country through applications made to the Land Kachcheri<sup>1</sup>.

The main criteria used for settler selection were that an allottee should be landless, have a large family and be experienced in farming. The Land Commissioner allocated allotments to districts according to the level of landlessness and pressure of unemployment in each area. However, there have also been some exceptions in the selection of settlers. For example, the casual labourers who were employed in the construction activities prior to the beginning of settlement were considered to be eligible for receiving settlement land. The total number of families settled within the boundaries of the Right and Left Banks area amounted to approximately 6200 families. The first batch of settlers came to the settlement scheme in 1964 and the settlement of families continued until the mid 1970s.

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<sup>1</sup> Kachcheri was the centre of district administration until the system was reformed in the 1980s. The land Kachcheri was the venue of selecting potential settlers for the allocation of state land. The suitability of applicants was verified by the officials at this meeting. Holding of land Kachcheri was a requirement under the regulations of Land Development Ordinance of 1935.

Each family was given 2 acres (0.8 ha) of paddy land and 1 acre (0.4 ha) of highland, including a homestead at the beginning of the settlement. The size of land allocated was not uniform across the whole scheme and varied depending on the timing of settlement. For instance, those who settled before the change of government policy on land size received a bigger land holding than those who settled after the policy change.

As far as crop cultivation is concerned, paddy is the main crop cultivated in the lowlands during both Yala and Maha<sup>2</sup> seasons in the Rajangana scheme. However, cash crops such as chillies, grains, legumes and vegetables are grown extensively both under lift irrigation and rainfed conditions in the highlands. The Rajangana scheme is reported to be one of the major producing areas of chillies and vegetables for the market in recent years (District Planning Division 1990).

The Rajangana farmers have been able to cultivate paddy during both Yala and Maha seasons due to the reliable supply of irrigation water. The scheme is also located close to many districts capitals such as Anuradhapura, Puttlam and Kurunegala (Figure 2.1). The scheme has easy access to the main roads and railways connecting Colombo and Anuradhapura, which has enabled the easy transportation of agricultural produce to other major cities. There is also an established road network within the scheme connecting each settlement tract. In 1968, Rajangana was brought under the Special Project Programme for the implementation of an intensive crop management programme in an effort to increase the agricultural productivity on experimental basis (Land Commissioner's

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2 The Maha is the major crop season which receives much of the rainfall from the north east monsoon (from November to February) in the Dry Zone. The south west monsoon which coincides with the Yala season brings less rain to the Dry Zone (from late May to late September). However this is the main crop season in the Wet Zone areas which receive much of the rainfall from the south west monsoon. The paddy cultivation in the Dry Zone areas during the Yala season is dependent upon the availability of supplementary irrigation facilities as the rainfall is insufficient to cultivate rainfed paddy. Therefore the Yala is the minor season in the Dry Zone areas.

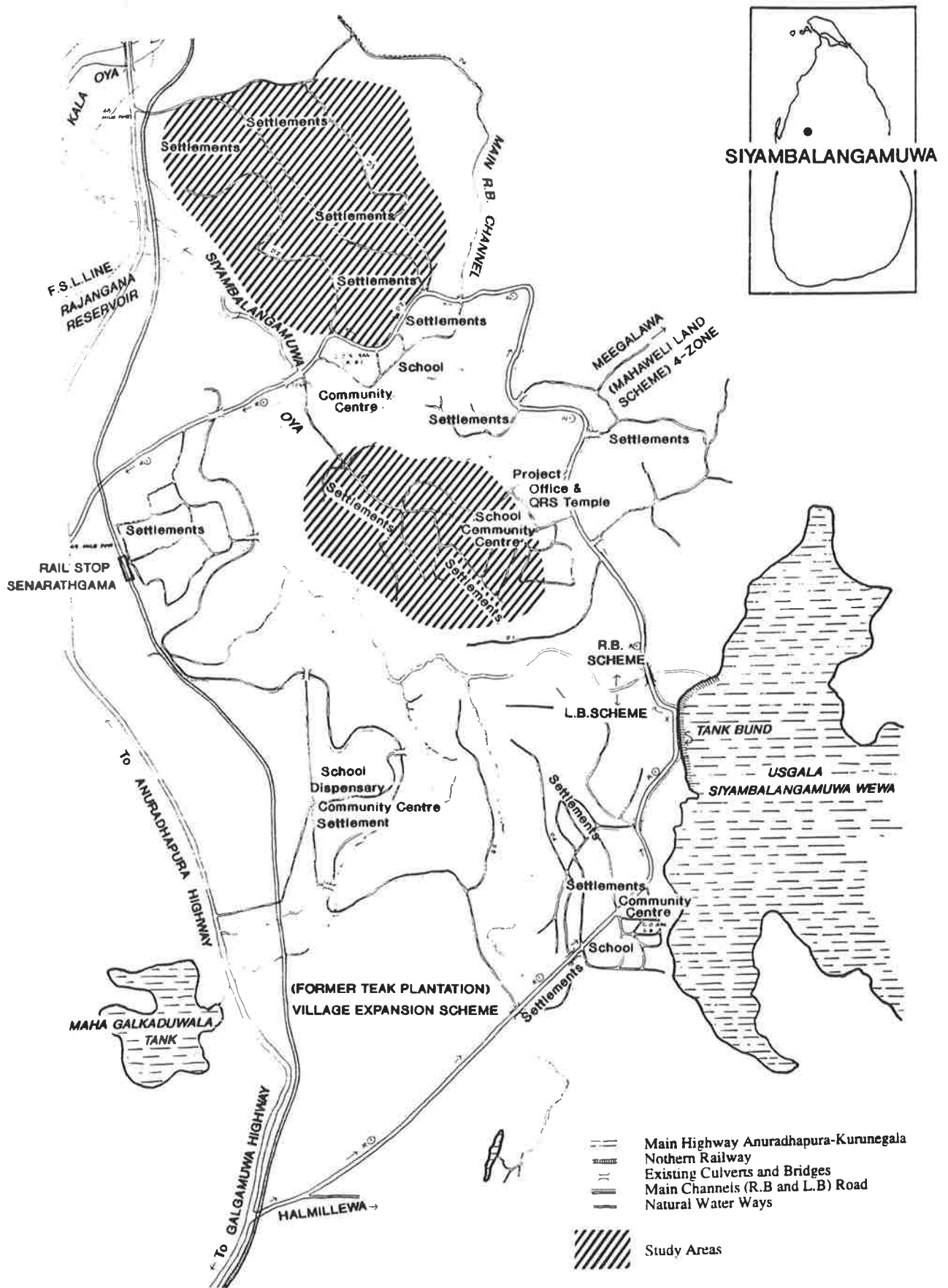
Department 1969; Hartoungh 1968 : 34-36). Lift irrigation facilities were also provided around the same time for highland cultivation. Recently, a major project was undertaken to improve and rehabilitate the irrigation scheme performance. Thus, the Rajangana scheme has received the attention of the government from time to time with regard to its present state of development.

#### **2.4.1.2 Usgala Siyambalangamuwa**

The Usgala Siyambalangamuwa irrigation and settlement scheme (henceforth called Siyambalangamuwa) is situated in the Kurunegala district and lies within the ecological area known as the Dry Zone. The distance between the Rajangana scheme and the Siyambalangamuwa scheme is 24 km (Figure 2.3). The major townships in the vicinity of this scheme are Galgamuwa, Migalewa and Tambuttegama. The rapid development of the latter two townships was facilitated by the initiation of the Mahaweli "H" system in the area. Prior to that, settlers were largely dependent upon facilities available at the Galgamuwa township which is about 8 km south of the scheme. There appears to be no substantial difference in the rainfall pattern and characteristics of soils in the scheme as compared to the Rajangana scheme. Yet, in this scheme the availability of the water in the main reservoir is one of the limiting factors in regular crop cultivation. The capacity of the Siyambalangamuwa tank is only about 18,000 acre feet and it is classified as one of the medium scale reservoirs. The tank was built by impounding the waters of the Siyambalangamuwa Oya, a small tributary of the Kala Oya in ancient times. The restoration of this ancient tank was completed in the late 1950s after being neglected for several centuries and settlement was undertaken at the same time.

The irrigation system of the Siyambalangamuwa scheme is divided into Left and Right Banks. The water distribution system is comprised of main, distributory and field channels. Homesteads are located along the banks of the main and

Figure 2.3 Usgala Siyambalangamuwa Irrigation and Settlement Scheme



Source: Land Commissioner's Department, Colombo.

distributory channels, typical of old settlement schemes. For administrative purposes, the scheme has been divided into five tracts. Tract numbers 1 and 2 are located on the Right Bank of the scheme, whereas tract numbers 3, 4 and 5 are located on the Left Bank of the scheme. The extent of land area within the scheme is around 1000 hectares, of which 600 hectares is used for paddy cultivation and the remainder is used for residences and for the growing of garden crops. There are also areas reserved for village pastures, canal and road expansion, and for public buildings. Schools, cooperative stores and civic centres have also been provided in each tract.

The settlers brought into the scheme were exclusively selected from within the district of Kurunegala. The majority of them originated from the nearby Purana (traditional) villages. The families who lived in the area prior to the construction of the scheme were given priority in the allocation of land. The settlers of tract 1 mainly came from the Wet and Intermediate Zones of the district. Most of them could trace their origin to distant places (i.e. 50 to 80 km) within the district and are distinct in their traditions and customs from the settlers recruited from the Purana villages.

The settlers have been selected for the scheme through the land Kachcheri calling applications through the Divisional Revenue Officers and the Village Headmen. Preference was given to landless households with large families, while those applicants with agricultural experience were given less attention in the selection. Several families who had skills in masonry, carpentry, pottery and blacksmithing were also selected after considering the need for their services in the new community. The families belonging to the traditional service castes such as drummers, astrologers, traditional healers and washermen were also settled for the same reasons. They were expected to engage in agriculture as well as continue

their traditional trades. Several educated youth were given land in the scheme in anticipation that they would provide the necessary leadership for the community.

The settlers were given a wide range of incentives in order to get themselves established in the new environment. They were also provided with a cottage house (built on the same plan, with one bedroom, one sitting room, verandah and a kitchen. The construction was of a permanent nature, with a tiled roof, brick wall and cement floor) and public wells.

The size of the land allotted to settlers was 3 acres (1.2 ha) of lowland and 2 acres (0.8) of highland. They were also given financial assistance for the development of land, an allowance for subsistence in the initial months of settlement, as well as agricultural implements and planting materials for crop cultivation activities.

Unlike the Rajangana scheme, the Siyambalangamuwa scheme has received less attention from the settlement authorities after a few years of settlement. No major development activity which benefits the settlement community has been undertaken in the scheme. The irrigation and settlement infrastructure are in a state of disrepair due to the long years of negligence. Consequently, the crop production activities have been affected over the last two decades leading to dire living conditions among large sections of the settler population.

#### **2.4.2 Comparison of the Characteristics of Two Sample Settlement Scheme**

The basic characteristics of the two settlement schemes selected for the survey are given in Table 2.2 for comparison. The two schemes differ substantially in size. Irrigation has been provided for crop cultivation and domestic needs by man-made reservoirs in both schemes, although the capacities of these reservoirs are quite different, affecting the regular supply of water in individual schemes. The main

crop cultivated in both schemes is rice and the settlers are dependent upon paddy cultivation as their main source of income. Each survey site also contained both

**Table 2.2 Comparison of the Characteristics of Two Survey Locations**

Characteristic	Rajangana	Siyambalangamuwa
Location	Parts in Anuradhapura Kurunegala and Puttalam districts	Kurunegala District
Families settled	6200	500
Place of origin	Majority from distant places	Mainly from surrounding areas
Year of settlement	1964	1958
Level of state support	Less	More
Water availability	Good	Poor
Cropping intensity	Double cropping	Single cropping
Size of holding	3 acres (1.2 ha)	5 acres (2.0 ha)

legitimate land owners as well as encroachers. Recruitment of settlers was undertaken by the same government agency, however, the criteria adopted for the two locations were slightly different. Due to the greater demand for land in the Dry Zone settlement schemes during the time of settlement in the Rajangana scheme, settlers were selected by drawing lots at the districts of origin. The agricultural knowledge of the applicants was also taken into consideration in selecting settlers for Rajangana, in addition to the criteria of family size and landlessness adopted earlier. A new scheme of "Advanced Alienation" was adopted in Rajangana where settlers were settled in undeveloped land in anticipation of their participation in initial land development activities. Although the settlers were also brought into undeveloped lowlands in Siyambalangamuwa in line with the advanced alienation principles, they were provided with built houses and developed infrastructure in the highlands within a short time. They were the last group to benefit from the

generous assistance of the government prior to the change in the policy of assistance.

Although, there is no significant variation in the unit of land allotted to settlers within the two schemes, there are considerable variations in the unit of land allotted to settlers between two schemes. The settlers of Siyambalangamuwa received relatively larger land holdings (2 hectares) than did the farmers of the Rajangana scheme. There is also variability in the availability of irrigation water between two schemes. Rajangana being one of the biggest irrigation schemes, is better endowed with irrigation water than Siyambalangamuwa. The water availability in Tract 2 of the Siyambalangamuwa scheme is better due to its location close to the main reservoir, while Tract 1 is located at the tail end of the scheme resulting in inadequate access to water for farmers living in this unit. The supply of drinking water has also been an acute problem in Tract 1 during the dry season. In contrast, water is relatively abundant and reliable in both Tract 6 and Tract 11 in Rajangana, and the availability of water has not affected the physical location of each tract in this scheme. This has allowed farmers of the Rajangana scheme to practice double cropping annually, whereas the farmers of Siyambalangamuwa have reported only one crop per year for four consecutive years with the possibility of cultivating only during the Maha season. Some farmers who have been faced with extreme difficulties in getting irrigation supplies for paddy cultivation have resorted to growing other crops under rainfed conditions even during the Maha season .

The settlement in Siyambalangamuwa commenced in 1958, whereas the settlers first came to the Rajangana scheme in 1964. Settlement took place over a period of 4 to 6 years in the Rajangana scheme whereas the settlement was completed within a very short period in the Siyambalangamuwa scheme. Both schemes have shown visible signs of problems due to the growth of the second generation population.

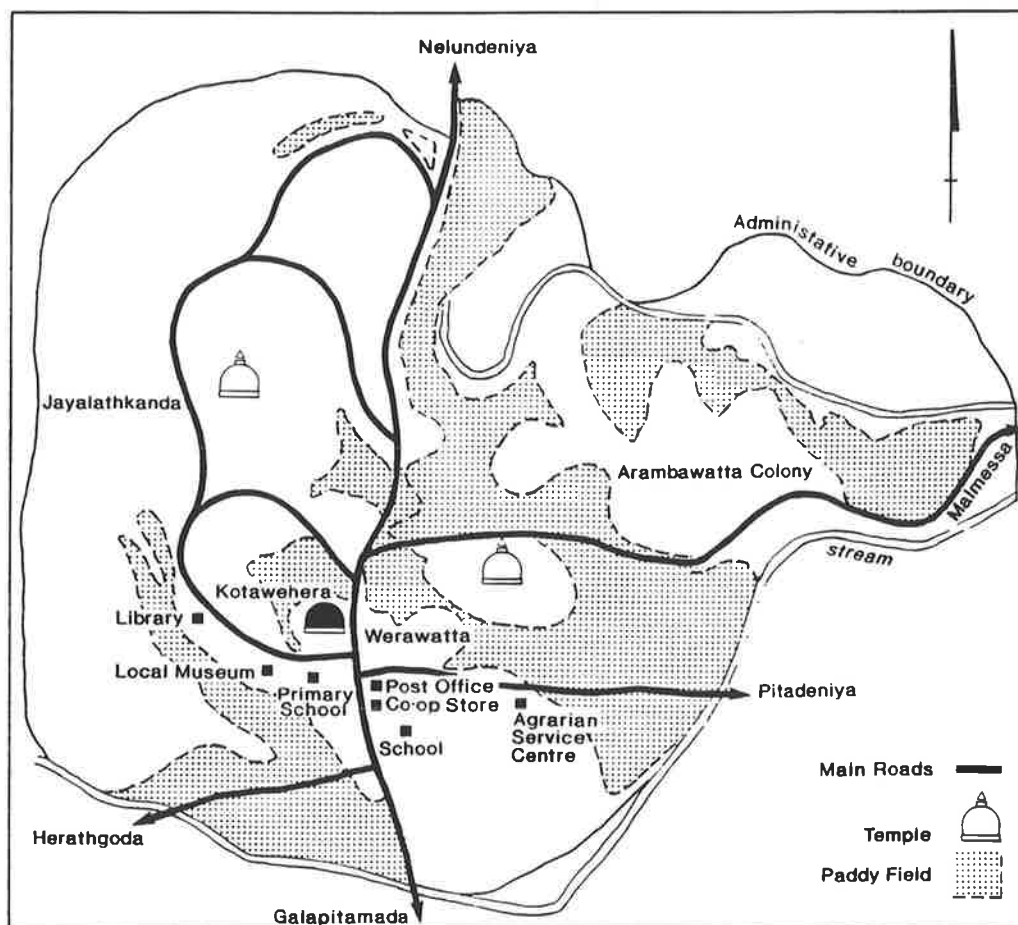
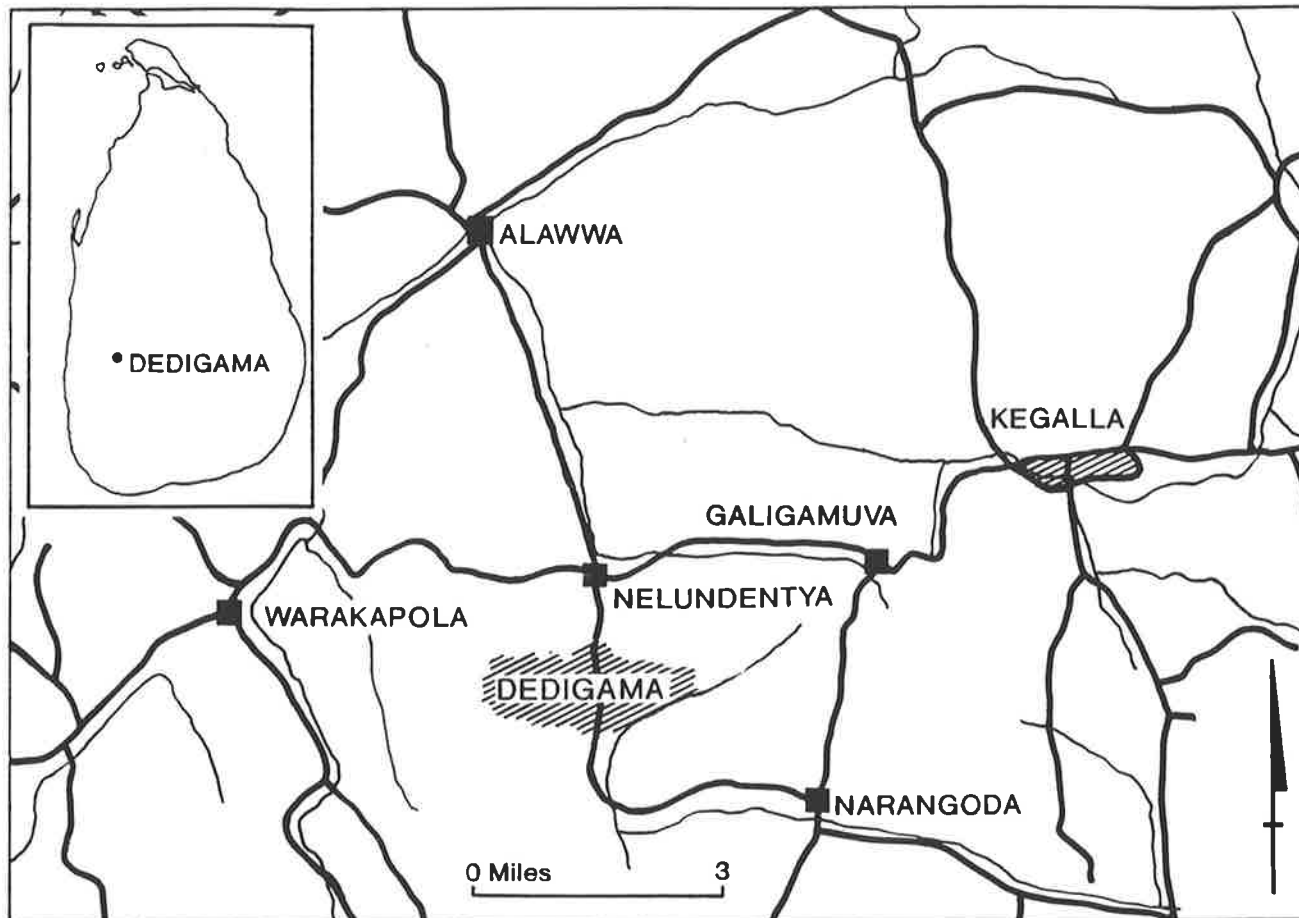
## **2.5 Choice of Study Area in the Wet Zone**

The purpose of selecting a sample from the Wet Zone was to ensure a group that could be contrasted with the Dry Zone sample. As mentioned earlier Kegalle was the district purposively selected from the Wet Zone. Contiguous areas from this district where the population pursue diverse economic activities and have experienced outmigration to the Dry Zone settlement schemes were targeted in the selection. However, there was no documentary evidence in the district Kachcheri in the form of recorded lists of villages from which settlers into Dry Zone settlements were drawn. Therefore, the selection had to be done after consultation with officers attached to the district government offices. Warakapola Assistant Government Agent Division was finally selected considering the diverse characteristics of the population living in the area and the convenience of its location for field work, together with the other survey sites in the Dry Zone. It was decided to select Dedigama Grama Seva Wasama within that division as the most appropriate locality after consultation with district level officers. A brief description of this study location is given below.

### **2.5.1 Dedigama**

Dedigama Gramaseva Wasama (henceforth called Dedigama) is a small administrative unit located within the Warakapola Assistant Government Agent's Division in the Kegalle district. Dedigama lies across the Nelundeniya Karawanelle road about 8 km off the Colombo Kandy highway (Figure 2.4). Legends, early history and archeological significance of the area have been documented by Godakumbura (1969) and he shows that the advantageous geographic position had led to the conversion of Dedigama into a city which was a home of royal princes. At the time of political disturbances in history it became the refuge of the royalty or the nobility (Godakumbura 1969 : 5) and it is believed that Dedigama was the birth place of King Parakramabahu the Great (A.D. 1153-1186)

Figure 2.4 Dedigama Gramaseva Wasama



who ruled the country from the kingdom of Polonnaruwa. In the fourteenth century, Dedigama was the capital of King Parakramabahu V (A.D. 1344-1359) who ruled the country. Ruins of an ancient Dagoba "Kotawehera" built in the twelfth century and a number of other archaeological remains are still found in the area. Therefore, the place is of historical significance and has been attractive to, and visited by, Buddhist pilgrims and tourists on their way to Kandy for many years. Dedigama consists of five contiguous villages which vary in size and number of residents namely Werawatta, Jayalathkanda, Medagammedda, Malmessa and Arambawatta. The majority of the villagers belong to the Goigama caste which is the highest and dominant caste group in the country. Recent immigrants to the villages, however are from diverse caste groups and have come to these villages for business, employment or because they purchased land in the area. The village of Arambewatta has been recently established under the village expansion scheme (Chapter Three). An acquired estate by the government under the land reform law was allocated among disadvantaged groups in the surrounding area in half acre land blocks in the early 1970s.

Dedigama belongs to the ecological area of the Wet Zone where the annual rainfall is over 2500 mm. The area has moderate hills with steep slopes. The crops grown in the area are diverse with paddy being grown in the valley bottoms and mixed crops such as tree crops and vegetables being planted at the homesteads. There are several large scale rubber plantations run by the State Plantation Corporation bordering these villages. In addition, there are a number of privately owned small scale rubber holdings on steep hill slopes and high ground in and around the villages. The area is also famous for the production of a variety of spices and fruits. Paddy is grown in a large tract of land in the area under diverse tenurial conditions. Share tenancy is the most commonly practised tenure and works primarily on a rotational basis. Paddy is grown mainly for subsistence, rather than any

commercial purposes. The majority of the households own micro land holdings. Landlessness and near-landlessness are dominant features of these villages particularly as a result of the fragmentation of land due to increasing population pressure. Consequently, they either farm land on the basis of share tenancy or engage in non-agricultural pursuits. Wage labour in small scale land holdings or large scale plantations, part time or full time work in domestic self employment such as Beedi (small cigars) wrapping and various types of service employment are some of the main non-agricultural employment found in the area. Further, some household members have moved out looking for a better future in both rural and urban destinations.

## **2.6 Sample Frame and Sample Size**

When the two settlement schemes were identified, a specific area within each scheme had to be located for complete enumeration to be undertaken. It was decided to select the Right Bank area from each settlement scheme and identify two tracts for complete enumeration of households. This enabled us to identify first and second generation households and the tenurial status of their land with a view to identifying sub-samples of households for conducting interviews. Each selected tract was expected to have between 200-300 households. The physical characteristics of each village and the places of origin of initial settlers were the major criteria considered in the selection of the villages. The settlement units given in Table 2.3 were selected as survey sites on the basis of the information provided by the Project Managers, Colonisation Officers and Grama Seva Niladari (local level officer attached to the Department of Public Administration).

The population in the two tracts selected from each settlement scheme as survey sites was completely enumerated at the first stage of the survey in order to establish the sampling frame for the selection of households for indepth interviews in the

**Table 2.3 The Characteristics of Survey Sites by Physical Location in the Irrigation System and Place of Origin of the Settlers**

Name	Unit	Origin of the Settlers
Rajangana	Tract 6	From surrounding area
	Tract 11	From various parts of the country
Siyambalangamuwa	Tract 1	From distant places (Within the district)
	Tract 2	From surrounding area

second stage. The total number of households interviewed in the first stage of the survey by localities and their break down is given in Table 2.4. The total number of

**Table 2.4 The Distribution of the Respondents of the First Stage Survey by Location**

Village/Tract	Location	Respondents
Werawatta	Wet Zone	96
Jayalathkanda	"	73
Medagammedda	"	28
Malmessa	"	42
Arambewatta	"	32
<b>Dedigama</b>	Sub Total	271
Tract 6	Dry Zone	227
Tract 11	"	225
<b>Rajangana</b>	Sub Total	452
Tract 1	Dry Zone	149
Tract 2	"	145
<b>Siyambalangamuwa</b>	Sub Total	294
<b>Grand Total</b>		<b>1017</b>

households enumerated in the first survey was 1017 households in all locations. In the Dry Zone locations, the households enumerated in the first stage consisted of first and second generation settlers, as well as a few third generation settlers and a substantial number of "encroachers" who belonged to the second generation of

settlers and those who had migrated into the settlement schemes to occupy state land illegally. The households enumerated in the Wet Zone locations represented households with different socio-economic backgrounds, having their major source of income in both agricultural and non agricultural activities.

In terms of land ownership, the majority of the households own small land holdings either for crop cultivation or for their homestead. The first and second generation settler households were separated out after the complete enumeration of the households in the Dry Zone settlement schemes and taken as the sample frame for the second stage. Once the complete enumeration was completed, the households in the Wet Zone locations were stratified into two groups on the basis of an artificial cut off point of the current age of the head of household. Those who were older than 45 years of age were considered to be comparable with first generation settlers in the Dry Zone sample, whereas those who were less than 45 years of age were treated as a comparable group with second generation settlers in the Dry Zone settlement schemes. From each settlement unit, it was decided to select an equal number of first and second generation households randomly out of the total first and second generation households enumerated in the first stage survey. It was decided to select 35 households belonging to each category in each location in the Rajangana scheme and 30 households belonging to each category in each location in Siyambalangamuwa. However, it was decided to select 65 households from each category from the entire population enumerated in the Wet Zone location in order to have a sufficiently large population for comparison. The total sample of the second stage survey consisted of 361 households drawn from both Dry Zone settlement schemes and Wet Zone villages. The break down of the number of households selected for the second stage survey by location and the effective sample is given in Table 2.5. The effective sample was identified evaluating the reliability of the responses given by the respondents. Although all the households

drawn into the sample were able to be interviewed, the effective response rate varies across locations between 73 to 100 percent. The overall response rate for all sample locations was 93 percent which could be considered as very satisfactory. The total number of households interviewed in the second survey represents about 36 percent of the total households enumerated in the first survey. However the sample fraction varies in individual locations in the range of 31 to 48 percent .

**Table 2.5 The Distribution of the Sample Households Selected for the Second Stage of the Survey by Location**

Location		1st Generation	2nd Generation	Effective Sample	Sampling fraction
Rajangana	Tract 6	35	35	-	31
	Tract 11	35	35	-	31
Sub Total		70	70	-	31
Effective Sample		70	70	140	-
Response Rate (%)		100	100	-	-
Siyambalangamuwa	Tract 1	30	30	-	40
	Tract 2	30	30	-	41
Sub Total		60	60	-	41
Effective Sample		58	44	102	-
Response Rate (%)		97	73	-	-
Dedigama		65	65	-	48
Effective Sample		61	58	119	-
Response Rate (%)		94	89	-	-
Grand Total		-	-	-	361
Overall Response Rate (%)	-	-	-	93	-

## 2.7 Questionnaires Design

Two separate questionnaires were developed (Appendix 2.1) to enumerate all the households in the selected locations of the Dry Zone land settlement schemes and in the control area of the Wet Zone in order to establish the basic sampling frame. In these questionnaires, questions were included to ascertain the following characteristics of the households.

- 1) Basic demographic characteristics, economic activities and details on the mobility of the household head, current members of the household and the offspring who are no longer members of the original household.
- 2) Information related to the operation and ownership of land, status of tenure, land disposal, parcelisation, fragmentation and encroachment
- 3) Condition of housing and present status of living.

Three separate questionnaires were designed for the indepth interviews of the original settlers of the Dry Zone settlement schemes; head of households over 45 years of age in the Wet Zone control areas and all the second generation members living in both areas. (The English translation of the questionnaires is given in Appendix 2.1). The second generation in the Dry Zone settlement schemes, and the head of households less than 45 years of age in the Wet Zone villages were treated as similar groups and administered an identical questionnaire schedule. A core questionnaire was administered to all groups irrespective of their background. The second stage was aimed at obtaining more detailed information and included specific questions on the following areas.

- 1) economic activities and occupational details.
- 2) land use pattern, crop management and labour use.
- 3) housing, basic amenities and assets.
- 4) fertility and family planning.
- 5) details on permanent and temporary migration
- 6) perception of household heads on socio-economic changes in the village.
- 7) income and savings.

The details information with respect to each of the major areas are as follows:

- 1) The economic condition of the settler households, major employment, secondary employment, particulars of household members seeking employment, the level of unemployment and underemployment within the household. Household involvement in cottage industries and other off-farm employment. Housing and access to basic amenities, ownership of consumer durables, farm equipment and other assets.
- 2) Data relating to the socio-economic conditions of settlers at the place of origin before they moved to the settlements including sources and amount of income, amount and type of land owned, extent of land rented and share cropped and also the amount of capital brought into the settlement.
- 3) The present land use pattern in settlement areas, type of crops cultivated, the use of farm technology (tractors and buffalo, improved seed varieties, extent of chemical weeding and transplanting).
- 4) Fertility and desired family size, mortality in the family and the knowledge and practice of family planning.
- 5) Movement of household members, destinations and the reasons for their movements. Perception of the non-migrants on mobility and non-mobility.
- 6) The present extent of contact with the place of origin. Settler/head of household's perception on the changes that have occurred in the settlement scheme since their arrival or over the last 10 years with particular reference to socio-economic and environmental variables.
- 7) Indebtedness, savings and household income by source.

## **2.8 Pilot Survey**

Prior to the commencement of the actual survey, a pre-test of the questionnaire was undertaken in the Dry Zone in two non-sample areas of Rajangana and Siyambalangamuwa as well as in the Wet Zone villages of Jayalathkanda and Herathgoda. Twenty five questionnaires were tested in all locations by investigators along with the principal researcher. Certain questions were either dropped or substantially modified after scrutinizing the results of the pre-test. The questions with regard to crop cultivation and land tenure had to be particularly modified on the basis of common crops cultivated and the land tenure types which prevailed in the Wet and Dry Zone locations. The question wording also had to be modified by incorporating more local terms into the questionnaires due to the misinterpretation of certain questions by respondents. Several questionnaires which were initially designed for different sub-groups of respondents had to be combined due to the fact that these subgroups were not mutually exclusive as expected.

## **2.9 Field Data Collection**

The fieldwork involved a two stage survey, the first survey was conducted during a period of approximately four weeks from 10th January to 8th February 1992. The second survey was started by mid February and completed by mid April 1992. In each selected tract of Dry Zone settlement scheme, one investigator was resident for a period of fifteen weeks. Two investigators were stationed in the Wet Zone location to cover the survey in five villages during the same period. The total number of investigators employed for the survey was six. The chief investigator regularly moved from one area to another for the collection of field data by himself, as well as for the supervision of field data collection by other team members.

For several reasons certain precautionary measures were taken prior to the deployment of these investigators in individual locations. The unsettled political environment associated with killings, intimidation and the unofficial curfew during

the period between 1989-1990 in many parts of the country has left a long lasting impact on the villages. Strangers were not particularly welcomed and were received with fear and suspicion. Since all of the investigators were young university graduates, the local police were informed of their presence and the objectives of the survey. The investigators were provided with identity cards and advised to carry a letter to indicate their role and the reason for their temporary presence in the village/settlement unit.

The initial contact person in the Wet Zone villages was the Grama Seva Niladhari (GS) whereas in settlement units, contact was established through either the GSS or the Colonisation Officer (CO). Field Investigators were introduced to these officers as well as farmer leaders prior to their deployment in survey sites in order to obtain good rapport toward the survey. Some of these officers subsequently introduced investigators to the community at regular meetings of farmer organisations, meetings of the Rural Development Societies or other formal gatherings. Some did it through word of mouth on an individual basis.

Lists of households were obtained from either the GSS or the COO and since all the field investigators were accommodated in settler's household/village household, it was not difficult to locate sample households once they were accustomed to the village/settlement environment and its boundaries. As they were also recruited from the same district or from the same area, within a short period of time they were able to familiarise themselves with the conditions in the sample sites. The investigators were expected to check the list of households with the present addresses of the respondents for consistency. They were instructed to visit all households within their boundaries and seek interviews with the head of the households (the person accepted by the rest of the household members as their chief). If the head of household was not in a position to respond due to incapacity

(old age, sickness etc.) the investigators were instructed to obtain information from other members of the household.

The respondents were given hand bills describing the objectives of the survey in advance. If the respondent was unavailable for the interview at the time of the first visit, the investigator was expected to make an appointment with the respondent to have the interview at another convenient time.

The investigators were provided with bicycles to travel for their field work as they had to cover a large geographical area. The bicycles proved to be a very useful vehicle in the settlement units, whereas investigators mainly travelled on foot because of the difficult terrain and geographical layout of the households in the Wet Zone villages.

The responses to the survey was generally good from all corners and the survey achieved 93 percent overall response rate. The nature of the Sinhalese peasant family is such that the respondents were hospitable and willing to cooperate. Some respondents were even over-enthusiastic about responding in anticipation of some future relief for their problems through our survey. However, the investigators were instructed not to give promises to the respondents in anticipation of an exaggeration of facts.

The survey was carried out during the slack period of the agricultural season, therefore it was relatively easy to meet respondents and conduct interviews in their places of residence with more privacy and in a friendly atmosphere. However, certain household heads in the settlement areas who commute to other areas for daily wage work were difficult to contact due to their absence from the village during the day time. Most of them commuted to the nearby Mahaweli settlement areas for wage labouring in activities connected with subsidiary food crop cultivation. Some have migrated out temporarily looking for various forms of farm

and non-farm work. The investigators were compelled to interview these heads of households in the evening once they returned home. If the head of household was extremely difficult to contact, the required information was ascertained from another responsible member of the household.

Attempts were made to maintain a high degree of quality in the data by way of adopting cross checks of completed questionnaires, complete scrutiny of schedules, as well as on-the-spot supervision of the administration of the questionnaires by investigators. One experienced Statistical Officer assisted the principal researcher in the supervision of field data collection in the Wet Zone sample site.

### **2.10 The Collection of Qualitative Data**

In addition to the collection of quantitative data using structured questionnaires, a range of qualitative information was collected through unstructured personal and group interviews. At the outset, various unstructured interviews were conducted with officials attached to various government departments and ministries in order to determine their perceptions about the problems of the second generation. These officials represented the Ministry of Lands, the Ministry of Agricultural Development and Research and the Ministry of Mahaweli Development. Informal interviews were also held with some retired government officials including one Land Commissioner who had been closely associated with the implementation of certain innovative settlement policies. These interviews were particularly informative with respect to the evolution of the settlement policy.

Apart from these unstructured interviews, interesting qualitative information was obtained through participant-observation and focus group interviews. Participant observation is a popular technique of research amongst anthropologists and sociologists to obtain first hand information by integrating themselves into the daily life of the study community (Kellehear 1993 : 115-138). Focus group interviews on

the other hand are used by all social scientist and offer a number of advantages. The technique is a socially oriented research method which can provide an insight into complicated topics where the area of concern relates to multifaceted behaviour or motivation (Frey and Fontana 1993 : 20-34). The technique is also flexible, relatively low cost, providing potentially speedy results and has the capacity to increase the size of a qualitative study (Krueger 1994 : 37).

The field investigators were given training in collecting information through the method of participant-observation prior to their deployment in the field. They were expected to maintain field diaries and make observations with respect to the different themes assigned to them. Each interviewer was required to prepare a brief report on the basis of his observations supported by case studies and present them at informal group meetings designed to meet the study team at regular intervals. These meetings were organised in such a manner so as to allow all field investigators working in distant areas to get together, discuss problems and communicate their experiences with the team members. The field problems and corrective actions needed were also decided upon in these meetings. Furthermore, the completed questionnaires were scrutinised in these meeting by the survey team and incomplete questionnaires were referred back to the investigator concerned for completion after another meeting with the respondent.

The principal researcher had a series of unstructured interviews with key informants during his extended stay in the different field locations. Since the three survey sites were located within a manageable distance, he was able to visit sample sites alternatively, moving from one location to another. The respondents to the unstructured interviews were field level officials, community leaders, village priests and office bearers of various village level organisations. These interviews were held individually and most of them were tape recorded and important parts were later transcribed.

The most interesting mode of qualitative data collection was the series of focus group interviews the researcher had with residents in the sample sites. The participants were informed of the venue and the time of these meetings in advance. The majority of the invitees attended such meetings due to the slack period of the agricultural season. Initially, two separate groups were called for meetings in each location representing original settlers and second generation settlers. Interviews were conducted for the two groups separately in order to maintain the homogeneity, as this is the guiding principle of the focus group (Krueger 1994 : 96). Both groups were put together in separate meetings to see their interactions and variations in opinion. The venues for these meetings were community halls and school buildings in the settlement areas and one residential training centre of a non-governmental organisation in the Wet Zone sample location. These group meetings involved 10-12 individuals as this number was thought to be sufficient enough for everyone to have the opportunity to share insights, as well as to provide diversity in perceptions. The discussions were held under the direction of the principal researcher and lasted 2-3 hours, with diverse topics being discussed. The group interviews with the original settlers were directed towards unearthing their experiences in the initial stage of the settlement. The issues discussed were the physical condition of the settlement scheme at the time of their arrival, the physiological, psychological and socio-cultural stresses they had to undergo during the stabilisation phase, the daily routine of work, initial reactions and adjustments to the environment. The relationship with officials and the social relations with the community were also discussed. The other subjects discussed included the value of children, knowledge and attitudes towards contraception, children's participation in agricultural activities and their level of school attendance, cultivation practices, land tenure, changes in the living standard as a result of their coming to the settlement schemes, aspirations for the future of their children and overall problems in the settlement scheme.

The discussions held with the second generation members were directed to identify their most crucial problems, needs and their perceptions on the causes of the problems. The discussion was particularly directed to finding out about their adaptation strategies to cope with population pressure. Their opinions on the changes that have taken place in the recent past in the areas of employment, crop production, land tenure and land use, use of technology, cultivation practices and environment was sought during these group discussions. Particular interest was paid to ascertain their opinions about desired family size and attitudes towards family planning.

These discussions were stimulating and fun for all the participants. Some participants made use of this opportunity to express their views on various matters freely, as they had never encountered such a friendly atmosphere to discuss their problems with an outsider who was prepared to listen to their problems with great interest. All the members of the group were given an equal opportunity to contribute to the discussion and interact with others. However, when both first and second generation members were put together for discussion the elderly group appeared to dominate, which generated fewer interactions between the two groups. The focus group interviews were very helpful in understanding the diverse views expressed by individuals on certain questions at the household level interviews. The probing of opinions expressed also helped the researcher to understand certain views with more clarity.

All of the focus group interviews were attended by the investigators working in the area. They were instructed to document the important issues put forward by the respondents, in addition to tape recording the proceedings. The focus group interviews also helped to achieve a good rapport towards the survey in the subsequent period of field work as the participants swiftly spread the message of study objectives among other fellow villagers. The study team expressed their

gratitude to all the participants by way of providing snacks and refreshments after each meeting and transport facilities were also provided for those who were in need of them.

### **2.11 Settlement and Village Level Data**

At the settlement level, information was obtained from the Project Managers and the Colonisation Officers of the schemes chosen as the survey sites. The information collected dealt with the extent of cultivated land, extent of land owned by the family unit and the basic demographic characteristics of legitimate householders and encroachers (such as their age, number of years resident, occupation, number of dependents and extent of land regularised), operational aspects of land tenure, cropping characteristics and management practices, crop production and output, farmer organisation activities, the major problems encountered and solutions attempted on the scheme. Information was also obtained from the office of the Divisional Officers of Agrarian Services Department, from the village register maintained by the Grama Seva Niladhari and the household information collected through the survey of Food Stamps Revalidation. Unfortunately, much of the historical record on population and land ownership were not available from the Divisional Secretary's office of Rajangana because arsonists destroyed the office building at the time of the insurgency in 1989-1990.

The records available at the Divisional Secretary's office in other areas provided information on the demographic characteristics of households in the division, their land ownership and operational details, assets and income data. These records are based on the data collected by Grama Seva Niladhari (GS). The data supplied by GSS pertaining to income, land ownership and assets of households had to be treated with caution as they are often exaggerated or underestimated by the respondents in order to maintain their eligibility for government subsidies. The

information collected through settlement level officials and their records were important as they provided useful background material on each survey site.

## **2.12 Limitations of the Study**

The execution of the sampling design of this study in all of its stages except the final one was explicitly on a purposive basis. This approach was adopted because of the limitation of personnel and resources and the financial and time constraints placed upon the researcher. Considering the purposive nature of the initial stages of sampling, statistically the results of this study cannot be generalised beyond the communities that were studied. The research questions pursued here entirely represent the settlement schemes or villages in which the study was done. However, this will not hinder understanding the problems and responses in communities with similar characteristics within the national framework or in the context of the developing world in general.

Due to the resource constraints, it was not possible to trace the second generation members and their families who had migrated out of the study sites for indepth interviews. Their exclusion from the sample resulted in a loss of valuable first hand information which could have been used to gain better insight into their perceptions on the importance of the outmigration, as a possible demographic measure. The information on these members had to be obtained entirely through secondary sources (first generation households). Consequently, the quantitative information with respect to such members may have been affected by the memory lapse of the respondents or be biased because it is not obtained directly from the people involved in the actual process.

The survey was carried out during one of the worst drought seasons in the country's history. Although, the settlers of the Rajangana scheme were not affected by the drought, the other sample sites were badly hit by the drought causing severe losses

in crop production. This is reflected in the crop production and related investment and seasonal income of the households.

In the absence of any baseline data, the economic and social changes that have occurred in the sample sites over the past 10 year period had to be obtained from the households. They often had to rely on the recall of their memories for responding to these questions which is likely to have resulted in some errors. Except fragmentary evidence available on the initial phase of settlement, the researcher did not have any other means of obtaining such information without directly questioning the respondents. These limitations have to be taken into consideration in the interpretation of the survey data.

### **2.13 Conclusion**

This chapter has explained the process of data collection adopted in this study. The application of the selected methodology in a desirable manner under different field conditions was the most difficult challenge of social investigation of this nature. As this study was mainly concerned with a farming population in a remote part of the country, the timing of the survey was found to be extremely crucial. The study demonstrated that the slack period of agricultural activity is the most appropriate time period for social investigation in order to achieve the highest response rate in an agrarian community. However, the slack period was not the most appropriate time for the survey of those who earn their living by way of wage labour. They tend to migrate out especially during the slack period of the season for places where short term employment opportunities are available. Consequently, they become the most difficult group to contact when the survey is planned during the slack period. The timing of the survey therefore needs to be based upon the availability of the most important group of respondents for the survey. Nevertheless, time may not be a crucial issue for another group of respondents. For example in the Wet Zone

control area the timing of the survey was found to be not as important as in the Dry Zone settlements, due to the major activities being undertaken by respondents which did not have clear seasonality and residents were usually available for interviews at their home villages. It was also proved that the recruitment of field investigators who are accustomed to the conditions in the survey area greatly facilitates not only the successful implementation of the study, but also the interpretation of both qualitative and quantitative data collected from the survey population at a later stage.

The study also displays the strength of the method of the focus group interview as a tool of social investigation. The focus group interviews allowed us to understand second generation issues with a clarity which cannot be achieved from a single visit interview situation where respondents have to be interviewed with a structured questionnaire in a less interactive manner. On the contrary, the focus group interview method allows close interaction with a group of community members who can divulge more accurate information as their interactions often lead to consensus on issues which generate different opinions. The highest response rate achieved in this survey is one testimony of the successful implementation of the study methodology in the field.

## CHAPTER THREE

### THE EVOLUTION OF THE LAND SETTLEMENT POLICY IN SRI LANKA

#### 3.1 Introduction

The history of Dry Zone land settlement policy in Sri Lanka dates back to the colonial period. The development of this policy is a pivotal concern of this study as present day second generation problems are closely associated with the historical process of the development of land settlement policy. Therefore, the present chapter examines the evolution of land settlement policy in Sri Lanka in order to place the study of contemporary patterns in their correct perspective. The development of land settlement widely known as "colonisation" prior to Independence, has been well documented by historians and other social scientists (Farmer 1957; Ellman et al 1976; People's Bank 1986; Samaraweera 1973). In addition, comprehensive evaluations of settlement policies have been made in three Land Commission Reports (Government of Ceylon 1929; Government of Ceylon 1958; Government of Sri Lanka 1990).

There is ample evidence to believe that an ancient hydraulic civilisation commencing from about the 6th century flourished in the Dry Zone areas of Sri Lanka (Leach 1959; Gunawardana 1971 : 3-27). The cultivation of rice was the economic base of this civilisation and social and cultural relations were developed around this economic activity. Anuradhapura and Polonnaruwa were the great ancient capitals centred around this hydraulic civilization. Mahavansa, the ancient chronicle of Sri Lankan history (compiled possibly around the sixth century A.D) provides detailed accounts of the highly sophisticated irrigation systems developed

over the years by ancient kings in the Dry Zone. However, this civilisation began to collapse by the thirteenth century and the kingdom shifted south to the Kandyan hills of the Wet Zone. The reason for the abandonment of this ancient Sinhalese kingdom of the Dry Zone is still a matter of controversy among scholars (Indrapala 1971). The decay has been largely attributed to continuous invasions from South India and malaria caused by the destruction and abandonment of irrigation works (Murphey 1957 : 181-200; Codrington 1960 : 93-103).

The Portuguese who ruled the Maritime provinces of Sri Lanka from 1505 to 1656, paid little attention to the cultivation of paddy. They never attempted the restoration of ancient irrigation works in the Dry Zone despite it being part of the territory under their control. The Dutch who succeeded the Portuguese attempted to restore some irrigation tanks and channels in the low country Dry Zone (Balasingham 1968 : 63). By the time the British occupied the entire country in 1815, the Dry Zone was jungle-clad, desolated and endemic with malaria. The British civil servant Emerson Tennant described the ancient capital of Anuradhapura in 1859 in the following terms:

"Here the air is heavy and unwholesome, vegetation is rank and malaria broods over the waters as they escape from broken tanks.....The historic city has shrunk into a few scattered huts that scarcely merit the designation of a village" (Tennant 1860 : 611).

After several centuries of neglect the restoration and revival of irrigation-based Dry Zone agriculture received some attention during the British period. In this chapter, the discussion of the evolution of land settlement is divided into three sections, each representing a significant period of development of land settlement.

### **3.2 Pre 1931 Period**

Although the British occupation of Sri Lanka began in 1815 with the fall of the Kandyan kingdom, the British did not have a significant impact on agriculture until

the enactment of the Crown Land Encroachment Ordinance (Ordinance No. 12 of 1840 and No. 9 of 1841). This was an outcome of the demand for land by private investors to initiate coffee plantations in the country. These investors anxiously awaited the availability of arable land in order to reap the benefits of the rising demand for coffee in the European markets. However, the prevailing land tenurial system in the nineteenth century made it difficult for the colonial government to supply the types of land they demanded. This impasse was ultimately broken by the enactment of the Crown Land Encroachment Ordinance. The ordinance set the legal principle that all waste land (forest and swidden land), unoccupied or uncultivated land was presumed to be the property of the crown until the contrary was proved.

As stipulated by the ordinance, the government had the power to eject any person from land who was unable to prove his ownership by way of a Sannas (a land grant given by a Sinhalese king usually engraved on a copper plate), payment of customary levies, evidence of occupation or use or maintenance of land for an uninterrupted period of not less than 30 years. The ordinance was heavily in favour of the state and effectively expropriated a large majority of the land owned by the peasantry. The effect of the ordinance was severe in the Wet Zone Kandyan region where the land was held communally by peasants for slash and burn cultivation (Chena cultivation), the collection of fire wood, as well as for the grazing of cattle. Documentary proof of ownership for such land was not available for the majority of the peasants.

The exact extent of land expropriated from peasants after the enactment of this ordinance is not known. However, land sales to investors prior to the enactment and afterwards, provides an indirect estimate of the magnitude of the land expropriation. Average annual sales of crown land to investors during 1835 to 1838 was 2595 ha. In 1840 alone, land sales soared to 31843 ha (Government of

Sri Lanka 1990 : 7). These lands were sold to European planters initially for the cultivation of coffee and later tea.

The adverse consequences of this large scale land expropriation have been well documented with many writers seeing this ordinance as the primary cause of the land hunger later developed in the Kandyan region (Government of Ceylon 1951; Hettiarachchi 1978). However, the "expropriation theory" has been rejected by other authors on the basis of the argument that the main areas of coffee culture in the nineteenth century were in the higher elevation areas where there were very few native settlements (Roberts 1970 : 175-176; Jayawardena 1963). Nevertheless, landlessness and unemployment became twin problems of the Kandyan region with increasing population pressure on the land (Government of Ceylon 1951). As the Sinhalese villagers in the hill country declined to become wage labourers in the emerging plantations, the government adopted a policy of bringing in cheap labour from South India. The coffee plantations first experienced a slump in 1846-48 and later were completely destroyed by a leaf disease (Vanden Driesen 1953 : 162-169). The Rebellions of 1842 and 1848 clearly displayed the sufferings of Kandyan peasants resulting from the development of plantation agriculture. The dispossession of many peasants of their paddy holding was accentuated by the Grain Tax Ordinance of 1872. This imposed a tax on the owners of paddy land which made many peasants sell off their parcels or abandon cultivation altogether owing to their inability to pay Grain Tax (Roberts 1973; Wesumperuma 1970 : 131-138). The subsequent enactment of the Waste Land Ordinance of 1897 further allowed the colonial government to consolidate its authority over the land in uninhabited areas of the country. Various chenas, waste and unoccupied land in the Dry Zone areas for which no claims from the natives were made within three months of the date of notice were brought under the control of the crown.

There were some isolated attempts to redress the economic hardship of the peasants in the early part of the 19th century. Sir Henry Ward the Governor of Ceylon between 1855 and 1860 saw the potential for development of agriculture in the Dry Zone and made admirable efforts to revive the ancient irrigation network in the area (Balasingham 1968 : 62-76). He saw irrigation development as a way of increasing rice production and reducing unemployment in the Dry Zone. Restoration of irrigation work was undertaken in the upper Uwa and Batticaloa in the eastern province and Magampattu in the southern province. However, Ward abandoned his efforts to develop large tanks like Kantalai, Kaudulla and Yodawewa due to the sparse population in these areas. Governor William Gregory (1872-1877) continued the restoration of the irrigation work revitalising the ancient irrigation works in Anuradhapura and Polonnaruwa. A number of village tanks were renovated with the help of the people and several major reservoirs and feeder canals were restored (Samaraweera 1973 : 449).

The potential of the Dry Zone as an area of food production and human settlement was increasingly realised during these efforts. Yet, the first attempt to settle people drawn from outside the Dry Zone in the restored Kalawewa area ended in failure, largely due to sickness among colonists (Farmer 1957 : 113). In spite of these small concessions, the land policy of the colonial government was generally adverse toward the peasants. In comparison to the expenditure on construction of roads and railways for the transportation of plantation produce, investment in the welfare of peasants was negligible (Silva 1983 : 41).

Immediately after the first World War however, the country was facing serious shortages of food supplies and the food production drive gained momentum leading to major changes in government land policy which later paved the way for the initiation of land settlement in the Dry Zone. The nationalist elements in the legislative councils in the early 1920s lobbied for change in government land policy

to relieve the poor from land hunger in the Wet Zone region. The liberalism that was gaining popularity in Europe made many British officials more compassionate to the plight of the peasantry.

A committee appointed to report on ways and means of increasing food production came up with the proposal in 1920 to open up land, provide irrigation, transport facilities and generous production incentives including agricultural extension and credit (Farmer 1957 : 117). The immediate outcome of the recommendation of this committee was the Food Production Minutes of 1920 which allowed District Revenue Officers to authorise the lease of small land allotments to applicants on easy terms. These leases could turn into grants if the recipients were able to pay off the unimproved value of the land for three years (Samaraweera 1973 : 450). This later turned into the Peasant Proprietary System, under which carefully selected applicants leased land allotments on the basis of restricted tenure but the government retained the right to eject the leaseholders if they proved to be unsatisfactory. The leaseholders derived the benefits of ownership such as the right to the total produce of the land and the right to pass the land onto an heir having obtained prior approval from the District Revenue Officer. Under this new system, over 4000 ha were allocated to 4000 applicants in the Batticaloa district (Samaraweera 1973 : 451).

There were also other experiments during this period such as the settlement of families in the Nachchaduwa colony (Figure 1.8 in Chapter One). On the recommendation of the Food Production Committee, considerable assistance was extended to the settlers there. As reported by Farmer (1957 : 131)

"Outright assistance included a temporary house and meals until the colonist was self supporting; the Government also supplied roads, free irrigation for five years, a medical service and a school. The colonist was, in addition, advanced a sum of money together with seed paddy and buffaloes. Later, free coconut and jak plants and free tools were added to the list".

However, this experiment was terminated due to difficulties in attracting desirable settlers as a result of the frightful reputation of the conditions in the Dry Zone. Health was reported as one of the persistent problem with sickness and death being common among colonists.

"The troubles of Nachchaduwa in fact cast a cloud over the idea of state-sponsored colonization for some time". (Farmer 1957 : 132).

The only colonies initiated prior to 1931 after the Nachchaduwa experiment were Tabbowa and the Malay colony at Beragama. The former was initiated with the idea of providing irrigation facilities for Puttalam town. The latter settlement was established to accommodate mercenaries who were brought to the island from Java during the first World War. They were reported to be living under dreadful conditions awaiting government help (Farmer 1957 : 133-135).

There were also some attempts to develop Dry Zone agriculture during the first World War when the rice price was very attractive. Ceylon Mills Company was given over 2000 ha for development at Kalawewa in 1920. Minneriya Development Company also undertook an ambitious development project covering 3600 ha in 1919 (Brohier 1941 : 28). However, both of these projects failed due to malaria, poor infrastructure and a slump in the rice price.

The failure of the development of large scale Dry Zone agriculture made colonial rulers review the idea that an attempt to increase the domestic rice production should be spearheaded by the peasantry. There was a growing view that it was necessary to provide irrigation and infrastructure as well as land for the poverty stricken peasantry. In 1925 a committee sponsored by the legislative council, explored the possibilities of settling those who without sufficient land could not support themselves and their families, on crown land (Government of Ceylon 1931 : 3). At the same time the preservation of the peasantry as a social class came to the forefront of discussion in official circles with the appointment of Sir Hugh Clifford

as Governor in 1925. He formulated the idea of the "preservation of peasants" as a class of "independent proprietors" and strongly favoured a policy of peasant colonization (Clifford 1927). His ideas were reflected in the land policy later recommended by the first Land Commission in 1927. The appointment of this first ever Land Commission was an important landmark in the evolution of land policy. The Commission had two major objectives:

- a) The preservation of the peasantry as a social class.
- b) Keeping crown land in a public trust for the benefit of the whole community as well as for future generations.

The Commission made the following recommendations in line with these objectives.

- a) Appointment of a special officer called the Land Commissioner. He was expected to function as the prime authority in matters relating to land, including regulation and allocation.
- b) The "mapping out" of land was recommended in the allocation to peasants or other users. The requirements of the peasants however needed to be given priority in the allocation of land.
- c) Instead of individuals taking the initiative to look for land and making applications for grants from the crown, the Commission recommended that applications from the public should be called upon when the extent of land available for allocation was determined. The eligible persons subsequently should be chosen at "land kachcheris" depending on their suitability.
- d) The Commission recommended three types of tenure pertaining to crown land.
  - 1) outright grant where special protection was not thought to be required for the peasant.
  - 2) lease under the peasant proprietor system.
  - 3) a new system especially designed to protect the peasant where "he displays the utmost improvidence in parting with land" (Farmer 1957 : 125-127).

A new tenure system was created to ensure security of tenure. Restrictions were applied to the mortgage, sale or transfer of land without permission. On the death of the recipient, the land was to be passed onto a nominated successor in order to prevent fragmentation. Although the Commission's recommendations were made in 1929, they were not brought into action until the enactment of the Land Development Ordinance of 1935 (LDO). Experiments in colonisation continued to be concentrated in the Wet Zone, and one of these was the "Sir Hugh Clifford Scheme" in Pasdun Korale. Farmer (1957 : 139) described the situation in 1931 in the following terms:

"...the period 1914-31 was, for the progress of Dry Zone settlement, one of experiment and discussion rather than of actual accomplishment. The Dry Zone in 1931 was still under a cloud; malaria and remoteness combined to give it an evil reputation and to discourage voluntary immigration.....The idea of government-sponsored colonization had been accepted, but for settlement in the Wet Zone only."

### **3.3 1931-1947 Phase**

Political developments in Sri Lanka in the 1930s contributed substantially toward the development of land policy. The inauguration of the Donoughmore Constitution in 1931 brought about far reaching changes due to the introduction of limited self rule. Along with constitutional changes, universal adult franchise for men and women was introduced. This resulted in local politicians becoming more sensitive to the problems of peasants since representation in the legislature had a strong rural bias due to the geographical demarcation of electorates (Silva 1985 : 11). The new constitution also created an Executive Committee System for policy making and implementation empowering Sri Lankan ministers to act as chairmen of Executive Committees who could make policy decision within the area of their authority.

The Committee on Agriculture and Land which controlled the Department of Agriculture, Irrigation, Survey, Forestry, Land Settlement and the newly created

Land Commissioner Department was chaired by the first Prime Minister of Independent Sri Lanka, Mr. D.S. Senanayake. He himself was a practical farmer with considerable experience in land matters and was deeply committed to the renewal of the ancient glories of Sri Lanka by way of land colonisation in the Dry Zone (Brohier 1955/56 : 68-80; Farmer 1957 : 143-145). He used his portfolio as the Chairman of the Executive Committee on Agriculture and Land to get the support of the colonial government and accessed the resources within his ministry to strengthen the idea of the colonisation program.

Senanayake expressed his views comprehensively on the question of peasants in his book titled "Agriculture and Patriotism". He argued that Dry Zone colonisation was the only way out of the problems faced by the peasantry. He wrote

"the distribution of population in the various parts of the country is such that migration from over-populous zones to less crowded areas will soon become not a matter of choice, but a grim necessity" (Senanayake 1935 : 20).

Senanayake was able to effectively push forward the idea of Dry Zone land colonisation as both a demographic and economic solution to the problems of the country at a time when the world economy was in the Great Depression. The effect of global depression was particularly severe on the island economy due to the fall in export earnings and increasing food imports. Hence the opening of new land to increase food production was seen as a major option available to solve the problems of food domestically. Senanayake strongly argued in favour of Dry Zone colonisation as a one way of consolidating his political base in an evolving parliamentary system based on universal suffrage as well as to avoid land reform which was seen by many as the best available alternative to land colonisation in restructuring the peasantry. As a member of the landed elite, he opted for land colonisation which did not threaten to disturb the colonial agrarian structure of the Wet Zone (Shanmugaratnam 1985 : 68).

The major actions taken by the Executive Committee on Agriculture and Land headed by Senanayake during the period between 1934 and 1940 were:

- (a) The enactment of the Land Development Ordinance No.19 of 1935.
- (b) The inauguration of the "New Policy" in land colonisation.

Many of the recommendations made by the Land Commission of 1927 received legal recognition with the enactment of the Land Development Ordinance of 1935. This Ordinance is one of the most important laws enacted by the state council during 1931-1947 (along with the Free Education Ordinance of 1943) which has had far reaching effects on the Sri Lankan society and economy (Silva 1983 : 50). The Ordinance laid down the legal foundation under which state land may be allocated for settlement and development. It identifies the different classes of people to whom land could be allocated as well as the different purposes for which the land could be used. The Land Development Ordinance also laid down the detailed procedures on land succession as well as the termination of land rights.

The mapping out of land for the purpose of village expansion, colonisation, village forest reserves etc. is an important component of the Land Development Ordinance. Land should not be allocated except at a Land Kachcheri where the Government Agent (GA) would select the suitable applicants to receive land. The recipient is given a permit initially authorising him to occupy the land. Once he fulfils the conditions of the permit "he shall become an owner of the land upon which he is in occupation and shall be entitled to receive a grant of that land" (Government of Ceylon 1956 : 13-14). The grant is however, subject to several conditions regulating subdivision and transfer. Succession is limited to only one nominee of the permit holder who should be a spouse or a relative by blood unless otherwise approved by the GA (Government of Ceylon 1956 : 16-18). Protected tenure is built-in to this land allocation system in order to safeguard the settlers from the disruptive forces of a free land market. Failure to adhere to the conditions laid

down in the permit however results in cancellation and ejection of the colonist. In spite of several amendments to the LDO, it still remains the primary instrument for allocating state land. Amendments have been largely concerned with the tenure of allocated land (Schickele nd : 1-16).

The new policy of colonisation began with the passage of the bill on the policy of aided colonisation which was tabled by D.S. Senanayake before the State Council in February, 1939. The bill proposed a wide range of assistance to the settlers in order to accelerate the pace of Dry Zone colonisation. The most important component of this bill was the decision made to clear the jungle at government expense in contrast to the prevailing practice of the settlers clearing their land by themselves. The provision of domestic water supply, irrigation facilities, roads and other infrastructure facilities, including schools, hospitals and community centres were also regarded as the responsibilities of the government. The settlers were also to be provided with ready made houses and would no longer need to be housed in temporary communal huts (wadiya) as was previously the case. They were to be given a subsidy for any work required after the first harvest in connection with the ridging or stumping of paddy land. In addition, they were to be provided with free planting materials and loans for the purchase of agricultural implements and buffaloes. Repayment of these loans was to be converted into a grant depending on the satisfactory progress made by the individual colonist (Farmer 1957 : 152). The Financial Secretary estimated that the new proposal would increase the assistance per colonist from Rs 250 to Rs 700 (Land Commissioner's Department 1948 : 8).

The new policy was not entirely without controversy. Although it was adopted overwhelmingly by the legislature, the major critics of this policy were in the left oriented parties led by Philip Gunawardena and Dr N.M. Perera. Gunawardena argued that the provision of irrigation and drainage facilities in the Wet Zone was a more productive way of investment considering the massive cost of proposed Dry

Zone development (Government of Ceylon 1939 : 666). Perera criticised the policy and questioned the economic justification of allocating money for a programme which was "neither a food production scheme, nor an unemployed relief scheme, nor a scheme to put the surplus population on land". He also expressed his view on the objectives of colonisation stating "a mixture of objects is often fatal to success" (Government of Ceylon 1939 : 680-681).

The new policy came into effect governing colonisation efforts until Independence in 1948 and even thereafter. Colonisation was accelerated by this new policy so that between 1939-1947, 55,761 peasants received 32,470 ha of crown land. Of this number 2,977 were settled with assistance, including a well built cottage on 8,604 ha of land (Land Commissioner's Department 1948 : 7).

The colonisation programme received a fillip with the outbreak of the Second World War. The need to be self sufficient in food production again became predominant and major emphasis was given to land settlement in the Dry Zone. In addition, with the commencement of the drive for food production in 1942, Revenue Officers were allowed to give out any crown land under temporary permits (other than reserved forests) for food production without restrictions on the priority selection of the settlers (Land Commissioner's Department 1948 : 6). During the same period, the Irrigation Department was given the entire responsibility for the development of land which included activities needed to accommodate incoming colonists upon a ready made farm. However, later in 1948 land development activities were passed onto a newly created Department of Land Development (Farmer 1957 : 155-156).

One important element in the regeneration of the Dry Zone was the introduction of DDT spraying as a measure of malaria control in 1945. Hyper-endemic malaria had hitherto claimed a large number of lives in the Dry Zone and kept others away

from the area (Farmer 1957 : 145-146). It was considered as the foremost enemy of Dry Zone development in the early years. The immediate control of this perennial problem in the late 1940s made the area more attractive to incoming settlers from the Wet Zone.

### **3.4 Post Independence Phase**

The obtaining of Independence from colonial rule in 1948 opened a new chapter of land settlement policy based on national needs and aspirations. In the absence of any industrial base in the economy, utmost attention was paid to the domestic agricultural sector, especially on increasing rice production. The modern plantation sector having no linkages with the traditional food crop cultivation sector had developed in virtual isolation (Snodgrass 1966). Land settlement was seen to increase domestic rice production as well as provide a long lasting solution to mounting population pressure in the Wet Zone. Therefore irrigation development and land settlement has proceeded with vigour during the post Independence era.

The creation of most of the major irrigation schemes based on large reservoirs occurred during this period. In contrast to the rehabilitation of existing ancient irrigation infrastructure in the colonial period, irrigation development was broadened to encompass river basin development (eg Galoya and Walawe) and reached its peak in the trans basin diversion under the Mahaweli development programme. The new irrigation development also progressed into multi purpose irrigation projects in which beside human settlement, the generation of hydro power became an important objective (Weerasinghe 1990 : 124; Abeysinghe 1979 : 122-132).

Some 15-20 percent of government annual capital expenditure was devoted to the development of major irrigation schemes until the early 1960s (Government of Ceylon 1962). The share was substantially increased in later years with massive

irrigation development undertakings. The biggest irrigation work commenced immediately after Independence in the Gal Oya Development Project initiated in 1949. It is still the largest multi purpose reservoir project in the country and was built on the model of the Tennessee Valley Development project in the USA. The man-made reservoir with a capacity of 700,000 acre feet of water can irrigate 48,600 ha of land. Nearly 20,000 families have been settled in new land brought under cultivation in Gal Oya. Irrigation water has been provided for the cultivation of rice and sugar. The large scale in-migration of people to the eastern Dry Zone began at the completion of this irrigation project. Another important river basin development project undertaken prior to the Mahaweli trans basin project was the Udawalawe Development Scheme which commenced in 1963. The project envisaged the irrigation of 12,600 ha and the settlement of 15,000 farm families. During the 1960s, investment in irrigation development made up 36 percent of the capital budget allocated to the agricultural sector. By the late 1960s, nearly all of the major ancient irrigation works had been restored and settled with farm families and three new irrigation projects viz: Gal Oya, Rajangana and Udawalawe had virtually been completed (Silva 1985 : 13).

### **3.5 Policy Changes up to the 1970s**

From the beginning of Independence until the commencement of the Mahaweli project, a number of policy changes were implemented at different times particularly with respect to the size of holdings, assistance given to incoming settlers, tenure of crown lands and the management of settlement schemes.

An International Bank for Reconstruction and Development (IBRD) mission to Sri Lanka in 1951, made a number of suggestions and specific recommendations with regard to the policy of land settlement (IBRD 1952 : 383-398). The mission suggested that both educated and those who have capital be drawn into the

settlement programmes providing them with large land blocks. Leasing of such land was recommended for both large cooperations and persons belonging to the "middle class". The mission also stressed the point that the present policy of drawing colonists almost exclusively from the landless class was a mistake. Since the Dry Zone area of colonisation was then virtually free from malaria, the mission questioned the wisdom of accepting the past policies of giving generous assistance to incoming settlers. They recommended the following cost cutting measures for future implementation of settlement policies:

- a) Reduce the standard unit of land allotment in order to lower the cost per settler as well as to offer opportunities for a larger number of settlers to earn a better living.
- b) Reduce the cost of clearing land borne by the state. Give assistance only to prepare part of the land leaving the balance for settlers themselves to clear.
- c) Change the current housing specification for colonists in order to provide less expensive housing.
- d) Increase the annual charges made to colonists for land as the current rates are fixed at a comparatively low level.

The suggestions made by the IBRD mission were appealing to the planners as the escalating cost of settlement had placed a heavy stress on the national exchequer at the time of a worsening balance of payments situation. The size of allotment given to settlers in the pre 1950 period was 3.2 ha (8 acres) consisting of 2 ha (5 acres) of lowland for paddy cultivation and 1.2 ha (3 acres) of highland. This allotment size was slashed, following their recommendations to 2 ha (5 acres) of which 1.2 ha (3 acres) were lowland and 0.8 ha (2 acres) were highland. In addition to cost cutting and accommodating more people in land settlement schemes due to the rising demand for land from the Wet Zone areas, the reduction of the unit size was also

justified by the settler's inability to cultivate relatively large farm holdings with their available family labour (Ellman et al 1976 : 7). The neglect of highland allotments by many settlers in the old settlement schemes also influenced this. Although the allotment size was reduced in 1953, assistance for settlers continued with only minor modifications. The types of assistance received by colonists in 1953 was as follows:

"As in the past, Government continued to assist the settlers in this difficult task in diverse ways. In the colonies, the land were cleared of forest and prepared for cultivation, type-plan peasant cottages and latrines were built on the highland block and irrigation facilities were provided for the paddy allotments before the colonists were actually placed in possession of their lands. The paddy allotments were also ridged at Government expense but not stumped. In the past two acres of irrigable area given to a colonist used to be stumped but as an inevitable economic measure, this practice was discontinued during the year under review. Instead, a subsidy of Rs 200 was paid to each colonist for stumping an acre of his paddy land. Seed paddy for first season, and planting materials for the highland, approximately in value to Rs 50 were issued free of cost to each colonist in addition to providing him with essential agricultural implements of the value of about Rs 50. Colonists were usually drawn from distant places, and if they had to travel over five miles from their home to the colonies, they were provided with free transport facilities for themselves and their families together with their household effects. On arrival at the colonies, they were granted subsistence allowances of Rs 30 a month for six months until their first crop from the land was harvested. A convenient group of cottages was provided with a communal well from which they could obtain their domestic requirements of water, for the colony as a whole, all essential roads were built and various other civic amenities such as meeting halls, play grounds, schools, dispensaries and buildings for co-operative stores were also provided at Government expense in places centrally located to suit the various purposes " (Land Commissioner's Department 1954 : 6-7)

With this scale of assistance the estimated cost for settling a colonist by 1953 was estimated at around Rs 20,000 (Weerackody 1970 : 4).

Prior to the implementation of the Advance Alienation Programme in 1956, further cost reduction measures were introduced. The provision of Rs 200 per acre for stumping for each settler was reduced to Rs 100 per acre. The estimated cost of a "type plan" cottage was reduced from Rs 3500 to Rs 1300.

### 3.5.1 The Advanced Alienation Programme

The provision of subsidies was dramatically reduced with the implementation of the Advanced Alienation Programme in 1956. It was a complete departure from the policy of fully assisted colonisation which was seen as a guiding principle of attracting families from the densely populated villages of the Wet Zone. Under the new system, settlers were brought into the settlement scheme 2 years prior to the projected date of provision of irrigation. They were accommodated in temporary huts and required to clear their land still in high jungle on a payment basis. Settler participation and commitment to the development work was expected from the inception of a project. Their participation was also expected in the construction of roads, channels and the preparation of their land allotments. During the first year, settlers were expected to clear their allotted land and prepare it under rainfed cultivation. During the second year irrigated water was provided for the settlers to undertake cultivation of paddy (Land Commissioner's Department 1959 : 45-46; Government of Ceylon 1962 : 135).

The subsidies paid to settlers during the period that the Advance Alienation Programme was in operation are given in Table 3.1. The subsistence payment was made only for an initial six month period until the first crop under rainfed condition was harvested. In addition to the payments in Table 3.1, the settler received planting materials, a set of implements and 2 bushels of seed per acre of paddy. The government continued to construct settler cottages until 1963, when the policy was changed so that settlers were given a subsidy of Rs 1000 to construct a cottage by themselves (Department of Land Development 1965 : 35). Another important change made during this year was a further reduction in the unit of land allocation. This time it was reduced to 1.2 ha (3 acres), comprising 0.8 ha (2 acres) of lowland and 0.45 ha (1 acre) of highland (Ministry of Land, Irrigation and Power 1966 : 117).

**Table 3.1 The Payments Made to Settlers by Type under the Advanced Alienation Programme**

Item	Amount in Rupees
Temporary hut	80
Jungle clearing per acre	100
Stumping per allotment	200
Subsistence payment for six month	30

Source: Administration Report of Land Commissioner, 1963-64.

Note: The initial payment of Rs 200 per allotment for stumping was later reduced to Rs 100

This policy discouraged settlers from bringing their families until the highland allotment was cleared. The government modified the policy in 1966 by taking responsibility for clearing highland allotments for settlers to construct their temporary huts immediately upon arrival so that they could settle down with their families. The per settler labour contribution to the development of land during the period that Advanced Land Alienation Programme was in operation was estimated at Rs 2000 - Rs 3000 (Land Commissioner's Department 1975 : 50).

The policy of the Advanced Alienation Programme was initiated to (Weerackody 1970 : 5):

- a) Expedite the process of land allocation in order to provide an immediate relief to the growing unemployment and land hunger in the Wet Zone as the existing rate of land alienation was too slow to make any impact on those twin problems.
- b) Reduce the expenditure borne by the government by transferring the responsibility of clearing land onto the allottees themselves.
- c) Achieve rainfed cultivation of land much earlier than was previously possible.
- d) To instil a greater sense of possession among settlers by way of getting them to participate in all aspects of land development activities.

e) Prevent squatters occupying state land by disposing of land early to selected persons.

Although the policy had a number of commendable features, some problems emerged during the course of its implementation. The success of the policy was primarily dependent upon the provision of irrigation facilities to settlers within the stipulated period of 2 years. The Irrigation Department failed to meet this time limit forcing many settlers to prolong their rainfed cultivation which was highly vulnerable to the vagaries of weather. Accordingly, poor crop income and loss of enthusiasm led to many settlers drifting back to their places of origin, on many occasions disposing of their land by illegal means (Weerackody 1970 : 5; Wanigaratne 1984 : 48-49). From June 1970 the policy was suspended, but was reintroduced in the 1980s with the implementation of the Mahaweli and Kirindi Oya projects (MLLD 1983).

When the Advanced Alienation Programme was in operation (1959 - 1970), it settled 45,813 farm families on a total of 68,550 ha of land in the Dry Zone. This was a four-fold increase in the number settled and doubled the alienated extent in comparison to the achievements made in the 30 year period beginning from 1920 (Wanigaratne 1984 : 49). This was possible due to the allocation of smaller allotments, settlement prior to all infrastructure being completed and the reduction in expenditure per settler to Rs 10,000 in 1958 from the previous cost of Rs 15,000 - 20,000 (Abeyratne 1972 : 28).

### **3.5.2 Land Commission of 1958**

Another important commission which reviewed the policy of land settlement in depth was the Second Land Commission of 1958. This was constituted in 1955 and directed to inquire into and make recommendations on the current policy and laws relating to the allocation of land with particular reference to the Land Development

Ordinance of 1935, current scale of assistance to peasants settling on crown land and the revenue collected by the government from the land allocated so far.

The Commission concluded that the past investment in land settlement had been inefficient and stressed the importance of economic criteria in future settlement planning. The Commission made a number of recommendations among which the most important were the changes proposed in the tenure of settlement land and measures needed to increase the productivity of land in settlement schemes. They proposed a freedom of disposition of alienated land subject to a condition preventing fragmentation. Although the Commission did not advise a curtailment of the current scale of assistance to prospective settlers, it stressed the importance of selecting colonists on the basis of their farming experience in order to achieve the maximum benefit from the land. The previous practice of giving major consideration to social justice in the selection of settlers was not endorsed by the Commission. The Commission recommended the provision of all the support services, including complementary inputs, credit, extension services and marketing facilities, needed to increase agricultural productivity.

Although the Commission made valuable suggestions to change the existing settlement policy with the exception of some minor revisions to the Land Development Ordinance in 1960 and 1969, little attention was paid to the implementation of their recommendations.

However, the need to change existing settlement policies was constantly under discussion and this intensified in the mid 1960s after the recommendations made by both the Land Commission and the IBRD mission (Amunugama 1965). The increasing cost per settler drew the attention of planners and was a drawback in expanding the coverage of settlement. The high cost was also associated with the settlers developing a highly dependent attitude toward the settlement authority. The

continuation of traditional peasant agriculture and the inefficient use of irrigation water also contributed to the low productivity in settlement schemes. The poor quality of settlers selected primarily on the basis of social considerations was often mentioned as a problem, as was the poor physical planning of settlement schemes. The major consideration in physical planning was the cheapness of gravity irrigation for paddy and little attention was paid to the economic, technical or social aspects of the settlements (Land Commissioner's Department 1969 : 82). The land allotments were laid out without consideration of the characteristics of the soil. All irrigable land with gravity flow was to be cultivated with paddy and all unirrigable land was to be cultivated with other crops. This arbitrary allocation of land for paddy and highland crops without giving any consideration to soil quality led to unsuitable land being cropped with paddy and land suitable being left unirrigated (Abeyratne 1982 : 153). Similarly, the siting of farmers homesteads along the irrigation channels rather than in village clusters led to the development of what is popularly known as "Ribbon Type" settlement where community spirit and social cohesion was limited (Thambaiah 1958; Farmer 1957 : 298; Harris 1984 : 326). The administration of settlement schemes was by the resident colonisation officer and overseers who were supervised by a District Land Officer at the District Kachcheri (Secretariat). This method of administration was geared more towards land administration than increasing productivity of the land (Weerackody 1970 : 6).

### **3.5.3 Colonisation Board**

To overcome these shortcomings and coordinate the activities of different line agencies responsible for settlement schemes a Colonisation Board was created in 1969. The Board was to approve all settlement proposals and the execution thereof. It was headed by the Permanent Secretary to the Ministry of Agriculture and Land and consisted of Heads of Departments concerned with the Land Settlement schemes. The major activities of the Board were carried out by three sub-

committees. These sub-committees were serviced by a planning unit under an Additional Land Commissioner with a cadre of officers representing various disciplines. A Coordinating Committee headed by the Government Agent was established in each settlement scheme for the purpose of formulating production programmes for the respective cultivation seasons and monitoring the progress of activities (Land Commissioner's Department 1969 : 82). The Colonization Board was not fully successful (Ellman et al. 1976 : 10), yet it was retained with a change of name into the Land Policy and Settlement Planning Division of the Ministry of Land and Development (Stanbury 1988 : 12).

#### **3.5.4 Lift Irrigation Projects**

Increasing the production in neglected highland allotments received renewed attention with a programme of providing lift irrigation facilities for older settlement schemes begun in 1956 with IDA (International Development Association) assistance. The programme was expected to increase the land under the cultivation of subsidiary food crops which was given a high priority in the imports substitution programme. The programme was based upon greater discipline being exercised in the use of irrigation water, as the programme was workable only if more water was saved in paddy cultivation. The programme also anticipated a shift from traditional cultivation of paddy among settlers toward a market oriented system of production by way of maximum utilisation of the entire farm unit (both highland and lowland). However, the total extent of land provided with lift irrigation facilities was very small amounting to some 500 ha in 10 settlement schemes in the 1970s. Although, two large scale lift irrigation schemes at Rajangana (1552 ha) and Nagadeepa (490 ha) were later developed, the performance of these schemes was generally found to be unsatisfactory (Land commissioner's Department 1974 : 73).

### 3.5 5 Special Project

The second FAO/IBRD mission visited the country in the mid 1960s to review existing irrigation projects and drew attention to the urgent requirement of increasing agricultural productivity per unit of land. The package proposed by the mission was consistent with the global expansion of "Green Revolution Technology" (FAO/IBRD 1968). The rehabilitation of older irrigation and colonisation projects, optimum use of water, crop diversification and institutional building for agricultural extension, credit and marketing were proposed, giving major emphasis to the coordinated supply of agricultural inputs for greater output. One significant development following upon the recommendation of this mission was the prompt initiation of the "Special Project Scheme".

The programme was first attempted on a pilot basis in the Elahera settlement scheme covering some 2240 ha of paddy and 1098 ha of highland. A special organisation was set up for this programme at two levels. At the apex a joint committee was formed with all the Heads of Departments concerned with land settlement chaired by the Permanent Secretary of the Ministry of Land. This committee was established to lay down the project targets, strategy of operation and periodically review progress. At the district level, the Government Agent was in charge of the operation as the Chairman of the District Agricultural Committee and a sub-committee consisting of the local Heads of Department were represented in the joint committee at the apex. Field execution of the programme was through a Resident Project Manager, a District Agricultural Extension Officer from the Department of Agriculture supported by project level officials represented by various other line Departments (Land Commissioner's Department 1969 : 84).

All the irrigation defects were repaired at the Elahera irrigation scheme prior to the implementation of the programme. The operation started in the 1967-68 Maha season. The results were striking and in a short time 95 percent of the whole area

came under cultivation of paddy and 85 percent of the acreage was sown with improved rice varieties (H4). The sale of fertilizer increased eightfold. The yield level achieved was 86.4 bushels against a target of 60 bushels. Credit repayment during the season was 90 percent (Land Commissioner's Department 1969 : 84; Hartoungh 1968: 35). Encouraged by this success, the government extended the area under special projects to a further 18,200 ha covering 9 settlement schemes in the 1968-69 Maha and 27,900 ha covering 11 settlement schemes in the 1969-70 Maha season. By the end of 1977, 23 settlement schemes were brought under the programme covering a total of 59,500 ha of agricultural land (Land Commissioner's Department 1976 : 36).

The concept of the special project programme which had a closer coordination of activities through a Project Manager thus appeared to have worked well in achieving increased output at the initial phase. The success of many schemes has been attributed to the calibre of the extension staff, particularly the Project Managers (Narayanasamy 1974). However, the programme was collapsing by 1979 as it was unable to sustain the initial momentum due to the lack of institutional development and failure to involve farmers in management decision making. In addition, supply of complementary inputs through the cooperative network proved to be erratic. More importantly, inefficiency in both financial and administrative management due to a lack of technical skills among the personnel managing these organisations became a serious threat to the continuation of the programme. Frequent transfers and displacement of the programme staff aggravated the problem in later years and resulted in the subsequent closure of the special project programme (Wanigaratne 1984 : 51).

### **3.6 Other Land Allocation Programmes**

Of the 110 settlement schemes in the country today the major irrigation settlement schemes are by definition considered as those with irrigation command of at least

80 ha. Except for two major irrigation schemes all the major irrigation schemes are located in the Dry Zone. Nearly 100,000 farm families drawn from various parts of the country have been settled on 175,941 ha of land in the major irrigation schemes. This land area is to be increased further with the progress of the Mahaweli settlement programme. By the end of 1985, nearly 60,000 farm families had been settled in an area of 52,000 ha of land under the Mahaweli project.

A total of 830,83 ha of land (some 12 percent of the land area in the country) had been allocated to the people under various land allocation schemes by the end of 1985 (Government of Sri Lanka 1990 : 132-133). The breakdown of the extent allocated under each scheme is given in Table 3.2. Each type of scheme has different objectives.

**Table 3.2 Extent of Land Allocated by the Government by Major Programme**

Programme	Extent (ha)	Percentage
Major Settlement Schemes	175,941	21.2
Village Expansion Schemes	357,239	43.0
Highland Settlement Schemes	13,565	1.6
Youth Settlement Schemes	7,964	1.0
Regularisation of Encroachments	205,762	24.8
Middle Class Allotments	55,019	6.6
Land Grants (Special Provision)	9,980	1.2
Rainfed Farming Settlements	5,363	0.6
<b>Total</b>	<b>830,833</b>	<b>100</b>

Source: Report of the Land Commission 1987.

### 3.6.1 Village Expansion Scheme

The largest amount of land that has been allocated to the largest number of beneficiaries was under the Village Expansion Scheme amounting to 43 percent of the total allocated land. The programme has been in operation since the 1930s. According to the Land Utilisation Committee (Government of Ceylon 1968 : 34) by 1966, a total of 504,154 allottees were living on 268,773 ha of land allocated under

Village Expansion Schemes. Moore and Perera (1978) reported that more than a quarter of all households in the country are residents on plots of land originally given under Village Expansion Scheme. The average extent of land given under the programme was initially about 0.4 ha. However, with the deterioration of the land situation, allotment size has become smaller and now is in the range of 0.2 to 0.02 ha per allottee.

The land allocated under the Village Expansion Schemes was largely residential with limited potential for crop production activities. The Report of the Land Utilisation Committee describes the land allocated under the scheme in the following manner:

" Most of the allotment given under the Village Expansion System are scattered lots where no consistent type of cultivation, except for a few garden trees or vegetable plots is possible. The alienation of land under Village Expansion can in many such cases be described as a mere extension of the residential lot on available crown land in the vicinity, to assist the dependents of the villagers family..." (Government of Ceylon 1968 : 35).

The primary purpose of allocating such land was to provide it for landless families within the vicinity of their home villages. A certain amount of financial and material assistance was given to them for the construction of houses, wells and latrines.

The social consequences of the Village Expansion Scheme have been analysed by some sociologists with the finding that they have contributed to the creation of rural slums (Moore and Perera 1978). However, there are also arguments that the urban slums presents in many other LDCs (Less Developed Countries) have been averted by the Programme of Village Expansion (Government of Sri Lanka 1990 : 135).

### **3.6.2 Highland Colonisation Scheme**

The Highland Colonisation Scheme was initiated in 1956 in order to accelerate the programme of land allocation, as the major colonisation schemes were inadequate

to meet the demands of the landless (Weerackody 1970 : 9). With the favourable world market prices for plantation crops, the government made available suitable highland for the cultivation of commercial crops for landless families away from their homes but within the district. These schemes were opened up in Ratnapura, Matara, Galle and Kalutara districts (Land Commissioner's Department 1969 : 87). Allocation of highland for tea and rubber cultivation was suspended within five years of the implementation of this scheme, however it was continued for the cultivation of coconuts. According to the Land Commissioner's Department, there are 58 highland settlement schemes in the country today, with the total extent covered by these settlement schemes amounting to 13,565 ha. In tea schemes each settler was given 0.8 ha of land for tea cultivation and 0.2 ha for a homestead; in rubber schemes 1 ha of land was given for development and a 0.2 ha for a homestead. The largest allotment size was given in coconut schemes comprising 1.6 ha for development and 0.2 ha for a homestead. The settlers were also given assistance in jungle clearing, land preparation and soil conservation. In addition, planting materials, fertilizer and dwelling houses were provided. The total assistance given in highland settlement schemes amounted to Rs 4500 per settler (Weerackody 1970 : 9).

### **3.6.3 Middle Class Scheme**

The Middle Class Scheme was another important experiment of land settlement, which originated with the social motive of providing leadership for the peasant colonisation schemes (Farmer 1957 : 158). The programme was designed to provide land to landless persons with sufficient income to develop and manage the land. The size of the allotment given to settlers under this programme ranged between 4 and 20 ha. The recipients of such land were in the higher ranks of the clerical grades or in the Ceylon Civil Service. Land suitable for highland commercial crops was also allocated to peasants since 1957 under the Highland

Colonisation Scheme. The total extent of land allocated under the Middle Class Scheme amounted to approximately 55,000 ha (Government of Sri Lanka 1990 : 133), however, the programme became inactive after 1956 due to increasing attention being paid to the allocation of paddy land to the peasantry.

#### **3.6.4 Youth Settlement Scheme**

Another experiment of land settlement was attempted in 1966 with the establishment of the Youth Settlement Scheme. The idea of settling educated, unemployed youth on land had been under discussion for several decades. At the commencement of this scheme, about one fifth of the unemployed (approximately 500,000) were youth who had at least received a senior secondary education. A large number of them had undergone training at Practical Farm Schools. Firstly, ten percent of the land in Major Irrigation Schemes was reserved for those with a S.S.C (Senior School Certificate, equivalent to tenth Grade) or those who had graduated from Farm Schools. Secondly, a few special schemes for the cultivation of tea, rubber, coconut or rice under restored minor irrigation work were established (Government of Ceylon 1968 : 39). The main idea of establishing these schemes was to divert the attention of educated youths who were unemployed and were expecting white collar jobs in agriculture. Such settlement schemes were envisaged to demonstrate to them that the agriculture could easily bring them an income of Rs 250 - Rs 300 per month which could be expected in a clerical job.

These schemes were restricted to those who were in the younger age groups between 18 and 25 years of age. Land preparation and development work in these schemes was undertaken on a self help communal basis. Development activities were organised under self contained cooperative societies in each scheme. Major emphasis was given to the cultivation of high value food crops in order to achieve

the projected income. Each of the schemes were settled with about 50 to 100 youths (Weerackody 1970 : 10).

The programme however did not work well as the job aspirations of the majority of the youth were not oriented to agriculture and as a result many of them abandoned their land upon obtaining other employment. There were 40 youth schemes involving a total of 2,500 youths covering nearly 8,000 ha of land by 1980. However, only a very few youth schemes proved to be successful as the majority of the youth selected for these schemes neither had leadership qualities nor commitment towards the programme.

### **3.6.5 Special Leases Scheme**

The other land allocation programme which ended in failure was the Special Leases Scheme initiated in 1965. Under this scheme, lands in the Dry Zone were allocated to private companies in blocks of 80 - 400 ha for the production of subsidiary food crops and the promotion of animal husbandry on a 25 year lease. The companies were given generous concessions such as tax holidays, free permits to import machinery, land vehicles etc. in order to encourage their investment. Approximately 2,500 ha were leased out under this programme among several companies. However, the programme was unable to make any progress either in the production of subsidiary food crops or the development of animal husbandry. On the other hand, there were allegations of the removal of valuable timber without any subsequent land development by the lessees. The programme was later abandoned with the change of Government in 1970 (Amarasinghe 1976 : 625, Ponnambalam 1980 : 82)

### 3.7 New Settlement Schemes

In the 1970s the policy of land settlement changed in the direction of establishing new settlement schemes that were low cost, self management and cooperative ownership. These schemes came into being with the realisation of poor returns of the old settlement schemes in comparison to the cost of investment.

In contrast to the Youth Schemes, Cooperative Settlements inaugurated in 1970 were aimed at experimenting the principles of collective farms and self management. Similar principles were followed in the establishment of District Development Council Projects under cooperative management in 1971 (Amarasinghe 1976 : 626).

Cooperative principles were experimented with in the Land Reform Settlements established after the enactment of the Land Reform Law of 1972 in order to accommodate the Marxist principles followed by the ruling coalition. The Law itself brought about considerable changes in land policy as well as in settlement policy. The legislation was aimed at transforming the land ownership pattern of the island through the nationalisation of the most productive, privately owned land. For the first time, this law imposed a ceiling on the extent of plantation and paddy land that could be owned by individuals or companies. Land exceeding a 50 acre ceiling (25 acres in respect to paddy land) was vested with the state and over 226,629 ha of land came under state control without any effective resistance from the owners. Three years later with the enactment of the Land Reform (Amendment) Law No. 39 another 168,758 ha of plantation land owned by the Sterling and Rupee companies was brought under state ownership. The government move to acquire privately held land under the Land Reform Law was instigated by the unemployed youth led insurrection in 1971 (Sanderatne 1974; Government of Sri Lanka 1990 : 180). New land settlements initiated on acquired land had the priority of creating more jobs among unemployed youth, together with

increasing agricultural production at low cost. The newly created Land Reform Commission entered the field of state sponsored settlements, allocating land to individuals, cooperatives and state agricultural cooperations. In order to manage the large extent of land acquired, an extensive institutional framework was established. These institutions included the Sri Lanka Estate Plantation Cooperation (SLSPC), the Janatha Estate Development Board (JEDB) and their regional networks, the USAWASAMA (Upcountry Cooperative Estate Development Board), electoral level cooperatives and the JANAWASA. The management of large scale estates were placed under the separate management of the SLSPC, the JEDB and the USAWASAMA. In addition, cooperative settlements popularly known as "Janawasa" were established. By 1976 there were 200 such projects covering about 19,500 ha. About 64,200 ha (28.1 percent of the vested land) of land were given to the constituency level cooperative societies. The extent of land allocated to individual villagers amounted to only 7,900 ha (3.5 percent of the total land acquired). In cooperative settlements "cooperation" was found to be only symbolic and the youth had virtually become day labourers hardly having any commitment to the advancement of their cooperatives. Some of the youth found alternative employment and dropped out from the schemes and the poor allowances paid to each settler was also a cause of discontent (Ellman and Ratnaweera 1974, Wanigaratne 1984 : 54). With the change of government in 1977, the management of the settlements was brought under the control of two established plantation management agencies.

The general criticism levelled against the whole exercise of land reform was that it was able to take over only a small fraction of the privately held land and most of them were mainly unproductive and run down plantations. The land distributed among the villagers was small in size, poor in quality and did not satisfy the requirements of most families (Moore 1985 : 65-84). The objectives of solving the

problem of landlessness, unemployment and increasing productivity was never achieved. Instead, the decrease in overall productivity of land was substantial. The lowest tea output in plantations was recorded soon after the acquisition of plantations in 1976. Redistribution of land among the landless or near-landless peasantry or those who were in real need of land was never achieved. Less than 10 percent of the nationalised land went to landless people (Government of Sri Lanka 1990 : 18). The creation of employment through acquired land was also not encouraging as there had been a depressing effect on employment due to the loss of production.

### **3.8 Mahaweli Settlement and New Policies**

The Mahaweli Development Project was the biggest undertaking of irrigation development in the country. The project was implemented with the diversion of the Mahaweli River at Polgolla in 1975. This diversion augmented the existing irrigable areas in the Dry Zone. The project implementation was accelerated from an originally planned period of 30 years to 6 years in 1977 with the change of government. The project was treated as a lead project.

The Mahaweli Development project at completion would generate 550 mw of hydro power and irrigate 360,000 ha of land of which 260,000 ha is newly opened land. The estimated cost of the project at current prices was US\$ 2 billion (Abeyasinghe 1990). The project also would settle 225,000 farm families. At the end of 1992, the number of farm families settled under the Mahaweli Development Programme was 84,394 (Central Bank of Sri Lanka 1992 : 77).

The planners of the Mahaweli settlement scheme were well aware of both the failures and successes of the old settlement schemes, so that experience gained from them was able to put into use in a more scientific manner. A number of changes were made with regard to the selection of settlers. The Mahaweli

Development Board (MDB) developed a point system (partly influenced by the experience of the Malaysian FELDA schemes) to decide the suitability of applicants for Mahaweli land. The highest points were given to married applicants in the age group 26-36 years with 3-4 children. Previous land ownership was also considered, as was experience in paddy or highland cultivation or animal husbandry. The leadership qualities of the applicants were given extra points by way of ascertaining their membership and active participation in various rural institutions (UNDP/FAO 1969).

However, the method of selection of settlers for Mahaweli settlements was not entirely free from criticism. The different origins of settlers created problems in the first settlements undertaken in the Mahaweli "H" area. The existing Purana (old) village system was completely absorbed into the Mahaweli settlements in order to restructure the existing land tenure system. A uniform land allotment size was given to each household living in the area as an egalitarian measure (Wickramasekara 1985: 99). This dislocation led to the creation of two groups. Firstly, settlers recruited within the area such as those who were resettled and allowed to retain their original houses and those who were removed and resettled in new homesteads within the project area. Secondly, there were voluntary settlers selected from the Wet and Dry Zone locations on the basis of broad eligibility criteria. The people brought from outside also included evacuees from the upstream reservoir development areas and down stream canal construction areas (Bulankulama 1986). The heterogeneous character of settlers in old settlement schemes has often been blamed for the lack of social cohesion, absence of effective leadership and strong individualistic attitudes among settlers (Farmer 1957; Tambaiah 1958; Amunugama 1965; MDB/SOGREAH 1972). The problem however, was repeated in the Mahaweli settlements due to the collection of different categories of peasants despite the fact that the Mahaweli model was

designed to avoid such problems (Silva nd; Wickramasekara 1985 : 114-115). Studies found that conflicts emerged between the natives and outsiders in the Mahaweli "H" area (Thilakasiri 1981).

The poor quality of the settlers brought in from the outside due to the increased politicisation of the selection process has also been noted. The sophisticated point system appears to have been disregarded in accommodating groups with vested interests. Dunham (1982 : 49) was critical of the method of settler selection and reported that:

"The MP's (Member of Parliament) voice was frequently influential in the selection of settlers, and it was not uncommon for land to be given to party members from his (or her) constituency (or occasionally to opponents just to be rid of them), to employees of the settlement agency or some other office or some other department, to relatives, to other supporters or even to friends. People with some influence (or the people with some backing) also had a better chance of being located at the head of a turnout or on better land".

Scudder and Vimaladharma (1989 : 15) also found that the quality of Mahaweli settlers had been deteriorating over the years in regard to their agricultural experience and their suitability for pioneering the problem prone Mahaweli Zone. They also found that the settlers selected on the basis of electorates were in greater difficulty than other types.

The layout of the Mahaweli settlement also radically changed as the lack of social cohesion in the old settlement schemes was thought to have originated from the development of ribbon-like settlements along the banks of canals and beside roads (Harris 1984 : 328). The Mahaweli settlements were established in a cluster pattern. This settlement pattern was also seen to provide easier access to basic services and amenities (Karunathilake 1988 : 137). The smallest settlement unit in the Mahaweli area was the hamlet with 100 to 125 families, and four to five such hamlets formed a cluster village where basic services for the population were provided. Two or four such village clusters constituted a township which catered to

a population of 3,000 farm families and had a range of social infrastructure facilities.

The cluster settlements were expected to foster community participation and a sense of shared responsibility among settlers. The selection and settlement of homogeneous groups in close proximity was expected to result in a more integrated community (Bulankulama 1984 : 338). However, studies have shown that people dislike the idea of cluster settlement as Harris (1984 : 330) reports:

"..because they feared that such settlement would give rise to conflicts because of cattle straying or children fighting, and because of the jealousies which would arise. One women argued that in a clustered hamlet people would be more jealous of those who were a little richer than the majority, with the result that these richer people would tend to cut themselves off from others, and would not, for example, lend food or money to their neighbours".

Therefore, it has been questioned that whether proximity placement alone was sufficient to generate social cohesion among settlers in cluster settlements (Bulankulama 1984 : 338).

The most important change that was introduced in the Mahaweli settlement scheme was the fixing of allotment size at 1 ha (2.5 acres) of lowland and 0.2 ha (half an acre) of homestead. This reduction of land unit size was an attempt to settle more families and maximize agricultural production with available family labour (Abeygunawardena 1979 : 97-98). However, there are counter arguments toward the allocation of smaller units. One of them was the lack of empirical evidence available to support the belief that small holdings are more intensively cultivated in the Dry Zone than are larger holdings (Wanigaratne nd : 13; Herath 1983 : 152). The problem with a fixed acreage is that it does not pay attention to soil condition, differences in agro-ecological zonation, family size, rising living standards and expectations, differential ability among farmers and the needs of the second generation (Scudder 1979 : 21-22). The small holdings only make sense when political and equity considerations are taken into account. With the available

restrictions on land tenure, the problem of landlessness could be eased only among the first generation of settlers, and the second generation is likely to experience landlessness earlier than in older settlement schemes where the unit of land allotment was much larger than in the Mahaweli scheme.

The physical layout of the irrigation delivery system was also changed in the Mahaweli. In the old schemes, provision of irrigation and drainage facilities was based on the principle of gravity irrigation and the schemes were primarily designed for the cultivation of paddy. The continuous flow of irrigation water during the agricultural season resulted in a tremendous loss of water due to seepage and percolation (FAO/IBRD 1968). Therefore, the distribution of the irrigation delivery system in Mahaweli was designed for rotational issues which would serve new cropping patterns leading to the optimisation of the use of irrigation water (Abeygunawardena 1979 : 99). The intensification of rice production and crop diversification for import substitution were major objectives of the cropping pattern promoted on the Mahaweli land. This was a major departure from the economy of many old settlement schemes.

Experimentation and change is still continuing in the Mahaweli settlement programme. The settlements first established in the Mahaweli "H" area have been in operation for nearly 15 years. Field studies conducted in this area have highlighted that the problems encountered by settlers are not entirely different from those found in the older schemes (Thilakasiri 1981; Siriwardena 1981; Krimmel and Massler 1982; Wickramasekara 1985; Scudder and Vimaladharma 1989). Although these studies have concentrated on small village communities, the findings are similar in nature. They include:

a) Diverse tenurial arrangement as opposed to the uniform pattern prescribed in the LDO (Land Development Ordinance of 1935) such as increased incidence of share

cropping, leasing, and mortgage arrangement and even disposition of land to rich peasants, traders and Government servants.

b) Marginalisation of a large section of the settler population through indebtedness and rising costs of cultivation.

c) Consolidation of their position by a small group of people mainly through money lending and trading activities.

d) Emerging second generation problems in relation to land and employment.

### **3.9 Second Generation in Planning of Land Settlement Schemes**

The review of the evolution of settlement policy provides ample evidence of the lack of attention paid to the second generation in the planning of old settlement schemes. The planners were almost totally preoccupied with the immediate problems of the first generation. Farmer (1957) argued that the physical aspects of land development were given priority in the planning of settlement schemes leaving aside more important socio-demographic factors. The immediate objectives of the settlement programme were to ease the growing population pressure on land in the Wet Zone region and to increase food production, so the major emphasis was naturally placed on relieving the problems faced by the first generation rather than taking any action relating to future generations of settlers. The plot of land given to the settlers was expected to solve the problem of landlessness, unemployment and food scarcity simultaneously (Government of Ceylon 1958). There was no clear cut policy on providing land or absorbing the labour of future generations into alternative employment.

As the size of land allocated to original settlers was relatively large in the older settlements, it appears to have been assumed that the second generation could be absorbed on the land provided and to some extent this worked. However, the subsequent policy was to reduce the allotment size in order to accommodate more people who were coming from congested areas of the country and had a poor socio-

economic background. In these cases there was no solution to the problems of future generations who would face the problem of landlessness at an early stage.

The lack of attention paid to the second generation is evident in the tenurial restrictions placed on settlement land. The Land Development Ordinance of 1935 stipulated that a settler's holding cannot be subdivided among his heirs contrary to the norms of customary land tenure practice which usually provides equal shares among the male members of the family (Ellman et al 1976 : 5). The result was that all except one member of the second generation were rendered landless in settlement schemes (Bulankulama 1984 : 348). The land settlement projects designed to alleviate landlessness among the first generation therefore actually aggravated the problem among the members of the second generation.

The regularisation of encroachments on state land certainly eased the land problems faced by second generation members temporarily, as a large majority of the encroachers on state land in the Dry Zone districts were second generation members who were not successors to their parent's LDO allotment (Government of Sri Lanka 1990 : 229, 240). According to the block to block Survey of Encroachments in 1979, six percent of the total area of the island had been encroached upon by over 600,000 people. Fifteen percent of the encroached land was reserved for roads or similar purposes (MLLD 1983). The encroachments on reservation lands within and outside settlement projects took place at a very early stage of settlement in anticipation of future scarcities and provided a means of existence for subsequent generations (Wanigaratne 1987 : 36). This kind of action was necessitated by the absence of any positive plan to provide a decent living for future generations in settlement schemes. Recent government policy has been to regularise all the encroachments which occurred prior to the commencement date of the Survey of Encroachment (31st of March, 1979). However, the regularisation has been restricted to land other than that on reservations or that needed for other

public purposes (MLLD 1987 : 54-55). The eligibility of encroachers for regularisation of their land was decided upon based on certain criteria. The encroacher has to be otherwise landless and be cultivating or have developed the land. The extent of land to be regularised per encroacher was 2 acres in the case of highland and 1 acre in the case of paddy land. The total extent of encroached land regularised between 1979 and 1987 amounted to 224,081 ha and 31 percent of the encroached land was found to be needed for public purposes and hence not available to be regularised (MLLD 1987 : 66).

Lack of employment opportunities has been identified as the most dominant causal factor for encroachment upon state land (Government of Sri Lanka 1990 : 228). There was little or no planning emphasis given to the creation of non-farm employment in the old settlement schemes. Settlement planning was concerned mainly with the setting up of agricultural settlements rather than the generation of opportunities not related to agriculture. The non-farm employment found in settlement schemes is usually confined to employment in government services or local consumption oriented services, and activities related to production linkages are largely absent (Bandaragoda 1988 : 5). Wimaladharama (1982) who studied patterns of non-farm employment in four major settlement schemes (Minipe, Udawalawe, Rajangana and Minneriya) found that the natural growth of non-farm activities without direct state intervention has taken place only in the Minneriya Settlement scheme. The provision of alternative employment opportunities during the slack period of the agricultural season has become a necessity for both the first and second generations due to the low level of crop diversification in many settlement schemes. The length of unemployment is also related to the water supply situation in individual schemes with settlers remaining unemployed for the greater part of the year in settlement schemes with a poor water supply situation

(ARTI 1991). There are no plans to provide an alternative livelihood for such settlers.

The provision of off-farm employment opportunities within the Mahaweli settlement area received some attention from the inception of settlement planning. For the first time in settlement administration, a Business Development Unit was established under the Mahaweli Management Organisation. The function of this unit was to identify opportunities, provide the necessary knowledge and skills and the overall promotion of non-farm activities. The performance of this unit however has not reached expectations (Bandaragoda 1988). The Employment Investment and Entrepreneurial Development Division (EIED) was later created within the Mahaweli Authority to replace the Business Development Unit. The EIED was aimed at attracting urban investors to start industrial activities within the Mahaweli Settlement area for the first time. Unlike the older settlement schemes, infrastructure developed in the Mahaweli area was ready to accept such investments. The performance of this division in generating non-farm employment opportunities for present and future generations is yet to be evaluated.

### **3.10 Conclusion**

Examination of the evolution of the land settlement policies shows that the objectives have changed over time in order to adapt to the changing economic and social environment. After the completion of the Mahaweli irrigation and settlement project, there will be no economically promising sources of irrigation left for future development (Government of Sri Lanka 1990). Therefore, it is critical that the existing sources be more intensively used. For the same reason the National Agricultural, Food and Nutritional Strategy formulated in 1984 proposed a major shift in construction in the new settlement phase toward rehabilitation of existing major irrigation and settlement schemes (Ministry of Finance and Planning 1984).

The current government policy for future directions in major irrigation and settlement works are based on the rehabilitation of deteriorated irrigation infrastructure, sustainable management of physical infrastructure and the sustainability of production and economic environment (Weerasinghe 1990 : 127). The rehabilitation of deteriorated irrigation infrastructure, roads etc. has been taking place since 1975. The Tank Modernisation Project was initiated to improve the infrastructure of 5 major tanks in the Dry Zone in 1975. The Gal Oya left bank, one of the major irrigation and settlement projects was rehabilitated with the government and USAID (United State Agency for International Development) funding in 1979. Other major irrigation and settlement rehabilitation programmes undertaken in recent years include: the Major Irrigation Rehabilitation Project, the Irrigation System Management Project, Minipe - Nagadeepa Rehabilitation Project, Village Irrigation Rehabilitation Project and National Irrigation Rehabilitation Project. The current policy has given major emphasis not only to system rehabilitation but also to improved operation and maintainence, better water management practices and encouragement of participatory management (Weerasinghe 1990 : 128). The programme for the Integrated Management of Major Irrigation Schemes (INMAS) was specifically launched in 1984 with the objective of enhancing agricultural production and productivity in major irrigation schemes through the improvement of irrigation management by way of beneficiaries' participation and involvement in management (Wimaladharma 1986). The programme is currently being implemented in 35 major irrigation schemes with mixed results (ARTI 1991).

The diversification of agricultural activities in the major settlement scheme has also become a high priority in recent years due to the general belief that the paddy yield in some high potential areas has reached a plateau and further increases of yield will be difficult (CBS 1987). A successful crop diversification programme is already underway in the newly developed Mahaweli areas (Abeysinghe 1990 : 34).

Modernization of the water delivery system which was originally designed for mono crop (rice) cultivation in the old irrigation schemes is under scrutiny for future expansion of crop diversification as the sustainability of major irrigation schemes depends upon crop diversification in the absence of any industrial development. Members of the second generation who are taking over the management of settlement land from their parents have to play a crucial role in the future realisation of such objectives of land settlement schemes. The next chapter reviews the existing literature on the general problems of land settlement schemes in developing countries

## CHAPTER FOUR

### THE PROBLEMS OF LAND SETTLEMENT SCHEMES IN DEVELOPING COUNTRIES: A REVIEW

#### 4.1 Introduction

This chapter reviews the performance of land settlement schemes in developing countries in order to better understand the situation in Sri Lanka. The types of problems associated with settlement schemes vary depending on the stage of growth which individual schemes have reached (Scudder 1985). Although, second generation issues are expected to be most significant in the later stages of settlement development, the roots of the problems are functionally related to the initial stages. Therefore it is essential that we review the problems experienced by settlers at all stages of settlement development in order to understand their possible relationship with second generation problems to be encountered at a later stage.

This chapter is divided into three major parts. Firstly, the conditions required for any settlement scheme to be economically and socially viable are discussed using a four stage model put forward by Scudder (1985). The literature on the economic performance of settlement schemes will be reviewed in the second part of the chapter in order to understand why schemes have failed to perform economically leading to hardship for the first generation settlers with the problems escalating when the second generation takes up the responsibilities. The final part of the chapter reviews the factors responsible for the success or failure of settlement schemes based on the framework developed by Lewis (1954).

#### **4.2 Scudder's Four Stage Model of the Settlement Process and the Second Generation.**

Scudder (1981 : 97) analyses land settlement issues on the basis of four successive stages of settlement development which were briefly outlined previously in Chapter One. He argues that settlement should pass through these four stages to become economically and socially viable.

The first stage involves the planning and design of the scheme, initial infrastructure development and the recruitment of settlers. Although the settler community are not heavily involved in activities at this stage greater part of the activities in the process, the decisions taken determine the problems likely to occur in later stages. Ideally, infrastructure development should be planned and implemented according to different needs of the settlers. Failure to do so will ultimately result in problems in later stages.

The second stage involves the actual transfer of settlers into the new habitat. The problems confronted by settlers at this stage are largely related to the strain and uncertainty associated with the new environment. At this stage settlers are subjected to physiological, psychological and socio-cultural stress (Scudder and Colson 1982 : 268) during which people take number of adaptive measures. They will be risk averse and their main aim is to satisfy the subsistence requirements of their families. Consequently few technical, organisational and socio political innovations are adopted at this stage. Scudder (1985 : 145) has also shown that it is not unusual to see large numbers of settlers drop out during this transition stage as some cannot cope up with the initial stress. The most often mentioned causes of desertion in case studies are inhospitable environment, illness and indebtedness (Farmer 1957 : 132; Bose 1983 : 168). Desertion is a common problem at the initial stage in many settlement schemes across the developing world, for example in Nepal (Kansakar 1983 : 244), India (Bose 1983 : 168; 1984 : 258), Somalia (Ragsdale and Ali 1988: 224), Sri Lanka (Farmer 1957 : 132; Rajendra 1976 : 80),

Ethiopia (Chole and Mulat 1988 : 181), Indonesia (Laquian 1982 : 43; Oberai 1986 : 151) and Brazil (Collins 1986 : 3).

Dependency is another undesirable outcome likely to occur during the transition stage. The amount of assistance given to settlers in this difficult period may result in them developing a sense of dependency towards the settlement agency. Oberai (1988 : 35-36) has shown that paternalistic policies adopted in many settlement schemes in Asia and Africa not only have escalated the cost of settlement, but have also undermined the settlers' commitment to self reliance and economic performance. The duration of the transition stage may last less than a year for some settlers, but for the majority it would last for at least two years or more often, five to ten years (Scudder 1985 : 133).

Substantial economic and social development is expected to occur at the third stage of the settlement process. This stage is characterised by a shift from a conservative, risk averse stance to a more dynamic risk taking stance (Scudder 1985 : 135). This usually occurs when the settlers gain economic self sufficiency and as they begin to feel more at home in their new habitat. People respond to opportunities at the new place at this stage. They embark upon a wide range of investment strategies in order to achieve higher levels of productivity by diversifying their activities and investment. As their income rises settlers begin to purchase consumption and production goods, as well as related services and this in turn generates more economic opportunities.

The final stage is the handing over or incorporation stage. This may be taken to signify that the community is successful. It is achieved when the second generation has grown up in the new area and has assumed command of the activities of the settlement.

However, Scudder (1985 : 148) shows that all settlement projects do not pass through all stages or in the order outlined above as number of internal and exogenous factors may delay the onset of stage three or prevent it entirely. If the third stage does not occur, not only do settlements fail to become socially and economically viable but also very often it replicates the situation in the settler's place of origin such as low production, landlessness, unemployment, inadequate economic opportunities or concentration of land among a handful of rural elite (Scudder 1981 : 100). Under some circumstances, the settler's living conditions may be better than at their place of origin in the initial stages, but as time goes by they tend to deteriorate due to the subdivision of land through transfers to the second generation, land degradation and land concentration among a relatively small group of rich land owners. This has been a general characteristic of the majority of government sponsored settlement schemes around the tropics and sub-tropics (Oberai 1988; Scudder 1981 : 100; Paiva and Bahrin 1984).

Another phenomenon emphasised by Scudder is the progression into stage four without passing through the third stage of economic development. He has shown that many government sponsored settlements never pass through the third stage (Scudder 1981 : 102). In such case, settlements do not meet criteria for success. In some schemes, although handing over and incorporation may have occurred, low income and poverty among settlers persists and even worsens if the settlers remain within the settlement scheme. Opportunities to increase production, raise living standards and generate farm and non-farm income are difficult to realise under such circumstances (Scudder 1981 : 100).

However there also can be a reversal of stages three and four where economic and social development do not occur until after the second generation settlers begin to take over. This can occur where a project is very isolated or through the interference of external factors such as wars (Scudder 1981 : 104).

Second generation problems surface when settlement projects do not pass through all of the four stages identified by Scudder or the order of progression is disturbed. The last two stages of the settlement process often overlap due to the complexities associated with the process.

The model put forward by Scudder was found to be clearer in explaining the problems associated with the planning and transition stages of settlement schemes. However, it fails to explain the last two stages adequately. Scudder himself admits that the last two stages are the least known (Scudder 1981). Therefore, the Scudder model is considered by some as more useful in explaining the settlement process in the planning and transition phase rather than subsequent stages, particularly when communities have entered the stage of potential development (De Wet 1988 : 182).

The following section attempts to review the extent to which the settlement schemes around the tropical world have been able to achieve high economic development. As suggested by the Scudder model, the second generation are no longer problems where settlement schemes have achieved high levels of economic growth. The locations of countries reviewed in this chapter and the relevant sources are shown in Figure 4.1.

### **4.3 Agricultural Output and Crop Productivity**

In the economic development stage, settlers are expected to achieve a level of agricultural output over and above their subsistence needs, as well as growth in agricultural productivity. However, the available evidence on agricultural output and crop productivity in settlement schemes across developing countries reveals that the majority of settlement schemes have poor records of achievement in this respect. For example, Kansakar (1979 : 118; 1983 : 243; 1984 : 294) has shown that in Nepal, crop output is lower in new settlement areas than in existing long established cultivated areas due to the lack of irrigation facilities in new settlement

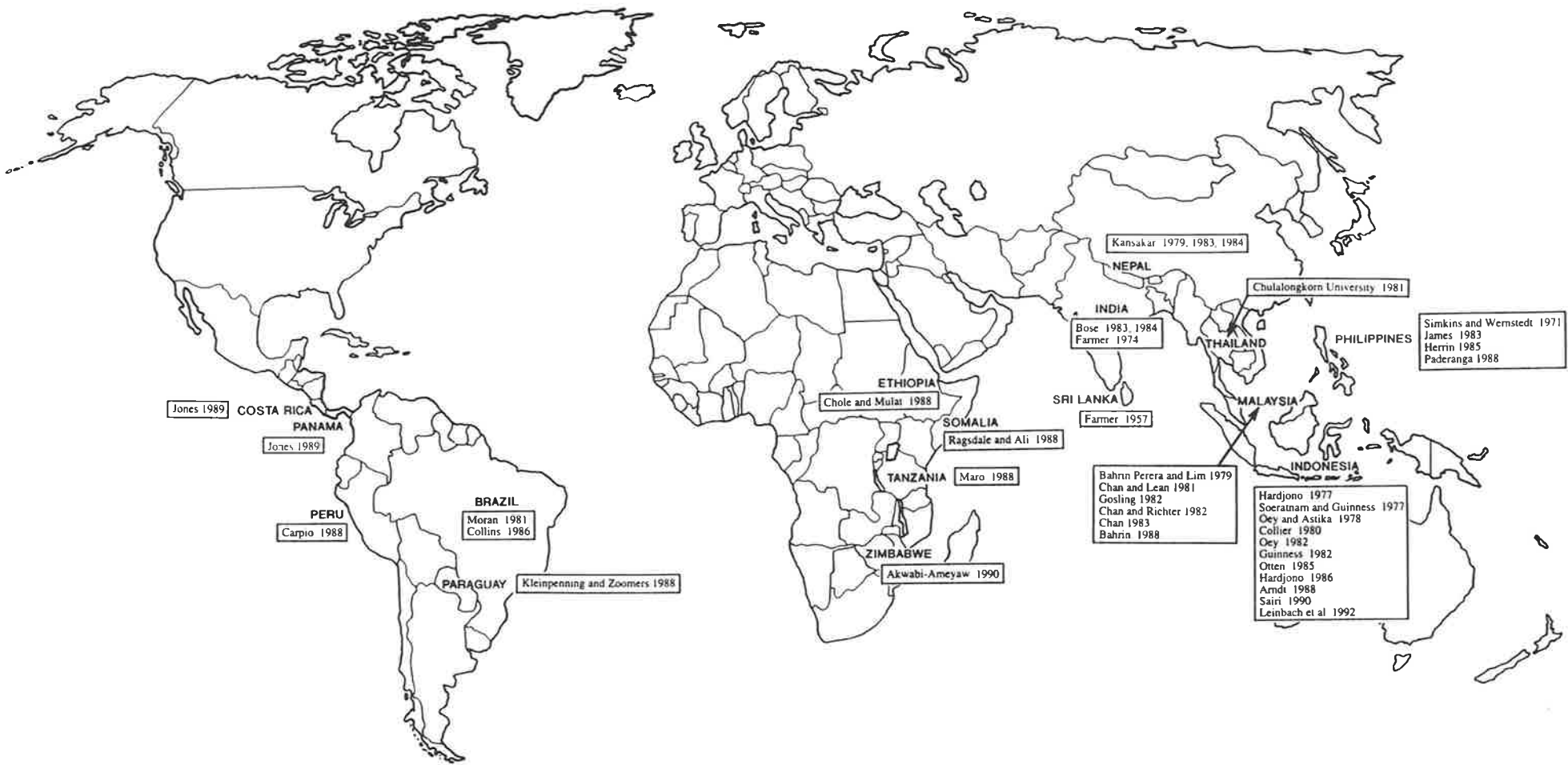


Figure 4.1 The Location of Countries Reviewed.

schemes since they are located on high ground. The land allotted to settlers varies in quality, consequently resulting in greater variations in crop outputs. Low farm incomes in those schemes have resulted in not only poor settler investment but also low productivity.

Levels of agricultural production and productivity have not increased in Tanzania following the villagisation (land settlement) programme. In fact, there are some indications that agricultural productivity and output of export crops have actually declined. The share of agricultural production in GDP declined over the period 1965 - 1981. This decline has been attributed to the low level of investment in agriculture resulting in poor management practices. Poor extension coverage and unsatisfactory marketing arrangements have also had unfavourable effects on productivity (Maro 1988 : 250).

The evaluation of the individually family managed settlements of Mufurudzi in Zimbabwe is reported to be on the path of success in achieving development objectives of the settlement programme (Akwabi-Ameyaw 1990 : 325). The productivity of maize and cotton crops increased substantially within a short period of time. For example, taking 1982-83 as a base year, maize productivity increased by 167 percent in 1983-84 and by 582 percent in 1984-85. In absolute terms, in 12 villages output has risen from 277.6 tons in 1982-83 to 1893.2 tons in 1984-85. Cotton productivity increased from a per hectare yield of 369 kg in 1982-83 to 1891 kg in 1984-85 which is equivalent to a 412 percent increase. The 1983-84 data for Mufurudzi showed that the farmers were retaining less of their total output and selling more of the grain which constitutes their staple diet due to the reliability of the crop yield (Akwabi-Ameyaw 1990 : 326).

Settlement programmes have positively contributed to crop diversification and increased food production in Southeast Asian countries like Malaysia, Thailand and

the Philippines (Chulalongkorn University 1981 : 49-52). In Malaysia, FELDA (Federal Land Development Authority) land settlement schemes are largely responsible for the development and diversification of crop agriculture. FELDA currently has 500 estates covering 800,000 ha (Far Eastern Economic Review 1992 : 99) and 65 percent are planted with oil palm. The rest of the land is devoted to cocoa and rubber estates, experimental fruit farms and cattle and livestock farms. Almost all of FELDA output is exported and in 1990, FELDA farms accounted for one fifth of the 6.1 millions tonnes of oil palm production (Far Eastern Economic Review 1992 : 99-102).

In the case of the Philippines, increases in agricultural output have been a major benefit of frontier settlement (Paderanga 1988 : 143; Herrin 1985 : 382-384). The resettlement of Digos-Padada valley in Davao province (Mindanao) has made considerable progress towards agricultural growth due to the remarkable infrastructure developed in the settlement scheme (Simkins and Wernstedt 1971: 114-120). Evidence from Palawan province in the Philippines however provides an example of an unsuccessful settlement scheme. The settlers who came from other areas have achieved lower productivity and income in this area compared to their local counterparts and the settler contribution to total food production was negligible (Chulalongkorn University 1981 : 51-61). Another case study conducted in the same area has also found that the government sponsored settlers had low crop output, low net income, less farm and non-farm assets as well as a poor degree of land development and a high level of indebtedness as compared to privately financed settlers (James 1983 : 576).

In Indonesia studies indicate varying levels of settlement contribution to the growth of agricultural output (Babcock 1986 : 170-173; World Bank 1986). As shown by Babcock (1986 : 170) transmigrants in Jambi, Riau, South Sumatra, Lampung, East Kalimantan and Central and Southeast Sulawesi are significantly contributing to the

provincial production of rice. Other important crops grown by them include corn, cassava, legumes, fruits and vegetables. A World Bank transmigration sector review revealed that among transmigrants resettled in Repelita (Five Year Development Plan) II (1974-1979), the average rice production of 1.6 tons per ha in swamp land areas was higher than in upland areas where the yield was only 0.6 tons per ha. However, among the transmigrants settled in Repelita III (1979-1984), the upland rice production per ha was higher than the average production of swamp land areas. The same pattern is evident from monthly household income data (World Bank 1986), however, yield levels vary according to environmental condition in transmigration areas. Rice yields were generally low in the swampy lands of Kalimantan as a result of weeds, rodent attacks and infertile soil (Collier 1980 : 36). Overall, the productivity in transmigration areas is reported to be generally low, except in the 10 percent of settlements that have tree crops or irrigated rice crops (Oberai 1988 : 16).

The evidence from Latin American countries on the crop income of settlers is similar. Only 40 percent of the settlers studied by Moran (1981 : 224) in the settlements of the Trans Amazon highway were able to achieve "respectable levels" of income and productivity during the first few years of settlement. Low yield levels among settlers have been mainly caused by the adoption of poor management practices and the absence of proper extension facilities. The highland Amazon areas of Peru failed to attract settlers due to the poor economic condition of the settlement (Carpio 1988).

The diverse settlement experiences in several colonisation projects in Central America have been documented by Jones (1989) giving major attention to their environmental effects. The colonisation of Panama's Darien province was reported by him as having all the elements of an ecological disaster. In terms of productivity, soil has been reported as the main limiting factor in Darien

agriculture. According to the farmers in the area, a good yield can only be expected for one or possibly two years. This situation has been accelerating the rate of converting farm land into pasture and forest to farm land. The lack of water for even drinking purposes has become a perennial problem. In addition, difficulties in transportation, inadequate storage facilities, and middlemen are major disincentives for farmers to increase their crop output (Jones 1989 : 52).

A colonisation project in Nueva Guinea in Nicaragua was reported as being disastrous due to poor yields, the high cost of production and poor rate of agricultural loan repayment in the initial years. However considerable recovery in crop output has been reported in subsequent years with the majority of farmers producing food grains for sale. Stability in farms has also been found in contrast to the abandonment of land due to weed infestations in the early years (Jones 1989 : 67-68)

Colonisation efforts in Costa Rica have been the most successful among Central American countries. Intensification of agriculture has been reported in the production of cacao, tropical spices, palm heart, ornamental plants and coffee with considerable growth in output. The colonisation areas of Guapiles and San Calos are reported to be centres of dynamism in the economy (Jones 1989 : 68).

The colonisations established by opening several highways in Paraguay were not very successful due to unfavourable conditions for agriculture in the frontier areas. Since government support was absent, given too late or low in scale, life was very hard for the pioneer settlers who were exclusively drawn from the poor, uneducated and landless. Only a small number of households have succeeded in raising their standard of living by increasing agricultural output. Lack of capital and other economic difficulties have prevented many of them from undertaking modern, productive and commercially sound agriculture. Colonisation policy has mainly

resulted in a further spatial expansion of the characteristics of rural underdevelopment in Paraguay (Kleinpenning and Zoomers 1988 : 257-265).

Productivity in many other small holder settlements in Latin America has been constrained largely by institutional factors. As reported by Wood and Schmink (1979), poor rice yields recorded in the initial years of the settlements project in the area of Maraba located along the Brazilian Trans Amazon Highway were not due to the failures of the colonists, but the result of inadequate functioning of support systems to assist production and commercialisation. Despite the rise in crop outputs in later years of this project, colonists were not able to reap the benefits of the output growth due to difficulties in transportation and marketing of their produce to institutional warehouses. The colonists have very often been forced to sell their produce to local merchants at a reduced price to settle bank loans or to secure loans for the coming season. A profitability analysis of rice production in the area further revealed that the settlers were receiving either a modest profit or heavy losses depending on the source of transportation for their produce and marketing outlets. Maintenance of a diversified farming system is also constrained in the area by the credit and marketing policies of government agencies and banks. In an attempt to promote rice cultivation in the area, credits were not given to traditional crops such as manioc despite their high value in the market (Collins 1986 : 3). The failures of the small farmer in the Brazilian Amazon have therefore been attributed to structural factors such as credit, titling of land and the marketing network that discourages sustained-yield production systems (Collins 1986 : 7).

Overall agricultural production in the majority of settlement schemes throughout the tropical world have failed to generate an adequate surplus in order to achieve high economic growth. A summary of the economic performance of different land settlement projects in selected developing countries is given in Table 4.1. As can be seen, high agricultural production has been realised only in four schemes, out of

**Table 4.1 Summary of Studies Related to Economic Performance of Government Sponsored Settlement Schemes in Selected Developing Countries**

Country/Project	Performance		Source
	Agricultural Production	Non Farm Employment	
<b>Nepal</b>			
Kanchanpur, Nawalpur	Low	Low	Kansakar (1979, 1983, 184)
<b>India</b>			
Dandakaranya	Low	Low	Bose, (1983, 1984)
<b>Malaysia</b>			
FELDA	High	Moderate	Chan and Lean (1981)
<b>Indonesia</b>			
Jambi,Riau,Central Sulawesi	Moderate	Low	Babcock (1986)
South Sumatra,Lampung			
East Kalimantan,			
Kalimantan	Low	Low	World Bank (1986), Collier (1980)
(Swamps Settlements)			
<b>Thailand</b>			
North East Project	Moderate	Low	Piampiti (1984)
<b>Philippines</b>			
Digos- Padada Valley	High	na	Paderanga (1988), Herrin (1985)
Palawan	Low	na	Simkins and Wernstedt (1971)
<b>Brazil</b>			
Trans Amazon	Moderate	Low	Moran( 1981), Collins (1986)
<b>Peru</b>			
Highland Amazon	Low	na	Carpio (1988)
<b>Panama</b>			
Darien Province	Low	Low	Jones (1989)
<b>Nicaragua</b>			
Nueva Guinea	Low	Low	Jones (1989)
<b>Costa Rica</b>			
Guapiles	High	na	Jones (1989)
San Calos			
<b>Zimbabwe</b>			
Mufurudzi	High	na	Akwabi-Amgyaw (1990)

fourteen listed in the table. None of the settlements have reported high performance in non-farm employment, except the moderate performance found in the FELDA schemes of Malaysia.

#### **4.4 Settler Income**

High income results in the accumulation of wealth among settlers so that they can make investments in a wide range of income generating activities, as well as on the education of their children (Scudder 1981). The "second generation problem" is particularly great in settlement schemes where the agricultural productivity is low and income is insufficient for the sustenance of the families of settlers. The experiences of many developing countries around the world conforms to the general pattern of poor settler income.

Kansakar (1979, 1984) has shown that in many state sponsored settlement schemes in Nepal, the income of settlers from agriculture is insufficient to provide them with a decent livelihood. In the Kanchanpur settlement scheme, settlers derive only 14 percent of their income from agriculture of which wage labour accounts for one third. Consequently, the degree of indebtedness is very high among the lowest income groups (Kansakar 1979 : 103). In most cases, the settlement projects have failed to generate successful settlers with better economic conditions. Success stories have generally been associated with the past economic conditions of the settlers, the quality of land they received or the availability of income opportunities outside agriculture (Kansakar 1979 : 280).

In contrast to the low level of income of the settlers of land settlement schemes in Nepal, the farmers who joined the FELDA schemes in Malaysia enjoyed a steady increase in their real income after a few years of settlement (Bahrin 1988). Chan and Lean's study (1981 : 256-257) of settlers in two FELDA schemes before and after settlement found that a substantial increase in average monthly household

income had occurred. The proportion of settlers who received more than M\$ 400 per month increased from 7 percent prior to settlement to 35 percent after settlement. However, there has been income differences among settlers according to the main crops grown. A greater inequality in income has been found among rubber producers than palm oil producers. The settlers in rubber schemes received generally lower income than oil palm settlers (Chan and Lean 1981 : 161). The average income of settlers of rubber schemes is still well below the average income of urban areas while the income of oil palm settlers is reported to be comparable with urban incomes. In the two FELDA schemes, more than seventy percent of the settlers owned radios, televisions and motor cycles (some even motor cars) (Chan and Lean 1981 : 179). The prosperity among settlers has encouraged them to invest more in the education of their children. Chan and Lean (1981) found as many as 61 percent of settlers had children living outside the scheme either studying or seeking work in the city.

The income of FELDA settlers is, however, functionally related to the fluctuations of the world market prices for their cash crops. In the 1990s a drop in commodity prices has made it difficult for small rubber and oil palm cultivators to make profits in FELDA schemes. The income of settlers dropped to the level of M\$ 400 - 500 from around M\$ 1200 in 1984. The subsidies given to settlers were reported to be inadequate to offset this price decline. The rising charges for communal services provided by the settlement agency have added an additional burden to the problem of falling net incomes of the settlers. It has also been reported that

"some FELDA estates are paying small holders less than M\$ 100 a month net of fees-a below-subsistence wage that falls well short of the FELDA ideal" (Far Eastern Economic Review 1992 : 98).

Such circumstances have been explained by Scudder as external forces which interfere with the settlement development and over which settlers have virtually no control (Scudder 1981 : 101)

In Indonesia too, many migrant settlers seem to have experienced some improvement in their income. However, the available information suggests that the improvement in income is extremely variable and relatively small. According to the World Bank transmigration sector review in 1986, in Repelita II, the average monthly income in a swamp land project was around Rp 77,600 while in an upland area it was estimated at around Rp 52,800. In Repelita III projects, the average income of swamp land settlers was only Rp 39,800 considerably lower than that of Rp 65,800 in upland areas. These income data suggest that there are significant disparities in income derived by settlers in upland and swamp land areas. Oey (1982 : 45-46) noted that the selling of crops before harvest at a discounted price for the middlemen had been common in settlement locations. This has depressed the prices of output resulting in low incomes for the settlers. Lack of linkages to outside markets has led to poor returns from agricultural produce in transmigration locations (Suratnam and Guinness 1977 : 94-95).

Income levels of settlers of Latin American colonisation schemes show considerable variations. Carpio (1988 : 367-371) found that farmers of the forest highland settlement of Alto Huallanga in Peru enjoy a better income and higher living standard than in their places of origin. Over sixty percent of settlers reported an improvement after their migration into the settlement. According to the same author, in the settlement of Tambopata where the infrastructure and the availability of services were poor, only 40 percent of migrant settlers had a real income below the minimum rural wage as compared with 56.3 percent in the area of origin. In contrast an evaluation of colonist income in coastal North Eastern Brazil revealed that most colonists earned less than the minimum wage. In the Satipo region of Peru, as well as in Eje Norte of Paraguay, the average colonist's expenditure was reported to have been more than their earnings (Oberai 1988 : 18). The review of literature therefore clearly demonstrates that the majority of the settlers in many

settlement schemes throughout the tropical world have failed to achieve a sufficient level of income.

#### **4.5 Off-Farm Employment Opportunities**

During the stage of economic and social development non-farm activities are expected to start on the homestead in small enterprises and later expand into other activities both on and off the settlement scheme (Scudder 1981 : 119-120). However, the available literature on land settlement schemes throughout the tropical world suggests that most settlement schemes have not been able to generate non-farm employment opportunities for both first and subsequent generations at least on the settlement schemes themselves (Oberai 1986 : 141-161, 1988 : 8-19).

Land settlements in Nepal have failed to provide non-farm employment for settlers (Kansakar 1984). Settlers of the Rapti valley development project are reported to have remained without work for a large part of the year. They were found to be unemployed during the slack period of the agricultural season and remained underemployed during the agricultural season due to the low demand for labour for the crops they cultivated (Kansakar 1983 : 244).

Large scale desertion by settlers and crime and prostitution among the youth in the Dandakaranya project of India have been attributed to the infertile and inhospitable land and lack of any form of non-farm employment opportunities in the settlement area (Bose 1983 : 170, 1984 : 258).

In Indonesia too, faced with farming difficulties, transmigrants have been forced to seek a livelihood away from transmigration areas. Guinness (1982 : 68) found that a significant proportion of transmigrants in Barambi, Tambarangan and Luwu have been employed in off-farm labour despite their work on their own farm. Lack of off-farm opportunities in nearby areas has forced them to seek employment long

distances away from the settlement where they need to stay for extended periods of time. Availability of off-farm employment even at distant places has given their families some hope of remaining in the settlement. Sairi (1990 : 114) found that non-farm employment opportunities were still very limited among the settlers he studied in two sample locations of upland and swamp land areas of South Sumatra. Some transmigrants however have found work outside agriculture in the plywood factories in surrounding areas. With the rapid population growth, the provision of employment outside agriculture in these locations is going to be a serious problem for the transmigration authorities in the future.

Another study carried out in nine individual transmigration sites in South Sumatra during 1988 on employment behaviour of transmigration families revealed that the off-farm activities were locally focused and the occurrence of off scheme activities was generally low. Women had lower participation in off-farm activities than males due to their social and family responsibilities (Leinbach et al 1992). Contrary to previous speculations, household heads in the sponsored rather than spontaneous category were more likely to seek employment away from settlement schemes. Incidence of off-farm employment in different settlement sites has been influenced by different agricultural environments and the main types of economic activity available. Settlement schemes with small-holder rubber plantations had less off-farm employment opportunities when compared to schemes with other crops. High incidence of off-farm employment occurs in tidal swamp settlement schemes where agricultural productivity is low and human settlement is more difficult due to environmental factors. Settlers in these schemes have been forced to look for off-farm employment for their survival. Poor access to land has also been cited by many individuals in some of the older schemes as a reason for seeking off-farm employment (Leinbach et al 1992 : 30-39).

Even in Malaysia various factors have restricted the non-farm employment opportunities for the original settlers as well as their second generation. Lack of industries or agro-based industries within the FELDA schemes or in nearby towns has compelled settler's dependents to leave the schemes to seek employment opportunities elsewhere. It is also unrealistic to expect better educated youth to stay in agriculture in the absence of non-farm work in the FELDA schemes. Chan (1983 : 49) has shown that better educated youth are migrating out of land schemes looking for employment in the cities.

Availability of non-farm employment opportunities is also poor in land settlement schemes of other South East Asian countries like Thailand and the Philippines. The proportion of settlers engaged in non-agricultural activities in Phra Phuttahabat and Lam Takong in Thailand and in the Palawan resettlement area in the Philippines was only around 4 percent (Chulalongkorn University 1981 : 58).

#### **4.6 Fragmentation of Land**

Subdivision of agricultural land is a phenomenon which contributes substantially to the problems of the second generation. Scudder (1981 : 100) has shown that a number of settlement schemes never reach the stage of economic development and quickly move to a situation where settlers suffer the same problems as in their places of origin, which include both land subdivision and fragmentation. If settlers diversify their economy and attain higher economic growth, the necessity for fragmentation of land is greatly reduced. Population pressure and the laws and customs of property inheritance are also partly responsible for the extent of land subdivision in land settlement schemes. According to the Islamic, Buddhist or customary law of inheritance, land is equally divided among the children upon the death of their parents causing fragmentation of land holdings to occur intergenerationally (Jones and Richter 1982 : 7). However, as a measure of

precaution, the subdivision or sale of land has been prohibited in many government sponsored land settlement schemes. In Malaysia, there are special regulations prohibiting the fragmentation of land allocated under FELDA schemes. Although, the problem of land fragmentation has been avoided in the FELDA schemes in Malaysia, the solutions for the questions of income, employment and land for the second generation appear to have been postponed in the original planning.

In Nepal, land ownership certificates were given to the settlers after ten years in company projects (Independent organisations assigned with the land allocation task). During the ten year period, land sale or subdivision was prohibited but in other (department) projects settlers were given land ownership certificates immediately after land allocation and this has facilitated the instant disposal of land to outsiders (Kansakar 1984 : 293, 299).

Fachurrozie and MacAndrews (1978 : 100) have shown that in transmigration areas of Belitang, the land holdings of second generation settlers was very small due to fragmentation. In the village of Sidomulyo which was settled in 1937 the average land size owned by first generation settlers was 1.1 ha, but this declined to 0.6 ha for the second generation and to only 0.3 ha for the third generation. The gradual increase in population coupled with a general paucity in employment opportunities outside agriculture has compelled settler's children to depend on the agricultural holding allocated to their parents. In consequence, land fragmentation has emerged with growing agrarian pressure among the settler community.

#### **4.7 Factors Responsible for Success in Settlement Schemes**

As early as the 1950s Lewis identified a number of factors which affect the success of any land settlement scheme and several of these are relevant in explaining the present day problems of the second generation in land settlement schemes. These factors include: (1) selecting the right place, (2) selection of the right settlers, (3)

physical preparation of the site before the settlers arrive, (4) settler's capital, (5) organisation of group activities, (6) acreage per settler, and (7) the conditions of tenure (Lewis 1954 : 3). The issues put forward by Lewis as essential for a successful settlement scheme have been addressed by Scudder amongst issues considered in the pre-settlement stage of his model. The neglect of factors identified by Lewis could result in the failure of settlement schemes or what Scudder termed as failure to achieve economically and socially viable communities. Such settlement schemes are characterised by little on-going development and second generation problems.

#### **4.7.1 Settlement Site**

As far as the selecting the "right" place of settlement is concerned, adequate attention should be given to the physical aspects of settlement including soil fertility, rainfall, drainage and environmental conditions of the sites. The major constraints of land settlement programmes however stem from the non-availability of fertile land. As shown by Lewis (1954 : 3);

"The trouble with most land settlement is that the best lands are already settled, so that land settlement officers are almost by definition working with areas which the people have rejected for centuries because of the difficulty of making a reasonable living there".

Hence, land selected for settlement schemes in many parts of the tropical world are found to be inferior in quality. As noted by Arndt (1988 : 55), poor site selection was a major source of failure of settlement in the 1950s and 1960s in Indonesia. The transmigration sites were generally of not good quality as they mainly consist of rainfed upland areas. These sites suffer from poor soils or inadequate water due to the fact that they mostly consist of red yellow podzolic soils which are highly succesptible to erosion and leaching. Therefore, much of the land allocated to transmigrants has been described as of marginal quality. Hardjono (1986 : 32) writes on the quality of land in different transmigration areas.

"In Central Aceh transmigrants have complained about barren soil that is full of stones while in other parts of Sumatra and even more so in East Kalimantan they have found that the soils consists of quartz sand. In many parts of Central and Southeast Sulawesi settlers have been expected to cultivate soils less than 10 cm in depth and in Irian Jaya they have been given swamp soils that cannot be used for farming".

Settlers in tidal settlement have always experienced greater difficulties such as the lack of drinking water, poor communications and inaccessibility. Hardjono (1986 : 33) further writes on the quality of tidal settlements,

"..the peat from which swamp soil are formed proved to be well over a metre in depth while in other areas where farming was possible rice yields were too low to warrant the effort of cultivation. Some projects were located so close to the sea that salt water penetrated the canal system in all seasons...."

The method of site preparation has also often resulted in the destruction of top soil in settlement areas. As described by Caulfield (1984 : 26)

"Heavy clearing equipment compacts the soil so that it loses much of its capacity for retaining water. Hard rains can then erode the land, silt up near by rivers and dams and lead to flash flooding as the waters "sheet" along the surface to the ground. The wheels of the clearing machines scrape off much of the top soil, exposing sub soils that are less capable of receiving and storing nutrients, so that fertilizers become less effective ".

Transmigration authorities increasingly find it difficult to locate suitable land sites for settlement, as much of the fertile land has been already occupied. Consequently, the local provincial governments who make the final decision on the choice of transmigration sites are left with no alternatives but to select land which is unsuitable for food crop cultivation (Hardjono 1977 : 39; Oey and Astika 1978 : 98; Oey 1982 : 41; Otten 1986 : 92-93). Since the economic livelihood of most migrant settlers depends upon agriculture, poor land quality has resulted in low incomes and poverty among transmigrants.

In Nepal, the forest land allocated to the settlers was usually that which had been rejected by the local population as unsuitable for cultivation (Kansakar 1984: 292). The Chitwan District Multi-Purpose Development Project has converted mostly uneconomic forest and fallow land into agricultural land. A number of settlement

sites were later found to be unsuitable for crop cultivation due to the lack of irrigation and inaccessibility to market centres. The area was also remote and experienced frequent banditry from the border region (Kansakar 1983 : 242).

In neighbouring India, there was continuous desertion from the Dandakaranya Project as the project site is inaccessible and remote from West Bengal. Moreover, the climate, terrain and soil were found to be unsuitable for crop cultivation (Bose 1984). In Ethiopia too, settlement sites have been selected without any proper consideration being given to the suitability of land for crop cultivation. In certain areas, settlements were located in remote, border regions disturbed with insurgency (Chole and Mulat 1988 : 181). In Somalia, the Dujuma Project had to be abandoned as a result of salinity which made it unsuitable for crop cultivation (Oberai 1988 : 29).

Lands selected for settlement schemes in many Latin American countries were also of poor quality. Sixty percent of the land area in the Bolivian Alto Beni, Chimore and Yapacani project areas were found to be unsuitable for settlement due to periodic flooding (Nelson 1973). Similar problems have also been reported in Bajo Aguan and Rio Guayape colonisation projects in Honduras and soil exhaustion and diseases in the Nueva Guinea project in Nicaragua (Jones 1989 : 60, 64). Land areas selected for many colonisation projects in Latin American countries were found to be undesirable for crop cultivation due to poor soils, slopes, inaccessibility or diseases (Jones 1989).

The FELDA has worked on the principle that the best available land should be allocated as resettlement sites (Bahrin, Perera and Lim 1979 : 50-52) and soil suitability, as well as accessibility have been given due consideration in the selection of settlement sites. The success of FELDA schemes is also partly attributed to the careful planning in the selection of settlement sites (Bahrin 1988).

The problems of sites selected for land settlement schemes in selected developing countries are summarised in Table 4.2. As can be seen, the most common problem associated with the settlement sites throughout the tropical world has been the poor quality of land. The infertile soil, erosion and leaching, poor irrigation or flooding were found to be common. The other problems were related to diseases like malaria, insecurity or poor services arising from the remoteness of settlement sites.

#### **4.7.2 Type of Settlers**

The success or failure of any land settlement scheme ultimately depends upon the quality of settlers. Therefore, their background is crucial in determining the viability of a settlement project. In fact, many settlement schemes have failed to select the right kind of settlers needed to achieve stated objectives. Most countries have laid down various criteria in order to assess the need and eligibility of prospective settlers. Some countries have even used a system of allocating points to particular characteristics of potential settlers (Bahrin 1988 : 96-97; Gosling 1982 : 68). The need and suitability criteria adopted in the selection generally include age, family size, land ownership, farming experience, income, ethnic and even religious background (Gosling 1982 : 68).

In many developing countries settlers represent the most disadvantaged and under privileged individuals in the society. In many Asian countries priority has been accorded to landless rural peasants with large families and also to those who have an agricultural background. In Nepal, settlers basically represent landless peasants, flood and landslide victims and repatriated citizens from Burma and India (Kansakar 1979 : 67). Settlers of many Indian settlement schemes were primarily represented by displaced refugees and landless peasants (Farmer 1974; Bose 1984). Landless tenants and displaced persons were given preference in the government sponsored land settlement schemes in the Philippines (Paderanga 1988 : 130). In

**Table 4.2 Problems in Sites Selected for Land Settlement Schemes in Selected Countries**

Country	Location	Problem	Source
Sri Lanka	Dry Zone Kala Oya	Malaria, Lack of water Unsuitable soil	Farmer (1957) ARTI (1984)
Indonesia	Outer Islands Sumatra Central Aceh Southeast Sulawesi	Barren soil, Inadequate water, Erosion and leaching, Peat in swamp areas, Salinity	Hardjono (1986) Arndt (1988)
Nepal	Terrai Chitwan Rapti Valley	Barren land, Lack of irrigation, Remoteness, Banditry	Kansakar (1983)
India	West Bengal Dandakarnya	Poor soil, Remoteness	Bose (1983)
Ethiopia	Southern Region	Barren land, Remote, Insecure due to insurgents	Chole and Mulat (1988)
Somalia	Dujuma	Salinity	Oberai (1988)
Bolivia	Alto Beni Chimore	Periodic flooding	Nelson (1973)
Honduras	Bajo Aguan	Erosion and flooding	Jones (1989)
Nicaragua	Nueva Gunia	Soil exhaustion, Diseases, Lack of market	Jones (1989)

Thailand, land settlement schemes were designed to alleviate poverty so that both landless rural peasants and the urban proletariat were accommodated in land settlement schemes (Piampiti 1984 : 357-360). The selection criteria often have resulted in selectivity bias toward settlers with poor educational levels and large families. Kansakar (1979 : 90-97) has shown that 85 percent of the settlers in the Kanchanpur settlement scheme in Nepal constituted landless families, followed by 12 percent of natural disaster victims and 3 percent of Nepalese returning from foreign countries. Their socio-economic status was low, and most of them were illiterate, had large families and possessed no capital. The educational attainments were poor among original settlers as well as their offspring and the literacy rate among the head of household was only 41 percent. The literacy rate among the total population was only 29 percent and the majority of them were in the age group 5-14 years. Female literacy was extremely low as compared to the male literacy. The most distressing observation on the level of education among the second generation were the settler's negative attitudes towards educating their female offspring. Out of the total number of children going to school, girls represented only 14 percent. The schooling of male members was not much better as only 23 percent of the households sent their children to school. The poor economic status of settlers and the importance of child labour in the household economy appeared to have kept them away from school. These children are more likely to be engaged in agriculture for their future livelihood due to the fact that they possess hardly any other skills.

In Indonesia, transmigrants represent a diverse group due to changes adopted in the selection criteria overtime (Arndt 1988). During the colonial period transmigrants were selected using ten criteria known as the "ten commandments of colonisation". The transmigrants were expected to be real peasants, young, married, physically strong, with a small number of young children. Former plantation workers were

excluded from being potential settlers (Pelzer 1948 : 29-30; Oey and Astika 1978 : 59-68; Oey 1982 : 34-36). These criteria were modified after gaining independence. The additional criteria added related to the inclusion of people with different skills, thereby allowing people other than farmers to be resettled in transmigrant locations (Arndt 1988 : 52). However, the selection criteria were not strictly adhered to in the selection of transmigrants allowing many unsuitable types to be included as transmigrants (Guinness 1982 : 64; Arndt 1988 : 52). Lack of knowledge of agriculture among transmigrants has been found to be a major cause of failure for many (Arndt 1988).

As far as the age and educational levels of transmigrants are concerned, the age structure of government sponsored transmigrants tended to be older than the ordinary migrants due to the minimum and maximum age limit set for household heads in the selection which was 18 and 45 years (Oey and Astika 1978 : 61). Unlike FELDA, transmigration authorities did not stress educational qualifications in the selection of transmigrants. Consequently, the educational levels of the majority of the transmigrants were reported to be low either with no schooling or not having at least elementary schooling. Soeratnam et al (1977 : 12) have shown that in a survey of 979 transmigrant heads of households in Barambi, Tambarangan and Luwu, 41 percent of the transmigrants had no schooling. Except for 18 percent of those who had finished 6 or more years of schooling, all the others had less than 5 years of schooling. In the Way Abung resettlement area in Lampung 95 percent of the transmigrants had education up to primary level or less (Chulalongkorn University 1981 : 57). Sairi (1990 : 69-70) has shown that around 37 percent of adult transmigrants in his sample in South Sumatra had no schooling or had not completed elementary schooling. In addition to low educational attainments among transmigrants, high rates of school dropout among the children of transmigrants has been found. The children are kept away from school due to the financial costs associated with educating them and the lack of proper educational institutions at

settlement sites (Sairi 1990 : 91). Their participation in agricultural activities has also contributed to the poor school attendance.

The types of settlers selected for FELDA schemes are somewhat different from other parts of the developing world as FELDA has placed greater emphasis on selecting good farmers for their schemes from the inception of the programme. In order to achieve this objective, the settler selection criteria have changed greatly over the past 3-4 decades. "Some agricultural background" and "initiative" were the criteria adopted in the selection of settlers for their first project (Gosling 1982 : 68). As the initiative criteria was often abused to despatch trouble makers, the criteria were changed into landlessness and suitability in 1961. This was later modified into a rating system assigning points to different measures of need and suitability of settlers. The need criteria included the size of the family and land ownership, assigning the highest points to landless people with large families. Suitability was decided on the basis of age, agricultural experience, education and skills (Bahrin, Perera and Lim 1979 : 113-134). FELDA selection criteria were later shifted from need to productivity favouring younger people with skills. However, the rural landless poor are still recruited for FELDA schemes with a view to redistributing economic means. Further, greater preference has been given to the Malay population who make up 96 percent in all FELDA schemes (Chan and Richter 1982 : 83). The mix of need and suitability criteria has strongly influenced the types of settlers found in FELDA schemes. Those selected in the 1960s were older (with the mean age of 35-36) with large families and were less educated with virtually no skills. However, more recent settlers represent young families with skills and better educational background (Gosling 1982). The FELDA settlers were overwhelmingly rural in origin and were largely landless. Landlessness and the desire to obtain land ownership have been reported as the major motivations for moving to FELDA schemes (Chan and Lean 1981 : 208-209). The educational level of FELDA settlers is another important variable of interest. The FELDA had

awarded points in its selection system for educational qualification since 1960, but the intake into earlier schemes did not stress educational qualification as an important criteria, therefore nearly 80 percent of the settlers in schemes opened up before 1960 consist of settlers with only primary levels of schooling (Chan and Lean 1981 : 120-121). Older settlers are less educated than the younger ones.

The major characteristics of settlers chosen for settlement schemes in selected developing countries are given in the summary Table 4.3. As shown there, the settlers have predominantly been recruited from the most disadvantaged groups in the society in almost all countries reviewed. Except for very small numbers of settlers drawn for certain settlement schemes either from middle class educated groups or from ex-servicemen in order to satisfy entirely different objectives (mostly political), the general pattern tended to be the drawing of settlers exclusively from the rural poor.

**Table 4.3 Summary of Studies Related to Type of Settlers Selected for Government Sponsored Settlement Schemes in Selected Developing Countries**

Country	Type of Settlers	Source
Nepal	Landless peasants, Flood and landslide victims, Repatriate citizens, Ex-servicemen	Kansakar (1979)
India	Displaced refugees, Landless	Bose 1984, Farmer 1974
Philippines	Landless tenants, Displaced persons	Paderanga (1988)
Thailand	Landless rural peasants, Urban proletariat	Bahrin (1984)
Indonesia	Landless peasants and labourers, Unemployed and homeless	Hardjono (1977) Arndt (1988) Oey (1982)
Malaysia	Landless rural peasants, Ex-servicemen	Gosling (1982) Bahrin (1988)

#### 4.7.3 Size of Land Allotments

The size of land allotments given to original settlers in individual settlement schemes is closely associated with the extent of land hunger likely to develop

among the second generation in later stages. The size of land plot given to settlers varies considerably in land settlement schemes throughout the tropical world. The size of land holding has been determined by the availability of land for development and the objectives of the settlement policies. In the allocation of land for settlers, the second generation appears to have not been thought of in the settlement planning as the immediate problem faced by the pioneer settlers was the focus of concern for planners. The size of land has very often been determined on the basis of the following two popular principles (Oberai 1988; Bahrin 1984 : 232):

- a) the farm must be large enough to provide a living higher than what the settlers had in their places of origin
- b) the farm should also not be larger than what an average farm family can cultivate

In general, relatively smaller land holdings have been given to settlers in South Asian, South East Asian and African countries. In contrast, settlers in Latin American colonisation schemes have benefited from receiving larger holdings for development.

Transmigrants in Indonesia were usually given two hectares of land, out of which 0.25 ha of land was reserved for their house and vegetable garden and 1.75 ha for wet rice cultivation. Since Repelita II, 3-5 ha of non-irrigated land was given to settlers in upland settlement schemes (Oey 1982). Bahrin (1984 : 232) has shown that the size of land parcels allocated to Indonesian transmigrants has remained virtually unchanged for nearly 50 years.

In FELDA schemes, settlers were given a 2.4 ha land holding for rubber production, a 0.8 ha for fruit growing and 0.1 ha for their homestead during the early 1960s. The size of holding was later increased to 3.2 ha and finally to 4 ha due to a slump in rubber prices which led to a fall in settler income. However, the land allotments for their homestead and for growing fruit remained the same. For

palm oil production, the initial land allotment given was 5 ha, but was later reduced to 3.2 ha. In the Jengka Triangle Project, the size of holding given for palm oil production was 4 ha. Except for the homestead, there was no provision for fruit growing in this scheme. However, in some oil palm schemes, holding size was as large as 5.7 ha and in rubber holding areas, 4.9 ha (Chan and Lean 1981 : 76-77).

**Table 4.4 Summary of Size of Land Holding Given to Settlers in Selected Developing Countries**

Country	Total Land Size (in ha.)		Source
	Old Scheme	Recent Scheme	
Nepal	2.7	1*	Kansakar (1979)
Indonesia**	10	3-5	Arndt (1988) Oey (1982)
Malaysia			
a) Rubber	3.3	4	
b) Oil-palm	5	3.2	Chan & Lean (1981)
Zimbabwe	Na	5	Akwabi-Ameyaw (1990)
Latin America	Na	40-100	Scudder (1981)

Note: \* The latest published figure given here corresponds to 1979, More recently this has been reduced to 1 bigha which amounts to 0.68 ha.

\*\* Under the Netherlands colonisation program the maximum size of holding given was 10 ha During the 1950s and 1960s migrants were given 2 ha. However, land size given under the World Bank assisted project was in the range of 3.5 to 5 ha.

The size of a family managed farm holding in a Zimbabwe settlement scheme was 5 ha which was relatively larger than settler allotments in Asian countries. In the Gezira scheme in the Sudan, land allocated to settlers was too large for settlers to operate with their available family labour resulting in absentee landlordism (Sabry 1970). The minimum land holding given in many Latin American colonisation schemes has been in the range of 40 to 100 ha (Scudder 1981 : 3). However, most of these lands ended up in the hands of land speculators due to the incapacity of small holders to develop them with the available institutional support (Collins 1986). The size of land holdings given to settlers in selected developing countries is given in Table 4.4 for comparison. As can be seen, the average holding size given to settlers in more recent settlement schemes has been significantly reduced

with the only exception being the Malaysian rubber schemes. The reduction of land size is likely to result in less access to land among future generation of settlers.

The size of the land allotment is unimportant, if it cannot generate an adequate income for the livelihood of settlers. The capacity of the land holding to generate surplus income depends upon a host of other factors such as water availability, soil fertility and the crop management practices adopted by individual farmers. The availability of capital and institutional support for crop cultivation and the marketing of produce in turn persuade settlers to take risks and make investment in land. The extent to which the land is able to provide the consumption needs of the settlers and generate a marketable surplus is more likely to have a greater effect on the problems of future generations.

#### **4.8 Conclusion**

The aim of this chapter was to highlight the problems encountered by land settlement schemes across the developing world and understand their likely relationship with the problems that are associated with the second generation. The issues discussed in this chapter are expected to provide a better insight into the second generation problems to be investigated in the case study areas of this thesis in subsequent chapters.

The settlement projects in general have failed to increase crop productivity as well as create employment or provide a decent way of living for the first generation settlers. The problems have perpetuated the conditions in the places of origin of settlers in newly established areas in contrast to the original objectives of bringing economic prosperity, social well being and regional development in the settlement regions. Due to the poor economic and social development in settlement schemes, the problems encountered by the first generation settlers in the process of settlement development are more likely to have been passed onto the second generation with

tremendous severity. The poor emphasis given to second generation issues at the planning stage of settlement schemes is also partly responsible for this general trend.

Intervening factors such as the changing global economy and the changing policy priorities of governments have also had wider implications for the performance of settlement schemes with some direct consequences on the problems encountered by first generation and their dependents. Therefore, if any settlement scheme is to become economically and socially viable, adequate attention has to be paid to settlement planning and implementation, taking the short and long term needs of both the first and second generation settlers into consideration. Such a strategy would reduce the problems likely to be faced by the second generation in the future. The next chapter deals with the basic characteristics of the first and second generation in the case study areas

## CHAPTER FIVE

### CHARACTERISTICS OF FIRST AND SECOND GENERATION SETTLERS

#### 5.1 Introduction

This chapter compares the socio-economic and demographic characteristics of first and second generation settlers in the study areas, in order to highlight the distinctive characteristics of the second generation in land settlement schemes. The analysis will also compare the current socio-economic and demographic characteristics of those who migrated into Dry Zone areas through government induced settlement schemes with those who stayed in their places of origin, i.e. non-migrants. The latter group and the second generation were specifically selected for our study as control groups to establish whether or not the settler migrants and their children have experienced social and economic mobility. The characteristics of the settlers and the control group can be expected to vary as the land settlement authorities emphasised certain qualities in the selection of potential settlers. The most important characteristics taken into consideration in the selection of potential migrant settlers as elaborated in Chapter Three, were family size, age and land ownership. These selection factors have inevitably shaped the demographic and socio-economic characteristics of the original settlers, as well as those of the second and third generations. The objective of this chapter is to analyse the profiles of each of these groups to establish the existence or not of social and economic mobility among migrants or the second generation.

The comparison of first and second generation settlers will be made on the basis of both household and individual levels of information collected during field work.

The characteristics which will be focused upon are those of the household, age composition, marital status, dependency, education, activities, income and living conditions of the two groups. The study of these characteristics is important as they determine the structural impacts of migration (Hugo et al 1987 : 211) as well as enhance our understanding of the migrants to land settlement schemes in comparison to non-migrants.

## 5.2 Household Structure

The study attempts to understand the household structure of first and second generation settlers as it both influences and in turn, is shaped by basic demographic processes. Households are defined here as co-resident people who are either contributors to and or dependent upon household income. We found five broad

**Table 5.1 Type of Household by Generation (in percentages)**

Type	First Generation			Second Generation		
	Rajangana	Siyambalangamuwa	Dedigama	Rajangana	Siyambalangamuwa	Dedigama
Single	1.7	1.1	4.9	0.4	0.5	0.9
Nuclear	61.3	75.0	53.4	89.0	92.9	79.6
Vertically extended	37.0	23.9	30.1	5.3	3.3	8.3
Horizontally extended	-	-	6.7	4.9	2.8	7.4
Vertically & horizontally extended	-	-	4.3	0.4	0.5	3.8
Other	-	-	0.6	-	-	-
All	100	100	100	100	100	100
N	116	92	163	228	182	108

Source: Complete Enumeration of Households, 1992.

Note: Vertically extended household comprises parents, sons, daughters and grand children, Horizontally extended family includes other relatives, in addition to the members in the nuclear family.

categories of household types in the sample areas namely, single person, nuclear, vertically extended, horizontally extended and a combination of both vertically and horizontally extended households. Table 5.1 shows that the nuclear family is the predominant type of household unit surveyed in all locations.

Second generation households reported a greater percentage of nuclear families compared to first generation households. Further, the proportion of extended families was found to be greater in the Wet Zone control area compared to the Dry Zone settlement schemes. Out of the two types of extended families, the most common was the vertically extended household which comprised linearly related members such as sons, daughters and grandchildren. Horizontally extended families which include other relatives are practically non-existent among first generation households in settlement schemes, mainly due to the initial migration of nuclear families into these schemes.

During focus group interviews, it was found that factors which have encouraged an extended system were the need to look after old parents and the necessity of managing household economic affairs as one unit without dividing family property among all claimants. The latter was particularly relevant in the case of the Wet Zone control area where joint property ownership was widespread (Chapter Six). On the contrary, in the Dry Zone areas, the scarcity of land was not as severe especially among the first generation. As the allotted highland area for the initial settlers was large enough (roughly about one hectare) to accommodate 2-3 households, older second generation members who entered into married life earlier than their younger siblings were able to share parts of the original land holding with their parents. This has allowed them to put up their own dwellings and move away from the extended family system despite the legal restrictions imposed upon the subdivision of settlement land. Secondly, despite the fact that the land frontier was gradually shrinking, encroachment onto reserved land set aside for various purposes

within the village as well as on the periphery, made it possible to absorb much of the early population growth in settlement schemes, allowing many of the second generation members to establish independent nuclear families. Caldwell (1976) argues that modernization involves the transition from extended to nuclear families. Unlike traditional Wet Zone villages, the settlement schemes consists of heterogeneous communities and are subjected to rapid social change. The family was also found to be more economically nucleated in the settlement schemes and the presence of more nuclear families is consistent with the social change argument of Caldwell.

The average size of household for both first and second generations by the age of the head of household and location is given in Table 5.2. As can be seen, household size is positively related to the age of the head of household with regard

**Table 5.2 Average Household Size by Age of Head of Household**

Age	First Generation			Age	Second Generation		
	Rajangana	S'gamuwa	Dedigama		Rajangana	S'gamuwa	Dedigama
45-49	6.33 (6)	-	4.54 (24)	Less 24	2.79 (9)	2.60 (29)	-
50-54	5.57 (14)	4.11 (9)	4.89 (24)	25-29	3.78 (49)	3.07 (29)	3.00 (10)
55-59	5.45 (22)	5.29 (21)	4.96 (26)	30-34	4.43 (56)	4.04 (46)	3.64 (25)
60-64	4.56 (27)	4.00 (19)	5.19 (31)	35-39	5.21 (53)	5.00 (31)	3.96 (28)
65+	4.00 (48)	4.60 (43)	4.96 (57)	40-44	5.14 (36)	5.38 (29)	4.79 (39)
				45+	6.04 (25)	5.92 (37)	3.83 (6)
All	4.70 (118)	4.58 (92)	4.96 (162)		4.69 (228)	4.56 (182)	4.09 (108)

Source: Complete Enumeration of Households, 1992

to second generation households in all areas. However, in the control area, a positive relation between household size and the age of the head of household cannot be found after the age category of 45+, possibly due to the small number of

cases (6 cases) in this age category. The average household size among first generation households has shown a consistently negative relationship with the age of the household head in Rajangana. This could be attributed to the consistent movement of mature offspring out of the household after marriage. This trend is quite consistent with the observation made with regard to the presence of more nuclear families among second generation households in this location. The large household size in congested areas of the country is interpreted as an outcome of the scarcity of housing and the delay in children leaving the nuclear family to form new households (MEPA 1991 : 30) which is quite consistent with the situation in the control area where landlessness and the problems of housing are much greater.

First and second generation households in the two settlement schemes have recorded similar average household sizes (Table 5.2). The largest household size of 4.96 was recorded among first generation households in the control area and was a function of the high incidence of extended households. The household size reported in all areas however, was found to be below the national average of 5.1 persons recorded for the rural sector in the Consumer Finances and Socio-economic Survey of 1986/87 (CBS 1990 : 3). The average household size reported in Rajangana and Siyambalangamuwa in earlier studies shows a larger household size than that observed in the present study. For instance, Jogaratnam (1974 : 5) reported an average of 7.9 family members in Siyambalangamuwa in 1972. An ARTI study conducted in the same area estimated an average of 6.3 household members in 1983 (Senaka Arachchi et al 1987 : 22). The average family size reported by Jogaratnam for Rajangana in 1968 was 6.5 members. Abeyratne (1972) estimated an average of 7 household members in the same location in 1972. The large average household size in early surveys was understandable due to the preferential selection of settlers with large numbers of dependent children. However this has been reduced as a result of the gradual separation of mature

children from the original household to establish their own households. The gap in household size between the first and second generations has narrowed over the years due to the effects of the life cycle factor.

The gender difference in the household heads between the first and second generation also reflects the effects of the life cycle factor. More female-headed households were reported among the first generation (Table 5.3) as compared with the dominance of male-headed households among the second generation. Almost

**Table 5.3 Gender of the Household Head by Generation and Location**

	Rajangana			Siyambalangamuwa			Dedigama		
	1st	2nd	All	1st	2nd	All	1st	2nd	All
Male	74.1	95.2	87.2	71.7	92.9	85.7	75.5	92.6	82.3
Female	25.9	4.8	12.8	28.3	7.1	14.3	24.5	7.4	17.7
N	116	228	452	92	182	293	163	108	271

Source: Complete Enumeration of Households, 1992.

all of the first generation female-headed households headed involved widows of the initial settlers. The Siyambalangamuwa scheme being older than the Rajangana scheme had more female-headed households among the first generation. Adult male household members are generally considered as heads even if they are temporarily absent from the village, therefore the female-headed households among second generation households also mainly involve widows.

### 5.3 Age Composition

An attempt was made to analyse the age of the first and subsequent generation members separately. This is important because, as was pointed out in Chapter One, the problems of the second generation can be exacerbated by age composition factors. The mean ages of the study population by generation and location are given in Table 5.4. The overall mean age of first generation members was found to be around 60 years. The first generation members of the Siyambalangamuwa

**Table 5.4 The Mean Age of Sample Population by Generation**

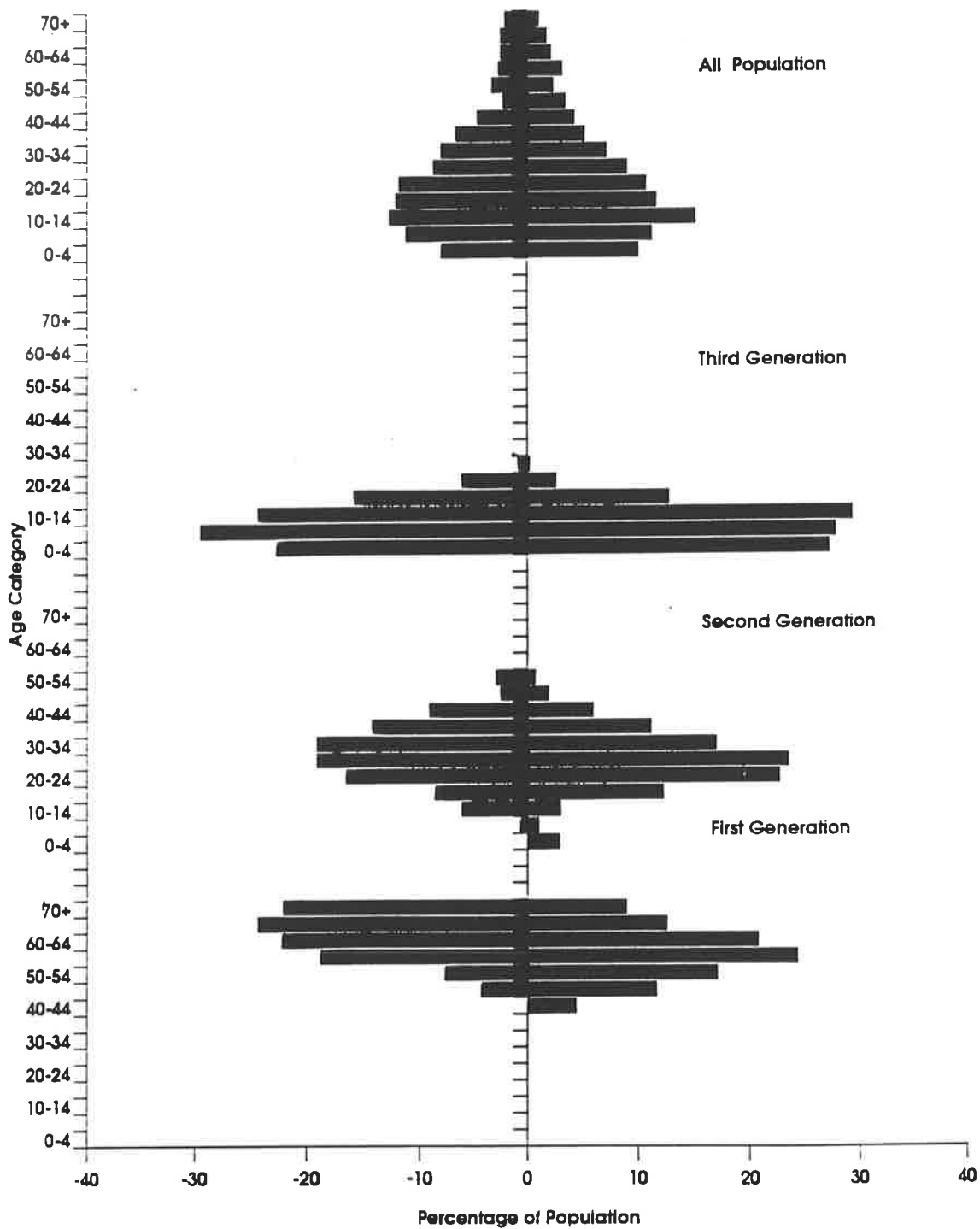
Rajangana	1st Generation			2nd Generation			3rd Generation		
	M	F	T	M	F	T	M	F	T
Mean	63.6	57.8	60.4	29.2	27.3	28.3	9.8	8.9	9.3
Sd	(9.7)	(7.4)	(9.1)	(7.2)	(7.7)	(7.4)	(6.4)	(5.4)	(5.9)
N	90	111	201	390	358	748	307	335	642
Sgamuwa	64.3	59.1	61.3	30.1	28.4	29.3	11.2	10.6	10.9
Sd	(8.7)	(7.7)	(8.5)	(8.9)	(8.7)	(8.5)	(6.1)	(4.9)	(5.5)
N	67	90	157	302	281	583	252	252	504
Dedigama	59.8	56.8	58.1	29.1	27.1	28.1	9.1	8.5	8.8
	(9.2)	(10.5)	(10.0)	(8.2)	(7.6)	(8.1)	(5.5)	(5.8)	(5.8)
N	127	162	289	326	301	627	143	135	278

Source: Complete Enumeration of Households, 1992.

scheme were slightly older than those of the Rajangana scheme due to the earlier establishment of the former. The mean age of the control group was found to be quite similar to the mean age of first and second generation members in the two settlement areas despite the selection of this group on the basis of an artificial age cut-off point. The mean age of second generation members in all three sample locations was found to be around 29 years, whereas the mean age of third generation members was approximately nine years old. The mean age of fourth generation members was not calculated since there were only seven members belonging to this category in both settlement schemes.

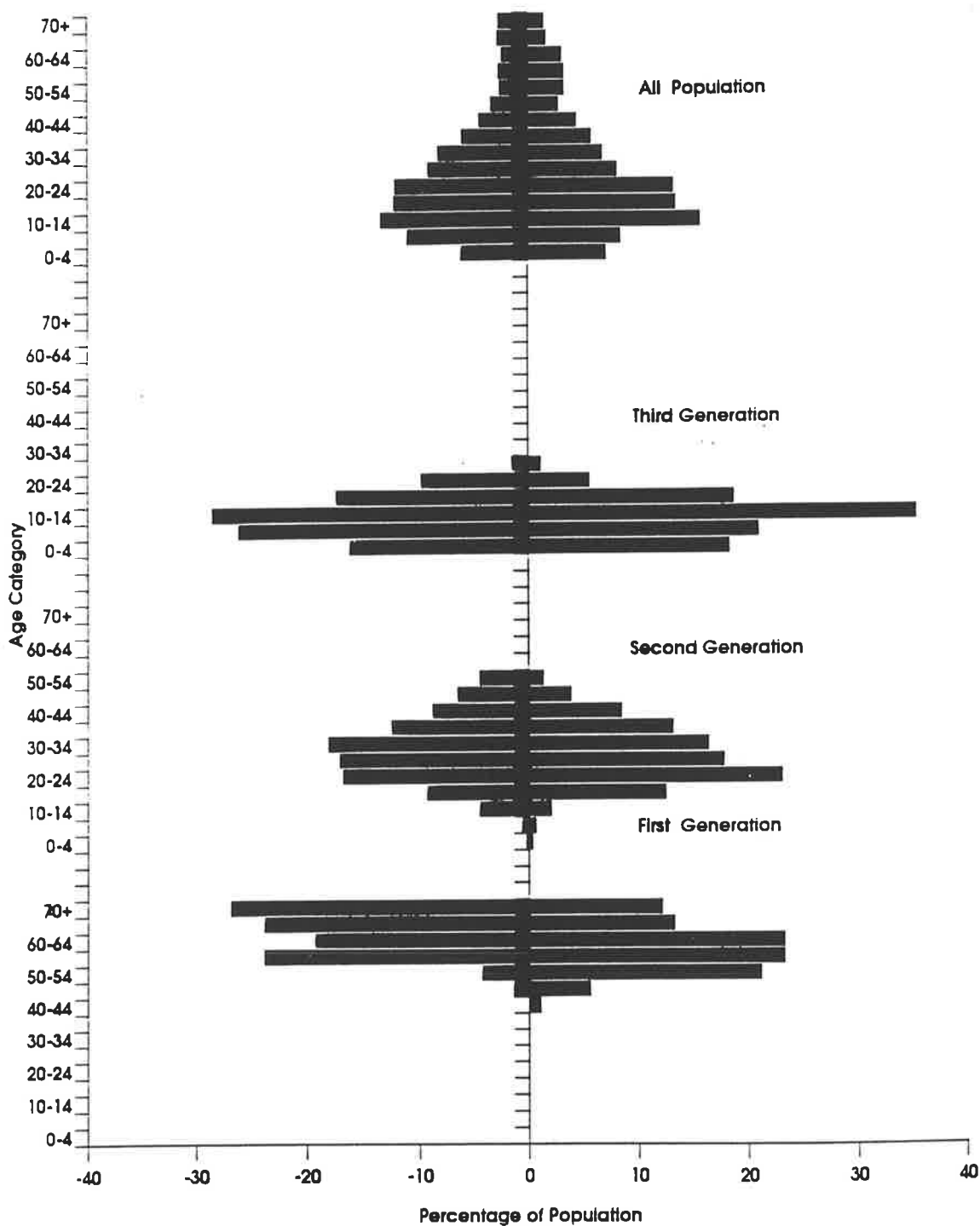
The age-sex structures of the population by generation and location are given in Figures 5.1, 5.2 and 5.3. These clearly indicate that the majority of first generation members are now around retirement age. As can be seen in Figure 5.2, 27 percent of male first generation respondents members in Siyambalangamuwa were older than 70 years and 96 percent of them were over 55 years of age. The corresponding estimates in Rajangana were respectively 22 and 88 percent. Only about 30 percent of female first generation members were aged less than 50 years in both settlement schemes. In the control area, Figure 5.3 shows that the distribution of first generation members across different adult age categories was more or less equal,

Figure 5.1 Population Age Pyramid - Rajangana



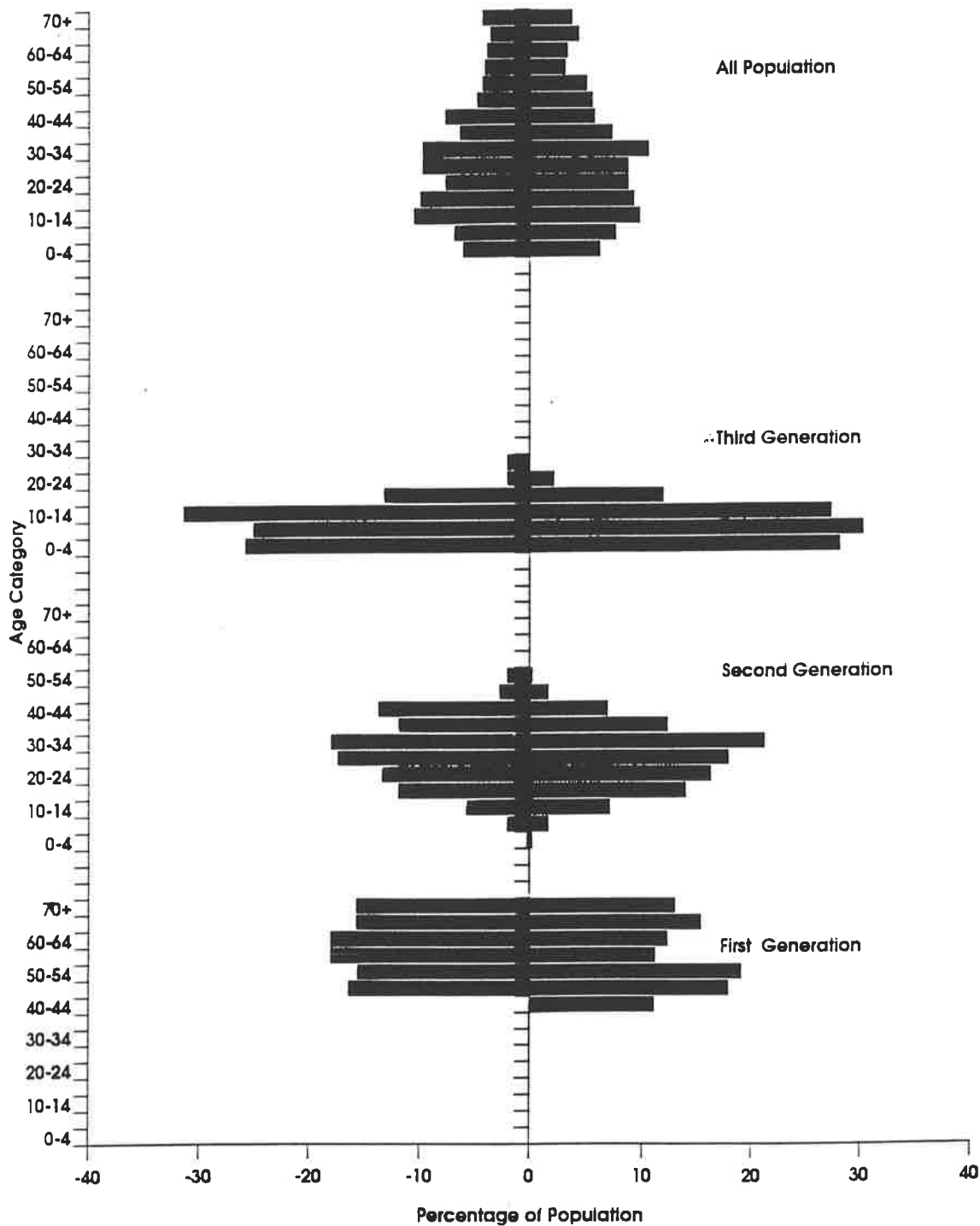
Source: Complete Enumeration of Households, 1992.

Figure 5.2 Population Age Pyramids - Siyambalangamuwa



Source: Complete Enumeration of Households, 1992.

Figure 5.3 Population Age Pyramids - Dedigama



Source: Complete Enumeration of Households, 1992.

particularly with respect to males, whereas the age distribution of first generation members in the case of settlement schemes was found to have a large concentration around the older age groups.

The most striking feature of the age distribution of the second generation members across the sample locations was that the majority of them were in the working ages. This applied to 92-94 percent of males and 91-97 percent of females. The biggest concentration of the second generation population was found to be in the age categories between 20-39, revealing that the bulk of second generation members have now reached the early working ages.

The dependent population in all sample areas is predominantly represented by third generation members. Seventy-three percent of males and 75 percent of females of the third generation in Siyambalangamuwa were under 14 years of age. The corresponding percentages in Rajangana were respectively 77 and 85 percent. The third generation was found to be even younger in the control area, amounting to 84 and 86 percent of male and female members respectively in age categories under 14 years.

The age pyramids of the total population with respect to each location show that the population in both settlement schemes have a relatively youthful age structure due mainly to the presence of large numbers of third generation members. As can be seen in Table 5.1, the total number of third generation members in both settlement schemes is only marginally less than the number of second generation members. However, the third generation members represent less than half of the second generation population in the control area. The first, second and third generation members respectively correspond to the top, middle and bottom layers of the age pyramids of the total population given in Figures 5.1, 5.2, 5.3.

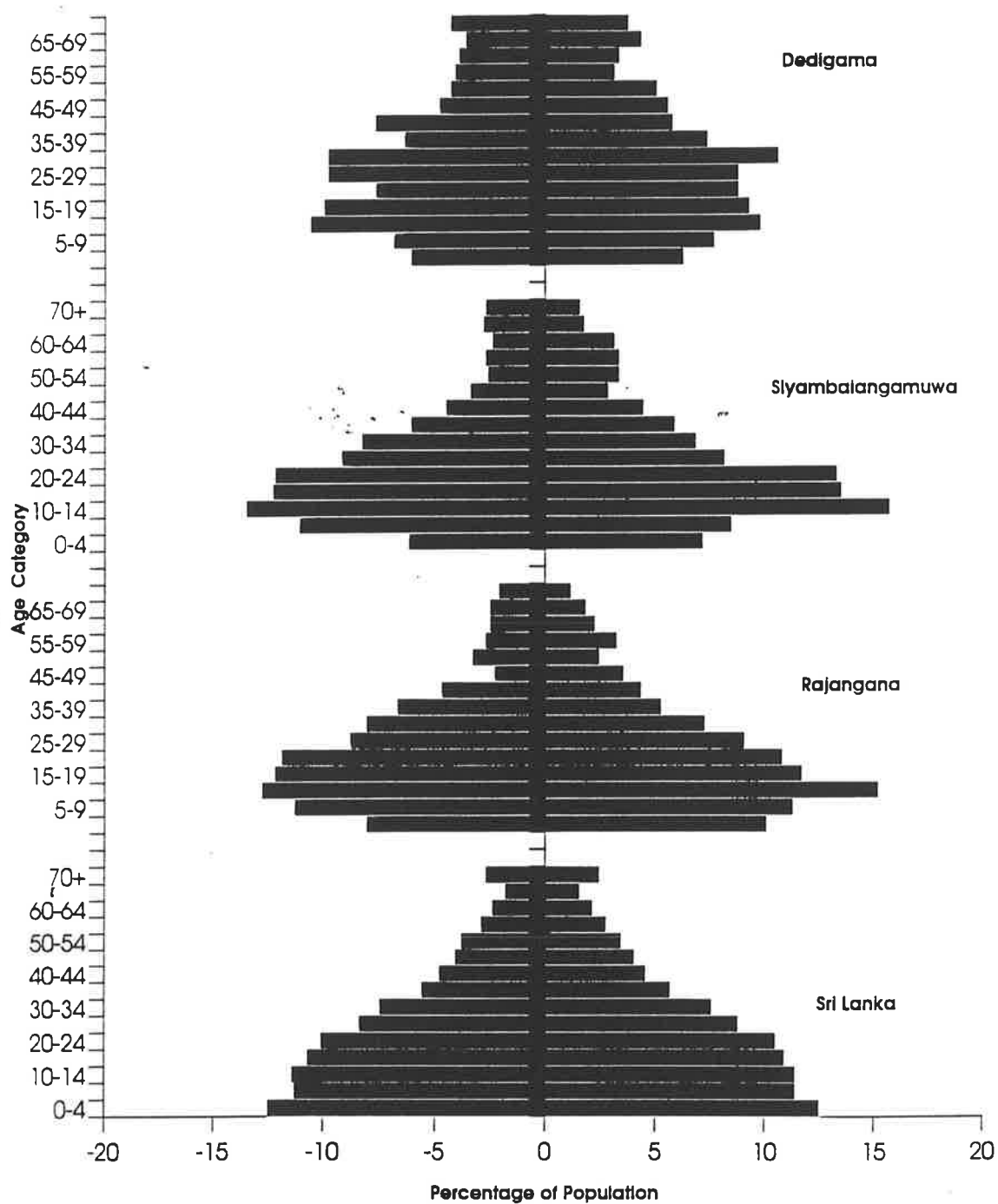
The shape of the age pyramids of the land settlement populations living in the Dry Zone were found to be entirely different from that pertaining to the population living in the Wet Zone control area. This is mainly due to the pattern of selectivity of the population drawn into settlement schemes. The migration of nuclear families with large numbers of dependent children into settlement schemes is echoed in the concentration of population in the working ages 30-40 years after the initial settlement. This is clearly shown by the "bottom heavy" nature of the age pyramids compared to that of the control area.

The age pyramids of the sample locations and the national age pyramids for 1991 are compared in Figure 5.4. As can be seen, the age pyramids of sample villages have some similarities with the distribution of the age pattern of young generation members in national age pyramids. The undercutting at the base of the age pyramid is due to the decline in fertility in recent years and this is evident in the sample data. However, the population in the older age groups in the sample settlement schemes is substantially lower due to the age-specific selectivity of original settlers discussed earlier. The age pyramid of the control area also shows a population which is much older than that in the land settlement areas.

#### **5.4 Marital Status**

The marital status of first and second generation settlers is another important demographic characteristic which has wide implications for the economic and social life of the study community. The current marital status of the population by generation is given in Table 5.5. The most striking feature of the marital status of first generation members is the presence of a large proportion of widows. As high as 23 percent of the first generation members in Rajangana were widows. This percentage was respectively 19 and 16 percent in Siyambalangamuwa and Dedigama. The marital status of the entire population living in settlement schemes

Figure 5.4 Population Age Pyramids of Sri Lanka and Sample Areas



Source: Complete Enumeration of Households, 1992 and Records of the Registrar General Office.

**Table 5.5 Marital Status of the Population by Generation (in percentages)**

	Rajangana			Siyabalangamuwa			Dedigama			Sri Lanka
	1st	2nd	All	1st	2nd	All	1st	2nd	All	
Never married	-	34.0	57.6	-	35.4	57.6	1.4	56.0	53.5	57.8
Married	74.1	60.3	35.8	78.4	60.6	37.8	82.7	41.8	40.0	36.4
Widow	22.9	1.7	3.9	19.0	2.6	3.7	15.9	2.1	5.5	5.0
Separated	1.5	2.1	1.4	1.3	1.4	0.7	-	0.1	1.0	0.8
Not legally married	1.5	1.9	1.2	1.3	-	0.2	-	-	-	-
All	100	100	100	100	100	100	100	100	100	100
N	201	748	2138	158	582	1355	289	627	1246	-

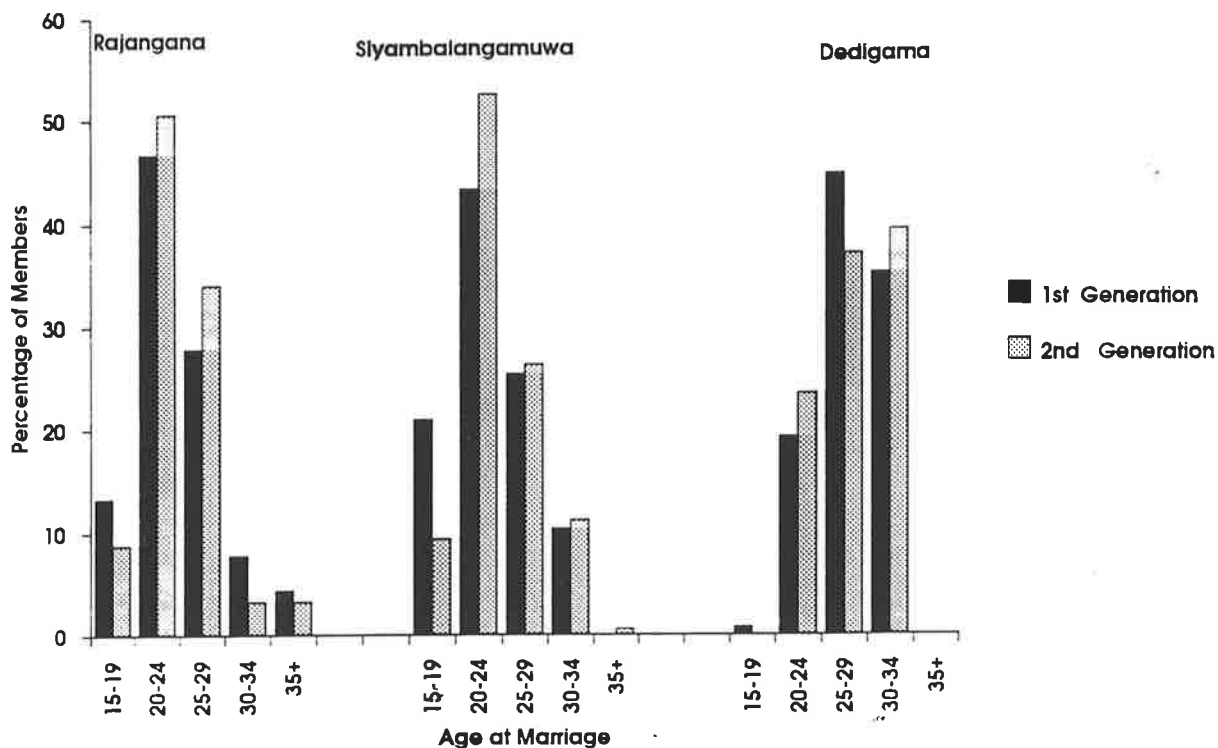
Source: Complete Enumeration of Households 1992, Consumer Finance and Socio-economic Survey 1986/87

has a lower proportion of widows than the national population, whereas the proportion of widows among the total population in the control area was slightly higher than the national average.

One third of second generation members in the two settlement schemes were reported as being unmarried due to the effect of the age structure of the group. The proportion unmarried among this group in the control area was over fifty percent. When we pool together the entire population living in the settlement schemes, marital status was found to be similar to the national pattern. Among the total population in the control area, the proportion of married members was higher, partly due to the presence of a smaller number of children as compared to the settlement schemes. The number of members who have separated or divorced was found to be negligible in all three sample locations, a trend consistent with the national population.

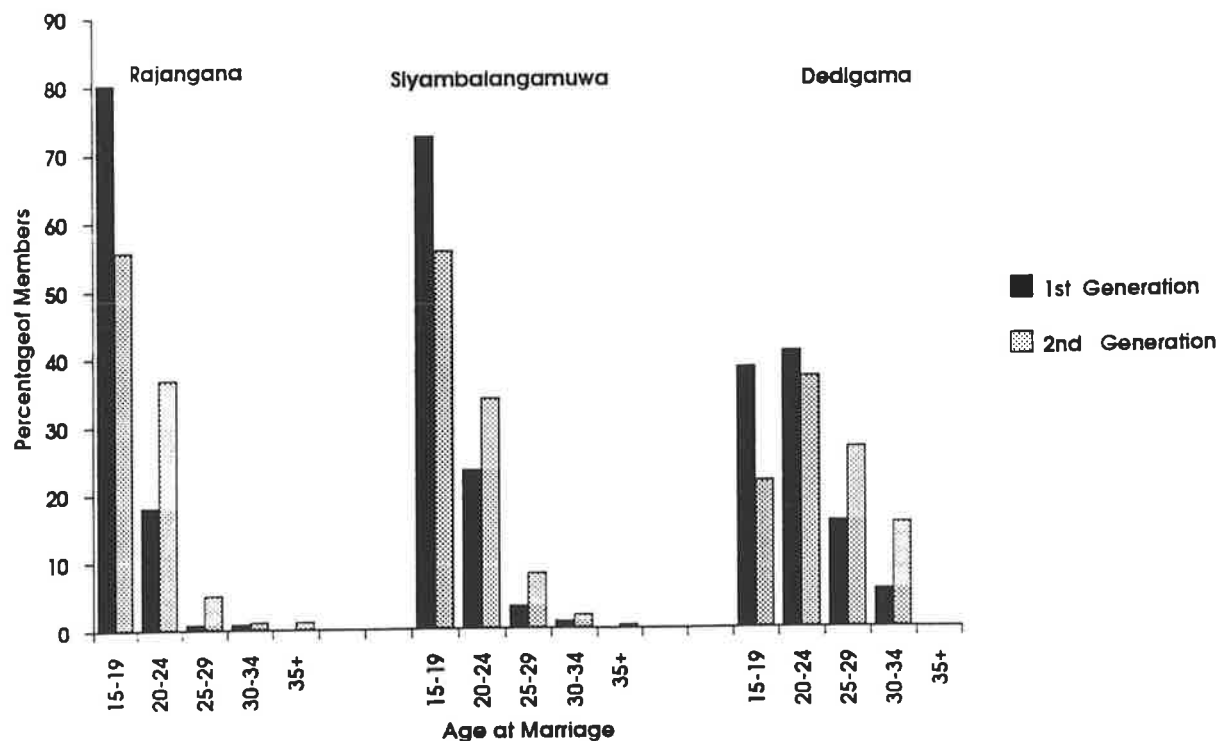
The age at first marriage for first and second generation members by sex is given in Figures 5.5 and 5.6. As can be seen, the proportion of first generation males and females who have married at young ages is greater than that of second generation married members in each category. For example, the proportion of males who married between the ages of 15-19 amounted to 21 percent of first generation

Figure 5.5 Age at Marriage of Male Members by Generation



Source: Complete Enumeration of Households, 1992.

Figure 5.6 Age at Marriage of Female Members by Generation



Source: Complete Enumeration of Households, 1992.

members in Siyambalangamuwa, whereas only nine percent of the males were reported married at this age among the second generation in the same location. None of the second generation males was reported as married at this age in the control area. The age at marriage of female members has shown the same trend, with a relatively high proportion of women marrying at ages 15-19 among the first generation and comparatively lower numbers being married among the second generation in the same age category. Therefore, a clear distinction can be made with regard to the age at marriage between the two generation groups and those who are settled in land settlement schemes and those who remained in Wet Zone villages. Firstly, more second generation members have postponed their marriage in comparison to the first generation members in each location. This was true in the case of both sexes. Secondly, both first and second generation members in the control area were found to have married later than their counterparts in settlement villages.

### **5.5 Dependency**

The presence of a large number of dependents and the relatively smaller working age population has resulted in a higher dependency among households headed by the second generation. The dependency ratio calculated for households belonging to each generation by location is given in Table 5.6. The highest dependency ratio in the range of 70-88 was reported by the households headed by the second generation across the sample locations, whereas the dependency ratio among first generation households was much lower and ranged between 32 and 36 percent. The national estimate of the dependency ratio in 1991 was 57.7 percent (MHWA 1992 : 7) which is quite comparable with the dependency calculated for all households taken together (i.e first and second generation households, various other households belonging to non-settler types such as encroachers). The lowest dependency ratio was reported by the households living in the control area. The

**Table 5.6 Dependency Ratio of Households by Generation and Location**

Age	Rajangana			Siyambalangamuwa			Dedigama		
	1st	2nd	All	1st	2nd	All	1st	2nd	All
0-14	88	488	737	56	340	422	111	184	295
15-64	407	566	1319	310	488	873	608	242	850
65+	58	12	82	56	3	60	85	16	101
All	553	1066	2138	422	831	1355	804	442	1246
Employed	293	468	1004	224	382	655	301	144	445
a) Dependency Ratio	35.9	88.3	62.1	36.2	70.3	55.2	32.2	82.6	46.6
b) Youth Dependency Ratio	21.6	86.2	55.9	18.1	69.7	48.3	18.3	76	34.7
c) Aged Dependency Ratio	14.3	2.1	6.2	18.1	0.6	6.9	13.9	6.6	11.9
d) Dependents per worker	0.89	1.28	1.13	0.88	1.18	1.07	1.67	2.07	1.80

Note: a) Dependency Ratio= 
$$\frac{(\text{Population aged 0-14 \& 65+})}{(\text{Population aged 15-64})} \times 100$$

b) Youth Dependency Ratio= 
$$\frac{(\text{Population aged 0-14})}{(\text{Population aged 15-64})} \times 100$$

c) Aged Dependency Ratio= 
$$\frac{(\text{Population aged 65+})}{(\text{Population aged 15-64})} \times 100$$

d) Dependents per worker= 
$$\frac{(\text{Population aged 0-14 \& 65+})}{\text{Population Employed}} \times 100$$

Source: Complete Enumeration of Households, 1992.

higher dependency ratio among second generation households is naturally caused by the presence of more young members, as most of the second generation adults are still of child-bearing age. Youth dependency (defined as the population less than 14 years of age as a proportion of the population aged 15-64 years) among second generation households ranged from 70 to 86 percent. However, youth dependency among first generation households was lower, as their children are either of working age or had already moved out from the original household to establish their own households. Therefore, any young dependents in the first generation households are members of the third generation who live as members of

extended families. The estimated national youth dependency ratio in 1991 was 51.4 percent (MHWA 1992) and except in Rajangana, the youth dependency ratio of the overall population was lower in all sample locations compared with the national estimate.

Aged dependency (population aged over 65 as a percentage of the population aged 15-64 years), on the other hand, was as expected much higher among first generation households. However, the old age dependency estimated for all households in the sample settlement schemes was found to be approximately half of the national estimate of 13.3 percent in 1991 (MHWA 1992 : 8). The old age dependency in the control area was much closer to the national estimate. The higher youth dependency and lower aged dependency of the overall population in the settlement schemes was created by the effect of age selectivity in the initial population.

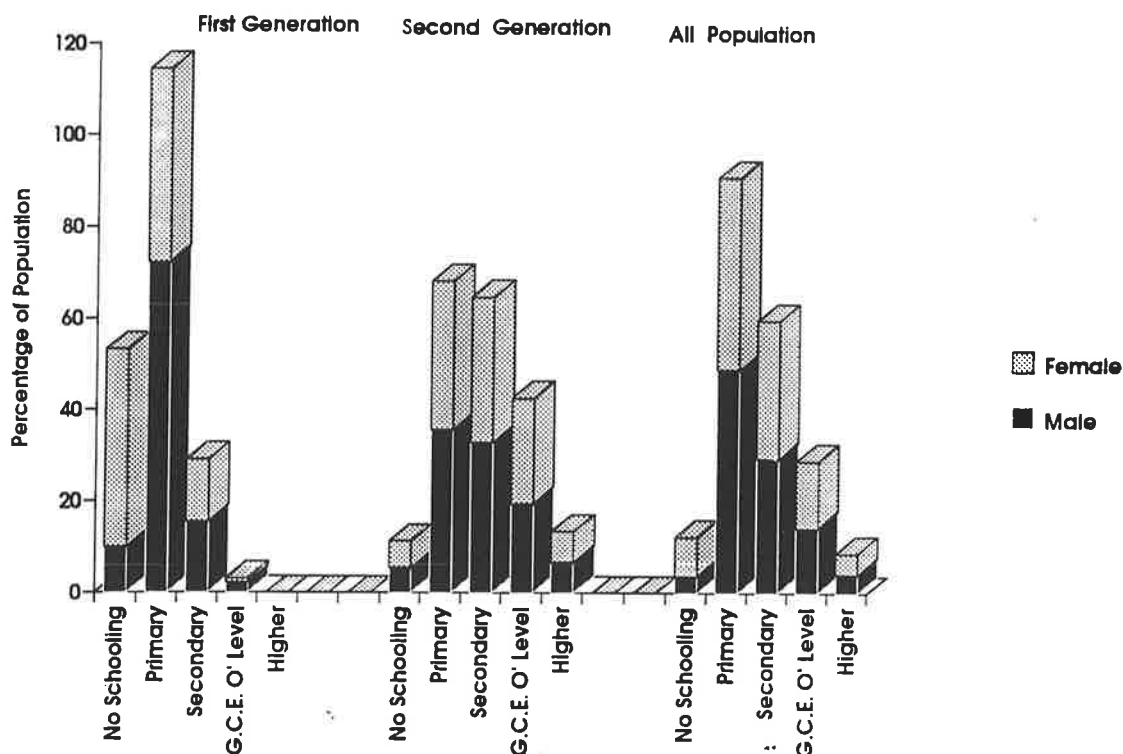
As shown in Table 5.6 the mean number of working members was higher than the mean number of dependents among first generation households in all areas except in the Wet Zone control area. Therefore, the first generation in land settlement schemes appears to be better off in terms of the number of dependents per working member. Every working member among the first generation in Dedigama has to support 1.67 dependents, compared with less than one dependent per working member in land settlement schemes. On the other hand, the second generation households in all areas have reported more dependents per working member. The situation was worse with regard to the control area where every working member has to support more than 2 dependents, suggesting that the employment opportunities are comparatively better in the Dry Zone land settlement schemes than the Wet Zone control area. A large number of dependents per working member in the Wet Zone areas indicates that the population is in obvious need of opportunities to provide for their families.

## 5.6 Educational Attainment

Another important dimension of the difference between the generations is education. The educational attainment of the general population in the country has greatly changed over the last 3-4 decades, particularly with the advent of universal and free education in the mid 1940s (Jayaweera 1978 : 138-142; ESCAP 1980 : 84-86; De Silva and De Silva 1990 : 21-27). The people living in land settlement schemes, however, failed to reap the benefit of the policy of universal, free education, to the same extent that was enjoyed by the general population.

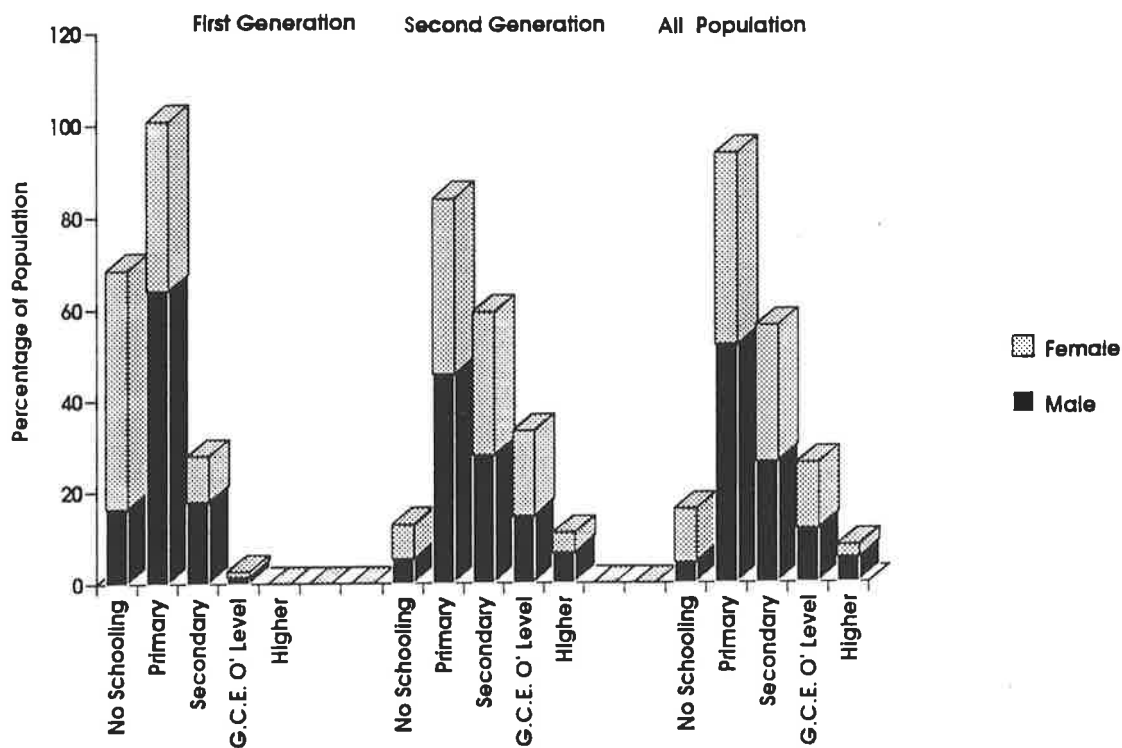
The educational attainments of first and second generation members by sex and location are shown in Figures 5.7, 5.8 and 5.9. The second generation was found to be more educated than the first generation, as a result of education progress in the nation as a whole. Those who had never attended school were predominantly

Figure 5.7 Educational Attainments of Population by Generation in Rajangana



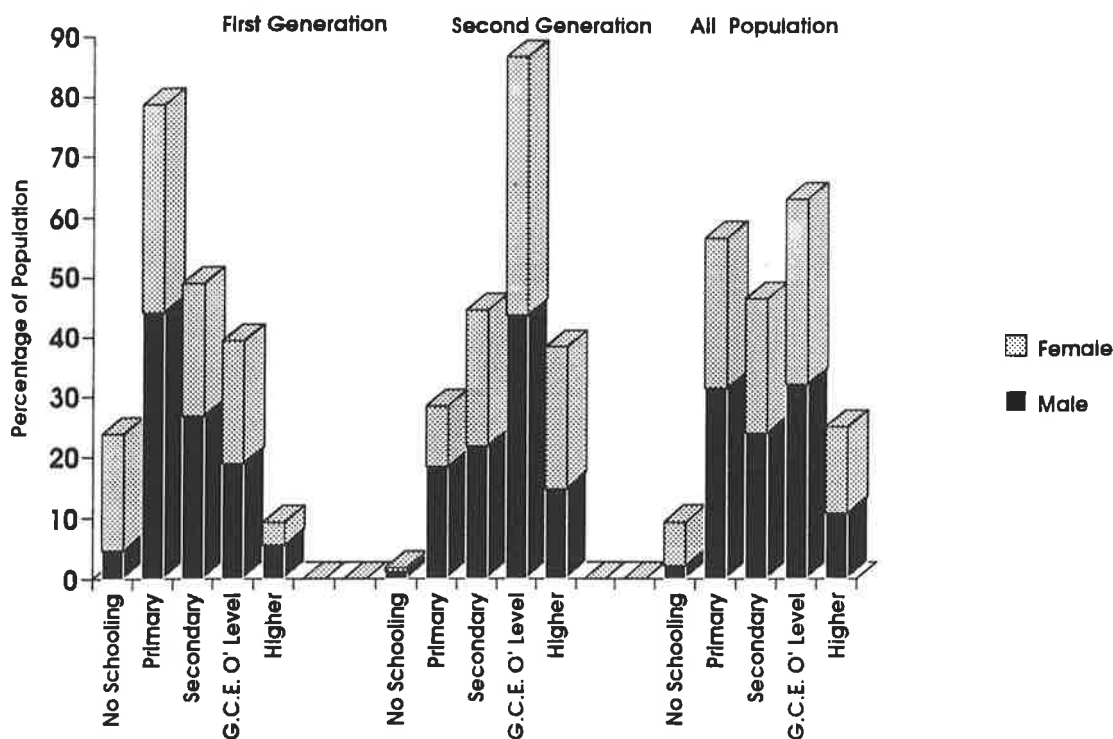
Source: Complete Enumeration of Households, 1992.

Figure 5.8 Educational Attainments of Population by Generation in Siyambalangamuwa



Source: Complete Enumeration of Households, 1992.

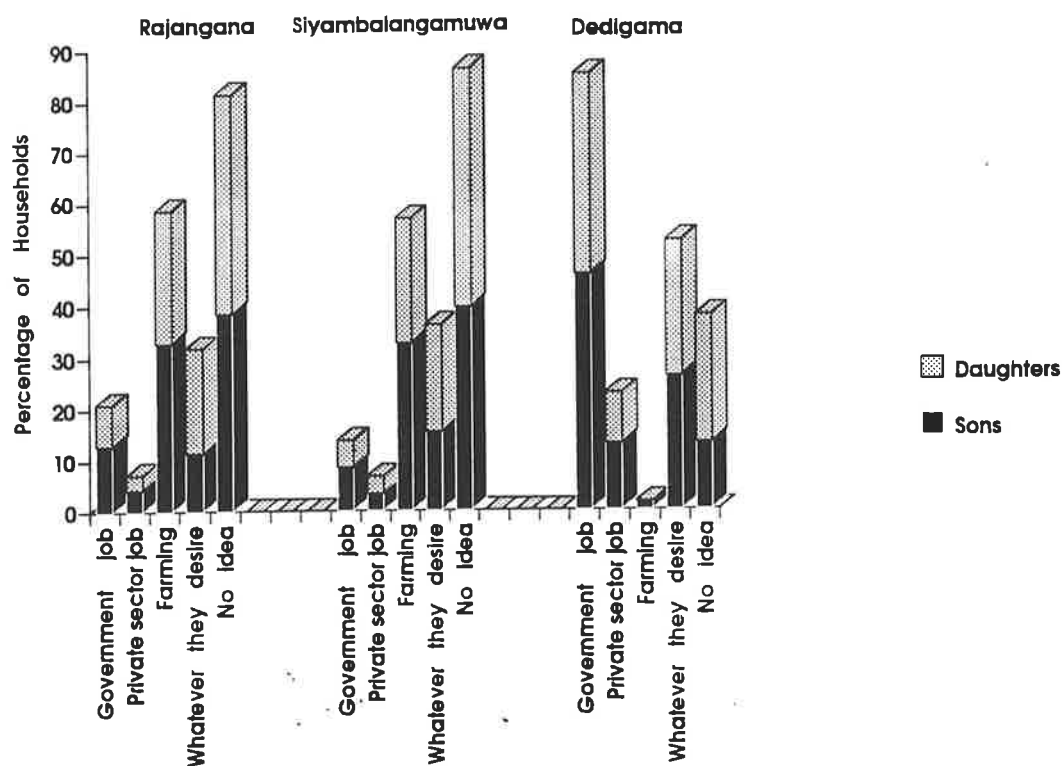
Figure 5.9 Educational Attainment of Population by Generation in Dedigama



Source: Complete Enumeration of Households, 1992.

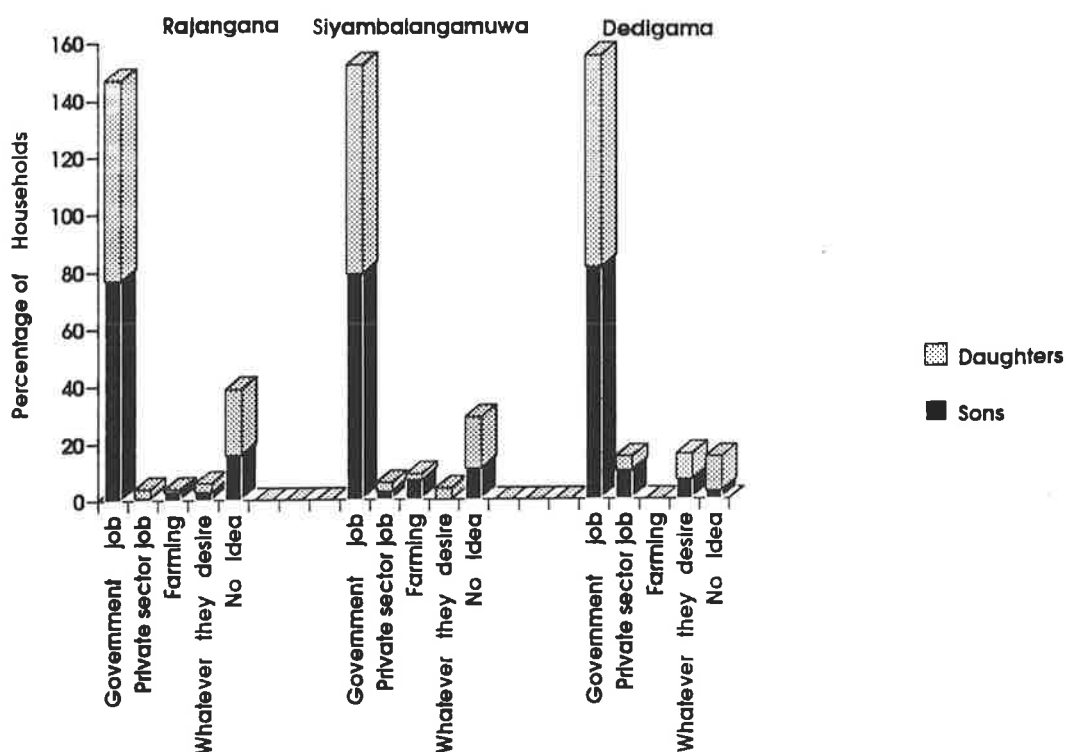
represented by first generation members. The level of educational achievement by sex revealed that more female members than male members had never attended school in all three locations. For example, more than half (52 percent) of the first generation women in Siyambalangamuwa had never attended school. In all three sample locations the majority of first generation male members had only achieved primary level education. Both first and second generation members were found to be more educated among Wet Zone residents than among those who are living in the Dry Zone settlement. This is attributable to several factors and the availability of better schooling facilities in the Wet Zone as compared with the Dry zone could be one explanation. Moreover the settlers who were selected for settlement schemes are generally the less well-to-do segment of the rural population, so their educational attainments would be below average. The settler population also tends to have low aspirations toward educating the younger generation. This was clearly evident from the first generation settler's desire for the future occupation of their children (Figures 5.10 and 5.11). The largest percentage (around 40 ) of them had no opinion about the future occupation of their sons and daughters. Of those who did express an opinion, approximately 30 percent wanted their children to pursue agriculturally related occupations. These opinions however, were likely to have been influenced by the actual occupation currently being pursued by their mature children. The majority of first generation settlers in the control area wanted their sons and daughters to have public sector jobs, suggesting that the first generation members in the Wet Zone control area had higher aspirations in comparison to their counterparts in the Dry Zone settlements. The second generation households in all areas wanted their children to pursue public sector jobs, implying greater variability in the aspirations of the two generational groups. Abeysekara (1984) has shown that migrant settlers in land settlement schemes in Sri Lanka have lower standards of educational attainment than other types of migrants. The studies carried out in

Figure 5.10 Type of Employment First Generation Household Heads Desire to Have for Their Offspring



Source: Sample Survey of Households, 1992.

Figure 5.11 Type of Employment Second Generation Household Heads Desire to Have for Their Offspring



Source: Sample Survey of Households, 1992.

many Dry Zone settlement schemes have often demonstrated low educational achievements among the settlers (ARTI 1979b : 13; ARTI 1980c : 12). This has been largely attributed to the poor educational facilities combined with and low aspirations among settlers (ARTI 1980a : 15-16). Karunatissa and Rupasinghe (1982 : 15-16) showed in the early 1980s that 27 percent of the children in settlement schemes of school-going age did not attend school, compared to only 4 percent in an up-country village of their study. They have also shown that children are not attending school for many as 3 days per week in some Dry Zone colonies and that in some instances schools remain closed until the harvesting season is over (Karunatissa and Rupasinghe 1982 : 29). An ARTI study conducted in the Pavatkulam scheme has shown that the settlers were more conservative in their aspirations regarding the education and employment of their daughters. Only 33 percent of settlers in this scheme wanted their daughters to have an education up to G.C.E O'Level and none of them preferred their daughters to have a university education. Seventy-five percent wished them to get married and work within the home (ARTI 1980a : 15-16). The parent's aspirations of providing their children with a higher level of education in the Padaviya scheme has hardly been achieved, as when children grow up they tend to get preoccupied with assisting their parents in their farm work (ARTI 1980c : 12).

The answers given to questions on the assessment of educational facilities available in respective sample areas by heads of households have shown that the relatively low level of education among households in the Dry Zone land settlement schemes is not due to the poor schooling facilities. As shown in Table 5.7, the first generation household heads reported that educational facilities available in the settlement schemes are much better than the facilities they had in their places of origin. Those who stated that the educational facilities in the settlement scheme

**Table 5.7 Assessment of the Educational Facilities as Compared to Place of Origin**

Category	Rajangana	Siyambalangamuwa
Better	9	5
Good	56	69
Same	21	7
Bad	3	3
Worse	11	16
All	100	100
N	70	58

Source: Sample Survey of Households, 1992.

were either good or better as compared to their places of origin were 65 and 74 percent in Rajangana and Siyambalangamuwa respectively. The heads of households who expressed their satisfaction with the currently available educational facilities in the settlement schemes were 84 and 87 percent respectively in the two settlement schemes. The perception of the first and second generation heads of households with regard to currently available educational facilities varied by respective sample locations. As shown in Table 5.8, the majority of the second

**Table 5.8 Perception of the Educational Facilities Currently Available in the Area**

	Rajangana		Siyambalangamuwa		Dedigama	
	1st	2nd	1st	2nd	1st	2nd
Extremely Happy	6	4	5	7	6	22
Happy	82	74	79	47	81	66
Unhappy	11	19	9	39	13	12
Extremely Unhappy	1	3	7	7	-	-
All	100	100	100	100	100	100
N	70	70	58	44	61	58

Source: Sample Survey of Households, 1992.

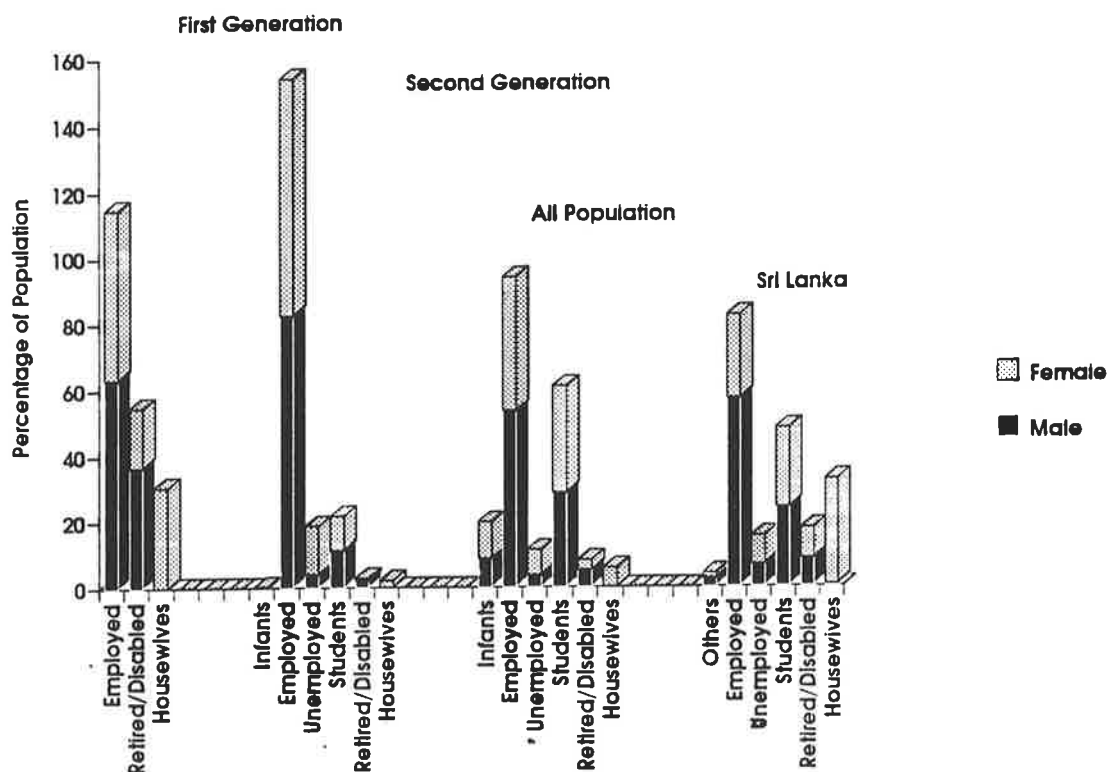
generation heads of households in the sample areas were pleased with the educational facilities available in their respective areas. More first generation households across all areas were found to be happier with the available educational facilities compared with the second generation households. Discussions with

government officials and village leaders revealed that the educational facilities available within settlement schemes were reasonably good for primary and secondary level education. Those who wished to have better facilities at high school level, however, were required to attend schools located outside the settlement schemes. Relatively poor educational achievements among offspring of the first generation settlers in the two land settlement schemes shown in Figures 5.7 and 5.8 can therefore be interpreted as a lack of interest shown by parents in educating their children, rather than the lack of educational facilities within the settlement schemes.

### 5.7 Activity by First and Second Generation

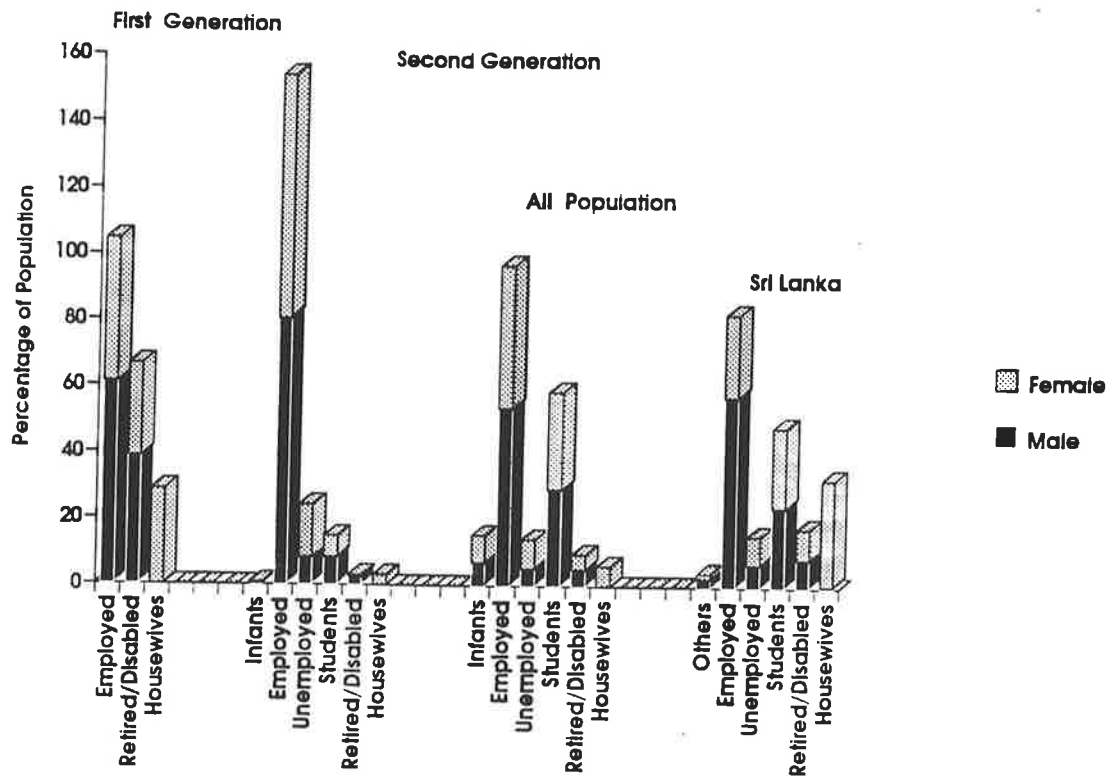
Each member of the population living in the sample location was classified on the basis of his/her current major activity. The main activities of the population by generation are presented in Figures 5.12, 5.13 and 5.14. There were variations

Figure 5.12 Activities of the Population by Generation in Rajangana



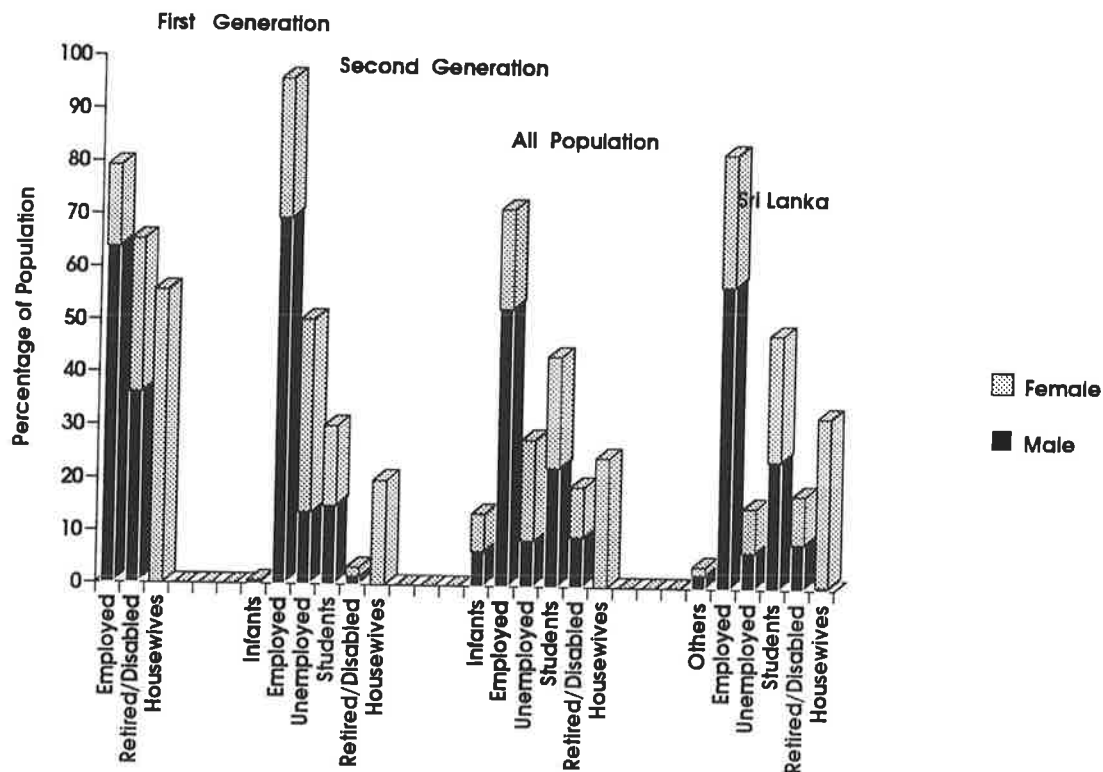
Source: Complete Enumeration of Households, 1992.

Figure 5.13 Activities of the Population by Generation in Siyambalangamuwa



Source: Complete Enumeration of Households, 1992.

Figure 5.14 Activities of the Population by Generation in Dedigama



Source: Complete Enumeration of Households, 1992.

in the activities of the sample population by place of current residence, as well as by the classification of generations. The employed population in first and second generation households in the Wet Zone control area was found to be lower than in the land settlement schemes, suggesting the availability of fewer economic opportunities in Wet Zone control area. A person was defined in this survey as employed as long as he/she had been gainfully employed for a minimum of 90 days during the complete agricultural season (roughly about six months) prior to the survey. Out of the first generation male members across all three sample locations, between of 61 and 64 percent were found to be employed, while the remaining members were either retired or too old to be engaged in productive activities. More female first generation members (56 percent) were reported to have been engaged only in household duties in the control area compared with the number of employed first generation females in the two settlement schemes. The availability of seasonal agricultural activities for female members in the two settlement schemes may have resulted in comparatively higher proportions of female employment. Approximately one quarter of the first generation women were reported as being either retired or too old to be engaged in productive activities. The majority of the second generation members reported being employed, mostly in agriculture-related occupations. The student population in both settlement schemes amounted to less than 10 percent of the second generation. In the control area, 15 percent of the second generation male and female members were attending school. The unemployed population were exclusively the second generation members. The unemployment rate was found to be much higher among second generation members in the control area, as compared to the two settlement schemes. Unemployment among female second generation members was greater than for males. The rate of unemployment for females members in the control area was found to be 37 percent compared with 16 percent in the two settlement schemes. However, the national estimates available on unemployment do not show large

variations by sex and are below (around eight percent) the estimated unemployment of the sample areas. When all the groups living in the sample areas were put together, including the third generation and non-settlers, one third of the population in the two settlement schemes were found to be students. This was higher than the national estimate, mainly due to the presence of more young children in the settlement schemes. Students accounted for one fifth of the population in the control area which is quite comparable with the national estimate. Nearly half of the male population were employed in all areas with the smallest proportion being in the control area.

### **5.8 Standard of Living**

The standard of living of households is difficult to established with one integrated measure. However, there are some indicators such as the Physical Quality of Life Index (PQLI) proposed by Morris (1979) which is based upon a number of variables such as expectation of life, literacy, infant mortality etc. The Welfare Index introduced by Drewnowski (1970 : 63) is also used to measure the prosperity of population in terms of nutrition, health, education, leisure, security and environment. However, such measures have not been attempted here, as it was difficult to create a single index for measuring the standard of living of the population under discussion with the available data. Nevertheless, a number of variables which are considered to be appropriate to measure the intergenerational differences in the standard of living of sample households will be used in the following discussion. These variables include condition of the current living environment (type of dwelling/ house and utility services such as water supply and sanitary facilities) and the ownership of household effects which represent a part of the material culture.

### 5.8.1 Tenure of Housing

There were major differences in the tenure of housing occupied by the two groups of households. All the first generation households in land settlement schemes had their houses on land allotted to them by the government. In the Wet Zone control area all the first generation households were living in housing constructed on their own land (either singly or jointly owned). The second generation households in the sample areas occupied houses of a wider variety of tenure types (Table 5.9). The majority of them had housing set up on part of the LDO land allotted to their

**Table 5.9 Tenure of the House Occupied by Generation (in percentages)**

Category	Rajangana		Siyabalangamuwa		Dedigama	
	1st	2nd	1st	2nd	1st	2nd
Parent's House	-	13	-	19	-	32
Own	100	86	100	81	100	60
Rented House	-	-	-	-	-	6
Other	-	1	-	-	-	2
All	100	100	100	100	100	100
N	70	70	58	44	61	58

Source: Sample Survey of Households, 1992.

parents or on encroached land belonging to the government. However, the ownership of this type of housing was not legally recognised by the settlement authorities. Dwelling units constructed on land allotted to parents was predominantly found among second generation settlers in Siyabalangamuwa. Fifty one percent of the second generation households had constructed their housing on encroached land, whereas 35 percent had housing on land allotted to their parents in Rajangana. Those who were living as a separate household under the same roof within a parent's house were estimated at 32 percent in the control area. This could be attributed to the serious shortage of land among the second generation households which forced them to stay with their parents. Rented

accommodation had been taken only by the households in the Wet Zone control area. Six percent of second generation households in the Wet Zone control area reported living in a government owned housing scheme. Those who neither owned nor paid any rent for their housing were categorised under other category in Table 5.9. These housing units were very often owned by close relatives of the occupants.

### **5.8.2 Housing Condition**

There were two types of dwelling units owned by sample households. First those constructed by the government which were exclusively permanent constructions. The second category consisted of housing constructed by the residents themselves. The quality of the housing of the latter type showed large variations. All the houses occupied by the first generation households in Siyambalangamuwa were constructed by the government, compared with only 36 percent of the houses belonging to first generation households in Rajangana. As discussed in Chapter Three, provision of housing for settlers was one of the major policies of the government-induced settlement programme until the late 1950s. During this time the land was cleared of forest and prepared for cultivation, type-plan houses and toilets were built on the highland blocks and irrigation facilities were provided for the paddy allotments before the settlers were actually placed in possession of their lands. All the settlers in Siyambalangamuwa schemes benefited from this policy. Although the settlers who were first brought in and settled under the Angamuwa tank in the Rajangana scheme benefited from the early policy of generous assistance, those who came in subsequent years to the Rajangana scheme were settled under the newly introduced "advanced alienation programme". They arrived prior to the provision of irrigated water and were expected to commence their work in clearing the high jungle and participate in the construction of channels, roads and the preparation of their own land for cultivation for which payment was made. In addition, they were given financial assistance to construct their own temporary

housing. Sixty-four percent of the first generation households in Rajangana belong to this group.

The respondents who were living in type-plan houses provided by the government were asked whether they had made any modifications, additions or renovations to the original houses. Nearly one quarter of first generation households in both schemes reported that they had not made any modification to the original houses. This proportion varied from a half to one third among second generation members who occupied ready-made government constructed houses in the two schemes.

The condition of the housing showed large variations in quality according to whether the housing was provided by the government or constructed by the settlers themselves. Questions pertaining to raw materials used in the construction of housing with regard to the roof, walls and floor were asked in order to understand the quality of the respondent's housing in the sample areas. These responses were then combined into an additive measure to quantify the quality of houses. Accordingly, they were classified into the following three groups, namely temporary, permanent and semi-permanent housing. A permanent house was defined as one where the material used for the roof, wall and floor area was of a durable type such as tile/asbestos, cement block/brick and cement respectively. A semi-permanent house was defined as one which was constructed of a mixture of durable and non-durable materials. A temporary house was defined as one which was constructed with poor quality, less durable materials such as wattle and daub or cadjan (leaves of coconut palm) walls, cadjan roof and mud floor. As shown in Table 5.10, cadjan was the most perishable cheaply available roofing material, commonly used by the households of second generation settlers in land settlement schemes. Although asbestos and metal sheets are superior to cadjan roofs, they are

**Table 5.10 Material Used in the Construction of Housing**

	First Generation			Second Generation			Sri Lanka
	Rajangana	Siyambalangamuwa	Dedigama	Rajangana	Siyambalangamuwa	Dedigama	Sri Lanka
<b>Wall</b>							
Cement blocks/Bricks	62	100	66	48	48	73	57
Mud	38	-	34	52	52	27	36
Others	-	-	-	-	-	-	07
All	100	100	100	100	100	100	100
<b>Floor</b>							
Cement	57	88	67	37	43	64	60
Mud/Cowdung	43	12	33	63	57	36	38
Others	-	-	-	-	-	-	02
All	100	100	100	100	100	100	100
<b>Roof</b>							
Tiles	50	100	71	27	46	66	45
Asbestos/Metal							
Sheets	14	-	5	10	2	5	25
Cadjan	36	-	24	63	52	29	29
Others	-	-	-	-	-	-	1
N	70	58	61	70	44	58	-
All	100	100	100	100	100	100	100

Source: Sample Survey of Households, 1992, Survey of Demographic and Social Aspects, 1986/87, Sri Lanka..

inferior to tiles. First generation households used more durable roofing as compared to the second generation settlers in the two settlement schemes. However, thirty-six percent of first generation households in Rajangana lived under roofs thatched with cadjan. The second generation households in the two settlement schemes used more non-durable housing materials than the total population of the country.

First generation households in Siyambalangamuwa consistently reported superior housing constructed with durable materials as they were provided with permanent housing by the government. Although half of the second generation in land settlement schemes had housing with mud walls, most second generation residents in the control area reported having housing of more permanent construction.

The field investigators of the survey made an assessment of the respondents' housing on the basis of general up-keep and environmental hygiene. Their assessments of housing conditions given in Table 5.11 and do not necessarily relate to the types of materials used in the construction. The most unsatisfactory housing was found among both first and second generation households in the Wet Zone control area. In order to make a comparison of housing quality between first and

**Table 5.11 Investigators Assessment on the Condition of Housing (in percentages)**

	First Generation			Second Generation		
	Rajangana	Siyambalangamuwa	Dedigama	Rajangana	Siyambalangamuwa	Dedigama
Very satisfactory	14	2	-	11	-	2
Satisfactory	57	74	64	57	52	55
Unsatisfactory	20	24	36	17	39	40
Very unsatisfactory	9	-	-	14	9	3
All	100	100	100	100	100	100

Source: Sample Survey of Households, 1992.

second generation, a Poor Housing Index was constructed consisting of attributes characterising poor quality housing. These attributes were mud walls, mud/cowdung floor, cadjan roof, more than the average number of persons per room (over-crowding), source of drinking water other than protected well and no toilet or shared toilet. The index was derived by adding up the presence of these attributes, dividing by the number of households and multiplying by 100. The results are given in Table 5.12. The largest proportion of poor quality housing was

**Table 5.12 Quality of Housing**

	First Generation			Second Generation		
	Rajangana	Siyambalangamuwa	Dedigama	Rajangana	Siyambalangamuwa	Dedigama
Poor	31	-	20	54	52	31
Good	56	100	70	36	48	62
Average	13	-	10	10	-	7
All	100	100	100	100	100	100

Source: Sample Survey of Households, 1992.

among second generation households. Poor quality housing was also found among first generation households in Rajangana and Dedigama, but not in Siyambalangamuwa as they were all in permanently constructed housing with facilities provided by the government.

### **5.8.3 Utilities and Services**

The major sources of water available for domestic use in the sample areas were open wells and irrigation channels. None of the sample households had access to pipe-borne water either in the Wet Zone sample or in the Dry Zone sample. The drinking water was obtained exclusively through wells. In addition to open wells in Siyambalangamuwa, there were a number of tube wells sunk for public use where domestic water was a serious problem during the dry months of the year. Details on the source of water for washing are given in Table 5.13. The main source of water for washing in Rajangana were irrigation channels. National data show that the majority of the population in the rural sector using wells for drinking and washing purposes. Water is not a problem for the majority of the households in Rajangana, as the major reservoir contains adequate water year round for both cultivation and domestic use. The Rajangana settlers had not experienced serious water problems even in a serious drought year, particularly after the construction of the Mahaweli reservoir system. Therefore settlers in this scheme largely depend upon the irrigation system for their water requirements. One third of Siyambalangamuwa settlers use the old Siyambalangamuwa Oya (stream) running across the scheme for washing purposes as the supply of irrigated water was totally inadequate and unreliable. The residents of the Wet Zone control area mainly depend on wells for their domestic water requirements. The questions on the adequacy of water for domestic purposes produced somewhat unusual responses in the Wet Zone control area, due to the timing of the survey which was carried out

**Table 5.13 Sources of Water for Drinking and Bathing and Adequacy of Water (percentage reporting)**

	First Generation			Second Generation		Sri Lanka	
	Rajangana	Siyambalangamuwa	Dedigama	Rajangana	Siyambalangamuwa	Dedigama	
<u>Source of Drinking Water</u>							
Wells	91	90	98	91	98	100	87
Tube Wells	07	10	-	09	02	-	-
River	02	-	02	-	-	-	04
Other	-	-	-	-	-	-	09
All	100	100	100	100	100	100	100
<u>Source of Washing Water</u>							
Wells	09	07	74	06	02	85	66
Tube Wells	-	07	-	01	14	-	-
River/Stream	01	76	26	-	70	15	22
Tank	21	08	-	19	05	-	06
Irrigation Channel	69	02	-	74	09	-	-
Others	-	-	-	-	-	-	06
All	100	100	100	100	100	100	100
<u>Adequate Drinking Water</u>							
Yes	63	09	66	70	11	78	-
No	37	91	34	30	89	22	-
All	100	100	100	100	100	100	-
<u>Adequate Water for Washing</u>							
Yes	81	05	59	77	-	48	-
No	19	95	41	23	100	52	-
N							
All	100	100	100	100	100	100	100

Source: Sample Survey of Households, 1992, Survey of Demographic and Social Aspects 1986/87, Sri Lanka

during one of the worst drought periods in the country. The farmers experienced severe crop losses due to the drought, but it was unusual for water supplies to be inadequate for household use in these villages. Consequently, many respondents gave negative responses on the adequacy of water for domestic use. However, in normal years water was quite adequate for domestic use in the area. The Siyambalangamuwa scheme was, however, regarded as a water deficit area which could be very clearly seen from the number of negative responses given by the respondents to the question on adequacy of water supplies.

The availability of toilet facilities is another indicator of living environment in the sample area (Table 5.14). Households in the Wet Zone control area were found to

**Table 5.14 Availability of Toilet Facilities (in percentage)**

Type	First Generation			Second Generation		
	Rajangana	Siyambalangamuwa	Dedigama	Rajangana	Siyambalangamuwa	Dedigama
Flush toilet	-	-	3	-	-	2
Water sealed	17	16	61	10	5	62
Pit	66	81	36	74	77	36
None	17	3	-	16	18	-
All	100	100	100	100	100	100
Household	10	21	5	9	32	14
Sharing_Toilets						
N	70	58	61	70	44	58

Source: Sample Survey of Households, 1992.

have better facilities as compared to the other two locations. Sixty-four percent of the first and second generation households reported either flush or water-sealed toilets. Open pits were predominantly used in land settlement schemes, however there were a number of households without any form of toilet. These cases were reported entirely in the land settlement schemes, mainly involving second generation households. The sharing of toilets by several households was also reported by the second and first generation households in Siyambalangamuwa.

### 5.9 Ownership of Household Assets

The ownership of household utilities such as transport and consumer durables is an indirect measure of the prosperity of households in rural settings. The ownership of farm implements indirectly indicates the magnitude of agricultural activities undertaken by individual households in an agrarian community. The ownership of livestock assets is a direct measure of the level of household income due to the fact that these assets are encashable in a household emergency and therefore could be considered as household liquid assets.

In this section, households will be classified into groups on the basis of asset ownership. Four separate indices were constructed to establish the prosperity of households in terms of the ownership of different assets. These included indices of transport equipment, household durables, agricultural equipment and livestock assets. Finally, a combined index was constructed by incorporating the scores of each asset index in order to determine the overall prosperity of households in terms of asset ownership. The indices were constructed simply by counting the number of a predetermined list of items indicated as present by households. However, each item was given a weight on the basis of its relative value and these are detailed in Appendix 5.1.

In the construction of the transport assets index, the items included were bicycles, motor cycle/scooters, two-wheel tractors and bullock carts. The items included in the household consumer durable index were radios, radio cassettes, televisions, sewing machines and wall clocks. The agricultural implements considered in the construction of the index on ownership of agricultural implements were ploughs, mammoties (local spade), sprayers and water pumps. The livestock assets were evaluated on the basis of the number of buffalo, cattle, pigs and poultry kept by the households.

On the basis of the mean scores, each household was classified as rich, average or poor. Those who had overall scores of less than 50 percent were regarded as poor, whereas scores of 50-70 were considered as average households and those who had overall scores of over 70 percent were treated as rich. The results are given in Table 5.15 which shows that more households in the Wet Zone control area were poor in comparison to households in the two settlement schemes.

There was a greater representation of average or rich households in land settlement schemes in terms of the ownership of transport equipment. The ownership of

transport equipment was very important in the Dry Zone settlement area due to the poor availability of public transport facilities. Therefore, every household needed

**Table 5.15 Households Classified on the Basis of Scores of Indices Prepared for Different Assets Groups (percentage of households)**

	First Generation			Second Generation		
	Rajangana	Siyambalangamuwa	Dedigama	Rajangana	Siyambalangamuwa	Dedigama
<b>Transport Equipment</b>						
Poor	40	33	75	30	30	67
Average	49	59	23	66	70	33
Rich	11	8	2	4	-	-
<b>Household Goods</b>						
Poor	26	14	25	24	27	21
Average	61	79	44	73	70	57
Rich	13	7	31	3	3	22
<b>Agricultural Equipment</b>						
Poor	54	52	92	73	68	98
Average	34	33	8	21	27	2
Rich	12	15	-	6	5	-
<b>Livestock Assets</b>						
Poor	74	79	98	87	91	100
Average	17	12	2	4	7	-
Rich	9	9	-	9	2	-
<b>Overall Assets</b>						
Poor	64	71	87	77	80	86
Average	24	15	11	16	20	12
Rich	12	14	2	7	-	2

Source: Sample Survey of Households, 1992.

at least one bicycle in order to move about within the scheme. Bicycles were not very popular in the Wet Zone control area due to the difficult terrain. Moreover, the ready availability of a reasonably good public transport system connecting villages with major cities discouraged households from purchasing a bicycle. Households in the rich categories owned expensive transport equipment like two wheel tractors, motor cars or motor cycle/scooters.

Wet Zone households were on average better off on the index of household durable goods. Thirty-one percent of the first generation households in the control area were rich in terms of ownership of household goods. By contrast, 22 percent of the second generation households in the same area could be classified as rich in

household goods. The majority of the households in land settlement schemes were average in terms of the ownership of consumer durables. The possession of consumer durables by the majority of the Wet Zone households suggests that they had been largely influenced by the urban values of consumerism, more than their counterparts living in the Dry Zone settlement schemes. The urban values have penetrated much faster into the communities living in the more developed parts of the Wet Zone close to the urban areas as compared to those in the remote settlement schemes in the Dry Zone.

More Wet Zone natives were in the poor category with regard to agricultural equipment due to the low intensity of agricultural operations in the area. However, there were very clear differentials between first and second generation households in the settlement schemes, with more second generation households belonging to the poor category. The rich group in this index tended to operate large agricultural holdings. Scores on the livestock index were low among households in the Wet Zone control area. Except for two percent of households which were found to be average, all the other households in the Wet Zone control area were poor in terms of livestock ownership and no livestock were kept by many households in the Dry Zone settlement schemes either. The keeping of livestock has been particularly discouraged in the settlement schemes for several reasons. The lack of grazing grounds within and around settlement schemes was widely referred to as a major factor in not rearing buffalo and cattle. The increased farm mechanisation in recent years in Dry Zone settlement schemes also discouraged the raising of cattle as draught power. Buffalo and cattle were rarely kept for meat purposes in the rural setting and inadequate space discouraged keeping them even for milking. During focus group interviews, settlers indicated that they were reluctant to undertake goat rearing, poultry keeping and pig husbandry as a source of income due to their religious beliefs.

The combined index on overall assets has shown that the a majority of the households are poor in all locations. The poor were disproportionately represented among the first and second generation households in the Wet Zone, possibly due to the greater weightage given in the index for agricultural and livestock assets which were found to be unfavourable for the Wet Zone residents. In Rajangana, there was a greater representation of households in the rich and average groups. This could be attributed to the higher intensity of agricultural activities in this scheme as a result of the assurance of irrigation water for crop cultivation. The cultivation of paddy in both agricultural seasons and subsidiary food crop cultivation for the market was found to be a major source of income among households in the area.

### 5.10 Household Income and Poverty

Table 5.16 presents a breakdown of the annual household income by its sources for first and second generation households in the three study areas. Paddy was the main source of income among first and second generation households in Rajangana

**Table 5.16 Composition of Average Annual Household Income by Generation (in percentages)**

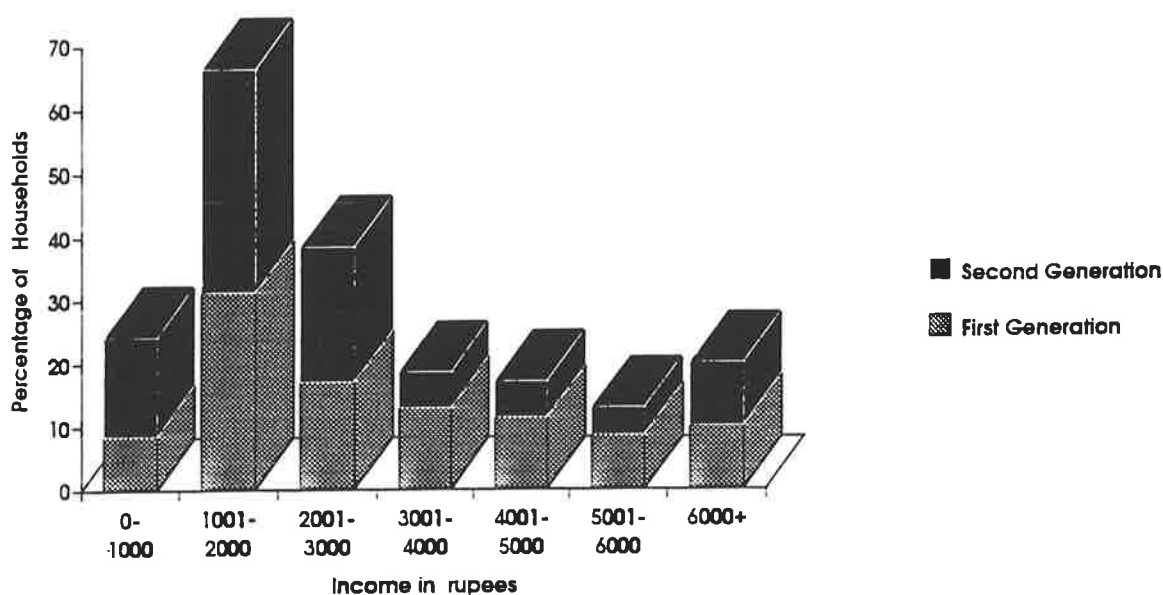
Source	First Generation			Second Generation		
	Rajangana	Siyambalangamuwa	Dedigama	Rajangana	Siyambalangamuwa	Dedigama
Paddy	42.1	22.8	6.1	43.6	18.1	5.8
Food Crops	11.2	18.5	0.7	20.0	12.2	1.2
Tree Crops	-	-	9.6	-	-	4.8
Livestock	1.2	0.9	0.1	0.3	-	-
Employment	30.1	50.3	73.5	26.2	62.2	77.4
Hiring out animal	3.4	1.4	-	4.9	-	6.1
Renting out land	11.5	4.0	1.5	0.9	0.5	1.4
Food Stamps	0.5	0.5	1.9	3.6	7.0	2.1
Retirement benefits	-	1.6	6.6	-	-	1.2
All	100	100	100	100	100	100
Annual Median Income Rs.	29727	16729	40240	23243	17595	29633

Source: Sample Survey of Households, 1992.

but not in the other two locations. Paddy income in Siyambalangamuwa was low due to the cultivation of only one crop annually. However, the cultivation of paddy and other crops (especially subsidiary food crops) together produced over forty percent of household income among first generation households in Siyambalangamuwa. Income derived from crop cultivation made up only 30 percent of household income among the second generation, suggesting that agriculture has played a secondary role in this location. Income from various non-agricultural occupations made up 74 and 77 percent of the household income respectively among first and second generation households in the control area. The crop income has remained around 10 percent of the total household income in this location due to the cultivation of crops predominantly for subsistence needs in micro-land holdings.

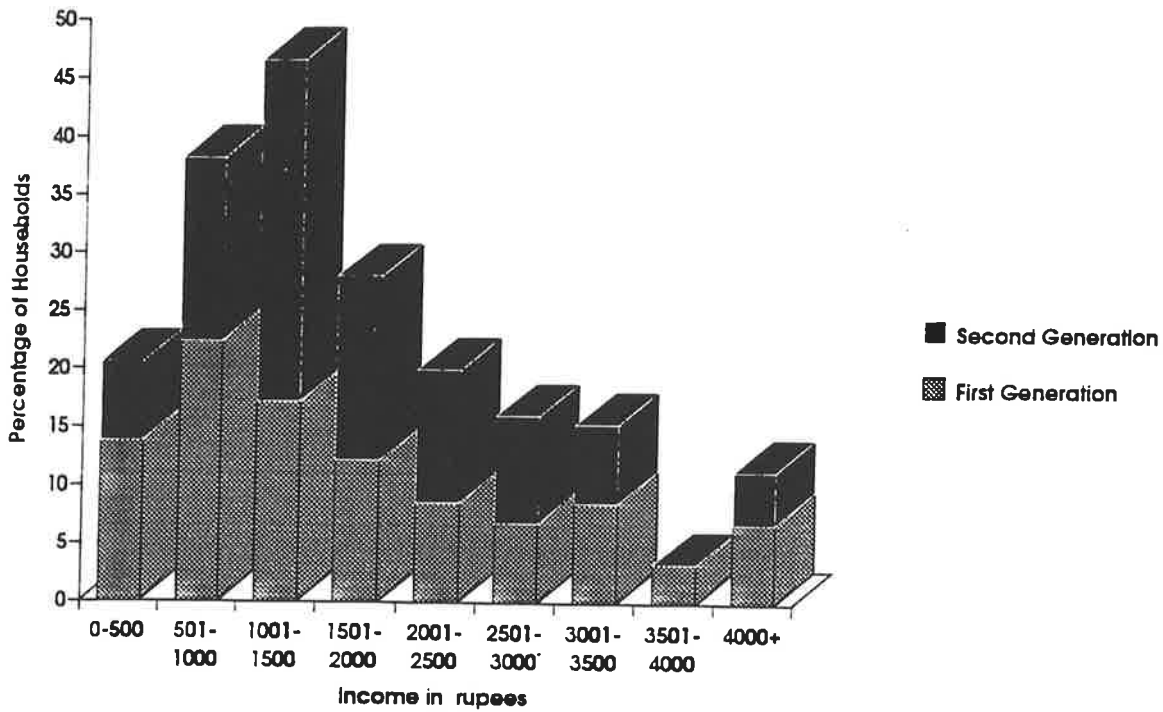
Figures 5.15, 5.16 and 5.17 show that 50 percent of the first generation households in Rajangana had received less than Rs. 2500 which was considered to be sufficient

Figure 5.15 Distribution of Monthly Household Income by Generation in Rajangana



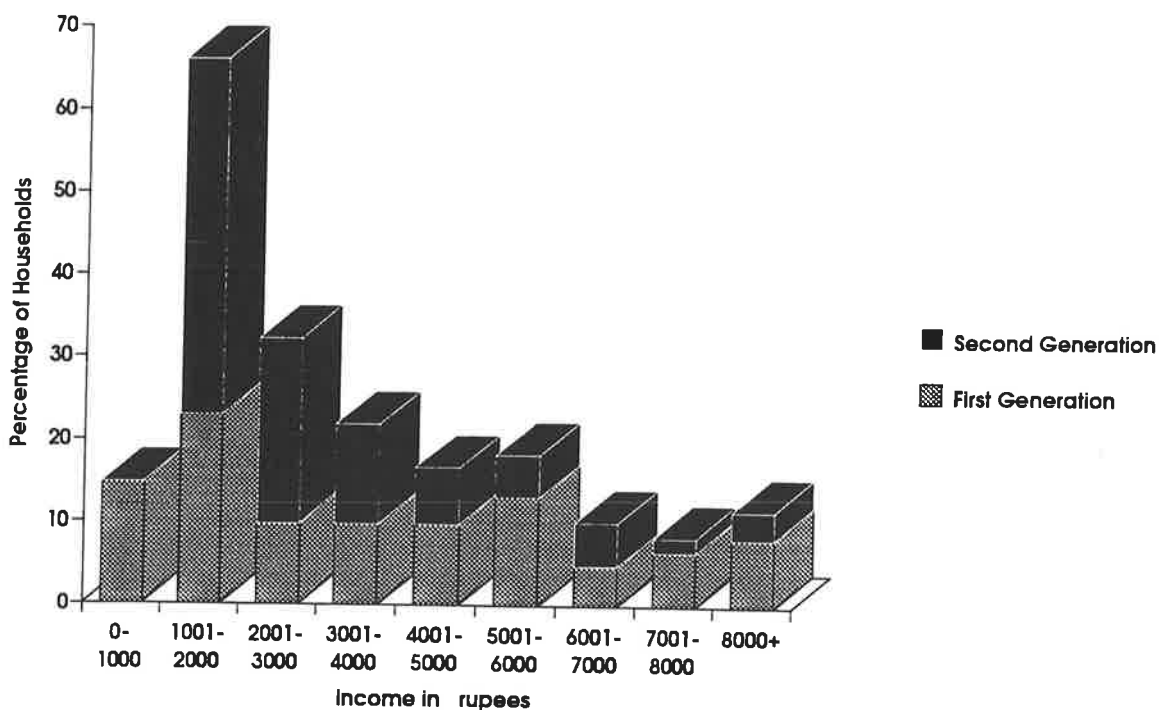
Source: Sample Survey of Households, 1992.

Figure 5.16 Distribution of Monthly Household Income by Generation in Siyambalangamuwa



Source: Sample Survey of Households, 1992.

Figure 5.17 Distribution of Monthly Household Income by Generation in Dedigama.



Source: Sample Survey of Households, 1992.

to maintain an average family under the Poverty Alleviation Programme introduced by the government in 1989. In the Siyambalangamuwa scheme 74 percent of households received a monthly income of less than Rs. 2500 suggesting a higher incidence of poverty among households in this scheme. The incidence of poverty, however, was found to be less common in Dedigama where only 39 percent of the first generation households received a monthly income of less than Rs 2500. In the case of second generation households, poverty was found to be comparatively higher in all three locations. In Rajangana 64 percent of households received a monthly income of less than Rs 2500. The relevant estimates among second generation households in Siyambalangamuwa and Dedigama were respectively 80 and 52 percent, indicating that poverty was more common among both first and second generation households in Siyambalangamuwa.

Median monthly household income by differential characteristics of household unit and the household heads are given in Table 5.17. As can be seen, household

**Table 5.17 Median Monthly Household Income by Various Characteristics of Households**

Characteristic	Rajangana		Siyambalangamuwa		Dedigama	
	N	Rs.	N	Rs.	N	Rs.
<b>First Generation</b>						
Household Members						
Less than 5	44	2243	42	1358	38	2642
Over 5	26	3006	16	1608	23	4769
<b>Second Generation</b>						
Household Members						
Less than 4	37	1512	22	1351	38	2000
Over 4	33	2170	22	1906	20	3018
<b>First Generation</b>						
Education of Head						
Less Primary	47	1970	45	1188	24	1928
Over Primary	23	4348	13	1744	37	4500
<b>Second Generation</b>						
Education of Head						
Less Primary	27	1444	22	1408	13	1629
Over Primary	43	2463	22	1590	45	2600

Source: Sample Survey of Households, 1992.

income was partly determined by the number of members in the households, and hence the larger the household, the larger the income tended to be since there were normally more income earners contributing. This was particularly the case if these household members were engaged in jobs outside of the household farm, as their contribution tended to add significantly to the household income. The level of household income tended to be closely related to some of the characteristics of the heads of households. As can be seen in Table 5.17, household income was closely related to the educational achievement of the head of household. Despite the physical nature of agricultural work available in land settlement schemes, the education of the head of the household was found to be positively related to the median monthly income. This could be partly attributed to the adoption of modern farming methods by the more educated farmers as well as the diversification of income sources by this group. The gap in the monthly income between more educated and less educated households was found to be greater in the case of first generation households in Rajangana and Dedigama.

### **5.11 Conclusion**

The objective of this chapter has been to highlight the basic differences between first and second generation individuals in both land settlement and non-settlement areas. It was found that the socio-economic characteristics of government-sponsored migrants and their subsequent generations were notably different from those of the non-migrant population and their descendants. The unfavourable situation of second generation migrants was apparent when their characteristics are compared with the first generation migrants. Although the land settlement migrants were selected from the most disadvantaged group of rural society, the migration into land settlement schemes does not appear to have remarkably improved their (first and second generation) current socio-economic situation. The large majority

of them still remained in poverty despite the basic objective of migration being the achievement of a higher standard of living. The second generation in the land settlement schemes was found to be particularly poorly educated, to derive a low income and to continue to be dependent upon the land in comparison to their counterparts in the Wet Zone. The differentials in educational achievements between these two groups were particularly wide, which contributed to the variability in employment pursued by them as well as their average level of household income. The disparities in income levels are attributable to the lack of diversification in economic activities pursued by the two groups. The second generation in the control area was found to be better educated and to have pursued diverse employment, which in turn had contributed to a comparatively higher household income level.

The differentials in the two groups very often demonstrated the effect of selectivity among settlers. This particularly contributed to the differentials in demographic and socio-economic characteristics among migrants as against non-migrants. The divergent pattern of resource distribution between two settlement schemes also contributed to the greater differentials in household income. The poverty incidence among second generation households in settlement schemes was found to be largely associated with the inaccessibility of land resources. This was accentuated in the absence of the skills necessary to take up off-farm employment opportunities. Although the overall assets index was found to be more favourable to the first and second generation households in the Dry Zone areas, the monthly household income indicated more poverty among them in comparison to the Wet Zone residents. The seasonality of household income and the lack of diversity in employment undertaken by the household members in the Dry Zone settlement explained this variability. The next chapter will attempt to demonstrate the nature of the second generation problems in sample areas.

## CHAPTER SIX

### PROBLEMS OF SECOND GENERATION SETTLERS

#### 6.1 Introduction

The focus of this chapter is to specify the nature of the problems being experienced by the children of pioneer settlers in land settlement schemes, particularly those revealed by respondents of the sample survey. The field survey data together with information gained through participant observation and focus group techniques are used in this chapter to provide an understanding of the problems being experienced by the adult second generation in land settlement schemes. The chapter will attempt to highlight the distinctive nature of the problems encountered by second generation settlers in Dry Zone land settlement schemes by comparing them with control group living in the traditional subsistence sector of the Wet Zone.

The first part of the chapter attempts to analyse the development of population pressure upon resources in land settlement schemes as the resident population grew and aged. In the second part of the chapter, the major problems currently confronting the second generation settlers will be identified and discussed.

#### 6.2 Population Pressure in the Sample Areas

Population<sup>1</sup> changes in the survey villages over the last three decades are summarised in Table 6.1. The population recorded in 1964 had almost tripled by 1992 in Rajangana and nearly doubled in Siyambalangamuwa. The population

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<sup>1</sup> Population census data for land settlement schemes cannot be separated out from district figures due to the fact that the census enumeration was taken for different administrative boundaries which cut across both land settlement areas and non settlement areas.

**Table 6.1 The Population Change and Growth Rate in the Survey Villages 1964-1992.**

Year	Rajangana	Siyambalangamuwa	Dedigama
<b>Total population</b>			
1964	867	684	893
1971	1326	960	1037
1981	1802	1253	1166
1992	2138	1355	1246
<b>Annual growth rate</b>			
1964-71	6.26	4.96	2.16
1971-81	3.11	2.70	1.18
1981-92	1.57	0.71	0.61
1964-92	3.28	2.47	1.20

Note 1: Population for 1964, 1971 and 1981 are calculated from the records available at the Divisional Secretary office in each survey area. Complete enumeration of households in 1992 survey provides 1992 figures.

2: The settlement in Siyambalangamuwa commenced in 1958, whereas the settlers first came to Rajangana in 1964.

growth rate was significantly higher in the Rajangana scheme during the entire reference period. The population in the control area for the corresponding periods grew much more slowly than in the settlement schemes. The rate of population growth in all areas has fallen dramatically from the high level of the 1960s period to a lower level in the 1980s.

The higher level of population growth in the settlement schemes can be attributed to substantial natural increase increments and the continued immigration of people from other areas in the initial stages of settlement. This was especially the case in the 1964-1971, the period of initial settlement in Rajangana and Siyambalangamuwa. Migrants to land settlement schemes in the early stages included friends and relatives of the initial settlers. These migrants have become permanent residents, settling on available land in and around the settlement schemes or through marriage with the second generation. There was also a stream of immigrants who did not have any relationship with the initial settlers but moved independently into settlement schemes. These migrants were attracted purely by the prospect of occupying state land illegally. Further, all types of immigrants were

welcomed by the settlers, both as a result of the heterogeneous character of the settlement community and especially, the labour scarce situation experienced in the initial years (Bulankulama 1984 : 344).

Some 43 percent of the encroachers in the Rajangana scheme were outsiders who had no relationship with the initial settlers and who had moved into the scheme independently. This proportion was only 17 percent in Siyambalangamuwa. Some 63 and 36 percent of the encroachers in Siyambalangamuwa and Rajangana respectively had been residing on their land since the early stages of the settlement. This is consistent with the findings of Wanigaratne (1987 : 36), that encroachment of settlement schemes takes place at the very early stages in anticipation of future scarcities of land. The migration of a large number of young couples with their young children onto settlement land as encroachers has also contributed to a rapid growth in population through the natural increase component. This kind of immigration has not occurred in later years due to diminishing land frontiers and increasing demand for land from second generation members within the schemes. Therefore population growth, after the early years of settlement, has significantly slowed down in both settlement schemes. Some 79 and 57 percent of the second generation respondents in Rajangana and Siyambalangamuwa respectively reported that they considered that immigration into their settlement schemes over the last ten years had declined. The migrants arriving in land settlement schemes in recent years have largely been the marriage partners of the second generation members. Since the prospect of land encroachment no longer exists within the settlement schemes as a result of the exhaustion of government land reserves, there has been hardly any migration into the settlement schemes for the purpose of illegal occupation of state land in the last decade.

The outflow of people on a permanent basis from settlement schemes, on the other hand, has occurred largely in two phases - in the early days of settlement and after

the growth of the second generation to adulthood. Desertion is one of the typical problems in the initial stages in many settlement schemes elsewhere in the developing world, for example in Nepal (Kansakar 1983 : 244), India (Bose 1983 : 168), Somalia (Ragsdale and Ali 1988: 224), Ethiopia (Choler and Mulat 1988 : 181), Indonesia (Laquian 1982: 43; Oberai 1986 : 151) and Brazil (Collins 1986 : 3). Those who migrated out from settlement schemes in the initial stages generally were those lacking the pioneering spirit to accept the hardships associated with the new environment (Rajendra 1976 : 73). Although the exact number of initial settlers who abandoned the survey villages is unknown, the colonisation officer in charge of the settlement scheme of Siyambalangamuwa mentioned that the deserters were largely those who were recruited from the distant, wetter parts of the Kurunegala district such as Polgahawela, Alawwa and Warakapola. These people did not have the necessary agricultural background knowledge demanded and could not adjust to the harsh conditions in the Dry Zone. Yet the number of settlers from these areas was small in comparison to the heavy outflow of settlers from the Rajangana scheme, where the settlers were expected to develop the land from high jungle to agricultural fields under the advanced alienation programme before the provision of irrigation water (Chapter Three). Rajendra (1976 : 80) estimates the number of deserters from the originally settled population in Rajangana at about 1500 (24 percent). However, such deserters were soon replaced by new settlers and encroachers, especially after the improvement in conditions in later years, so that immigration accelerated during the 1964-1971 period. According to the records of the Project Office of the Irrigation Management Division (IMD), the total number of encroachments in the entire Right Bank system of the Rajangana scheme in 1992 was estimated to be 1157, as compared to only 288 in the Siyambalangamuwa<sup>2</sup> scheme. The better water supply situation for crop cultivation encouraged a greater

<sup>2</sup> Official estimates of encroachments in this scheme were found to be an underestimation (Chapter Eight). The absolute number of encroachers was less due to the relatively smaller size of the scheme than Rajangana.

inflow of migrants into the Rajangana scheme. Population growth during 1964-71 was less in Siyambalangamuwa as compared to the rate of growth in Rajangana due to the volume of immigrants being lower in this scheme. This is attributable to the smaller size and comparatively less land available for encroachment in the Siyambalangamuwa scheme. The rate of immigration also had slowed down in this scheme due to the fact that a substantial time had elapsed since the establishment of this scheme in 1958 compared to 1964 in Rajangana.

In recent years the main component of the population growth in the two settlement schemes has been natural increase. It was especially high in the 1971 - 1981 period, but subsequently there was a significant slowing down in population growth as the first generation ceased child bearing and the adult second generation members began to outmigrate. The population growth rate in the Siyambalangamuwa scheme during the 1981-92 period was very similar to that of the control area where the population growth rate was consistently low throughout the reference period. The low growth rate in the Siyambalangamuwa scheme was attributable to heavy outmigration among second generation married members (amounting to 44 percent of that group) as a result of the extreme pressure on resources and difficult living conditions in the area (Chapter Ten).

As discussed in Chapter One, the characteristics of the population selected for settlement schemes in the initial stages greatly contributed to the high rate of growth. Young men and women with large families were given preference in the selection of early settlers. The mean number of children reported by settlers at the time of their migration into the two sample settlement villages was 4.23 and 4.91 in the Siyambalangamuwa and Rajangana schemes respectively. The median ages of the first generation women at the time of migration was reported as being 36 and 34 years respectively, showing that the majority of them were in the child-bearing ages with a large number of children when they migrated.

The responses given by first generation settlers to the question on the reasons for having large numbers of children (more than 5) reflects the low level of contraceptive knowledge and the settlement environment itself which tended to encourage them to have large families. Table 6.2 shows that 41 percent of the first

**Table 6.2 Reasons Given by First Generation Households to Have More Than Five Children (in percentages)**

Reason	Rajangana	Siyambalangamuwa	Dedigama
Needed as farm labour	13	3	-
Not an economic burden	36	38	48
Non accessibility to birth control methods	26	28	13
To get help in old age	31	21	26
Not applicable i.e. had less than five children	3	16	41
N	70	58	61

Note: Total does not add up to hundred due to multiple answers  
Source: Sample Survey of Households, 1992.

generation household heads in the control village had less than five children, as compared to only 3 and 16 percent of their counterparts the Rajangana and Siyambalangamuwa schemes. Chapter Nine shows that the mean number of children ever born to first generation women was 6.9 and 6.4 in the Rajangana and Siyambalangamuwa schemes respectively, in comparison to only 4.1 in the control area. These data indicate that the significant difference in fertility among migrant women in land settlement schemes and an equivalent group of women in the migrant source areas of the Wet Zone was an outcome of a number of interrelated factors (Chapter Nine). The impact of migration on fertility has also been observed in Indonesian transmigration areas. Oey (1975 : 224) has shown that Javanese

migrant women in the transmigration area of Lampung have far higher fertility than the Javanese women on Java. She argues that higher fertility among Javanese migrant women was a consequence of improved economic conditions, as well as the higher demand for labour in Lampung than in Java (Oey 1975 : 234-237). Early studies of land settlement experience in the Dry Zone of Sri Lanka observed that the available family labour had been inadequate to cultivate the entire land holding allotted to settlers (Farmer 1957; Fonseka 1966 : 16, 1971 : 70). This forced settlers to either fallow part of their land holding or to cultivate the entire holding with the assistance of hired labour. Some settlers have called on close relatives and friends during the crop season to fulfil this additional labour demand (Perera and Gunawardena 1980; Crooks and Ranbanda 1981 : 43-45). The demand for such labour in recent years however, has subsided due to the greater availability of labour locally as a result of the population growth. The improvement of non-farm employment and income opportunities in the Wet Zone areas (largely due to the post 1977 economic reforms) in general, has also discouraged the seasonal migration of Wet Zone labour as they can access locally available employment opportunities (Wanigaratne 1987 : 13).

Children in settlement schemes have contributed a significant share of the total labour input into family farms from the initial days of settlement (Karunatissa and Rupasinghe 1982 : 28-32; Wanigaratne 1979 : 18-19). This has changed over time as the second generation have matured. Chapter Five shows that in contrast to the first generation, second generation settlers have placed greater value on their children's education and aspired to them taking up white collar employment in the public sector. Only 13 and 3 percent of the first generation respondents respectively from the Rajangana and Siyambalangamuwa schemes specifically mentioned the greater demand for labour on the family farm as one of the major reasons for them to have large families (Table 6.2). However, the majority of the

respondents reported that having a large family was not an economic burden for them in the 1960s as the cost of raising of children was less, unlike the cost in recent times. However, slightly over a quarter of the first generation settlers stated the lack of accessibility to family planning as a major reason for having a large number of children. Although the family planning association was founded in 1953 in Sri Lanka, modern contraceptive methods were not available in all parts of the country until recent times (Abeykoon et al 1992). It has also been shown that traditional methods were commonly used in the 1960s by Sri Lankan couples who wished to control their fertility (Caldwell et al 1987 : 13). Old age security was the other reason cited by most respondents for having large families.

It is clear that the first generation settlers had changed their status from being landless or land-poor in their place of origin to land owners in the place of destination. They needed extra hands, especially during the peak periods of crop production activities for which they had to employ hired labour. They responded to this new demand by having a large number of children. This is particularly consistent with Caldwell's (1982) argument that the familial mode of production never favoured "highly controlled fertility". He asserted that in such societies high fertility helped the security and stability of its members and benefited the decision-maker, mostly the head of the family. The intergenerational net flow of wealth in these societies was from children to parents. The benefits likely to be gained through having a large number of children were bolstered at this time by the low cost of child-bearing. The financial cost borne by parents for food, clothing and health facilities in raising children was much lower than in recent times.

Although education has been available to all citizens free of charge since 1945, it allowed children to be taken out of working on the farm, hence costing farmers indirectly. The declining trend in the male activity rate of the 10-14 age group after the 1946 census in Sri Lanka has been attributed to the government policy of

keeping children below 14 years of age in school and discouraging their participation in paid employment (Wilson 1976 : 257). However, the regulations on compulsory school education were not enforced vigorously and therefore parents were able to withdraw their children from school during the periods of peak agricultural activities such as planting and harvesting. Karunatissa and Rupasinghe (1982 :29-31) have shown that the children were not attending school for as many as three days per week and the schools remaining closed until the harvesting was over in certain Dry Zone settlement schemes. Their study further revealed that children in land settlement schemes spent a great deal of time on the farms during times of peak activity. Furthermore, 27 percent of the children of school attending age have totally withdrawn from school to be available for full time farm work. Therefore the majority of first generation settlers in the land settlement scheme were found to place relatively low value on the education of their children due partly to their own low standard of education, as well as the need for the children to work on their farms.

Universal food rations at subsidised prices have been available to households since the time of Independence in 1948 until the programme was targeted to the most needy in the late 1970s (Fernado 1986 : 62-64). The government even issued rice free of charge from 1965 to 1970 to all citizens except income tax payers earning over Rs. 1000 per month (Wijesinghe 1976 : 177). Being non-tax payers, the settlers of land settlement schemes were equally eligible to receive free rice despite the fact that they produced the bulk of the rice in the country.

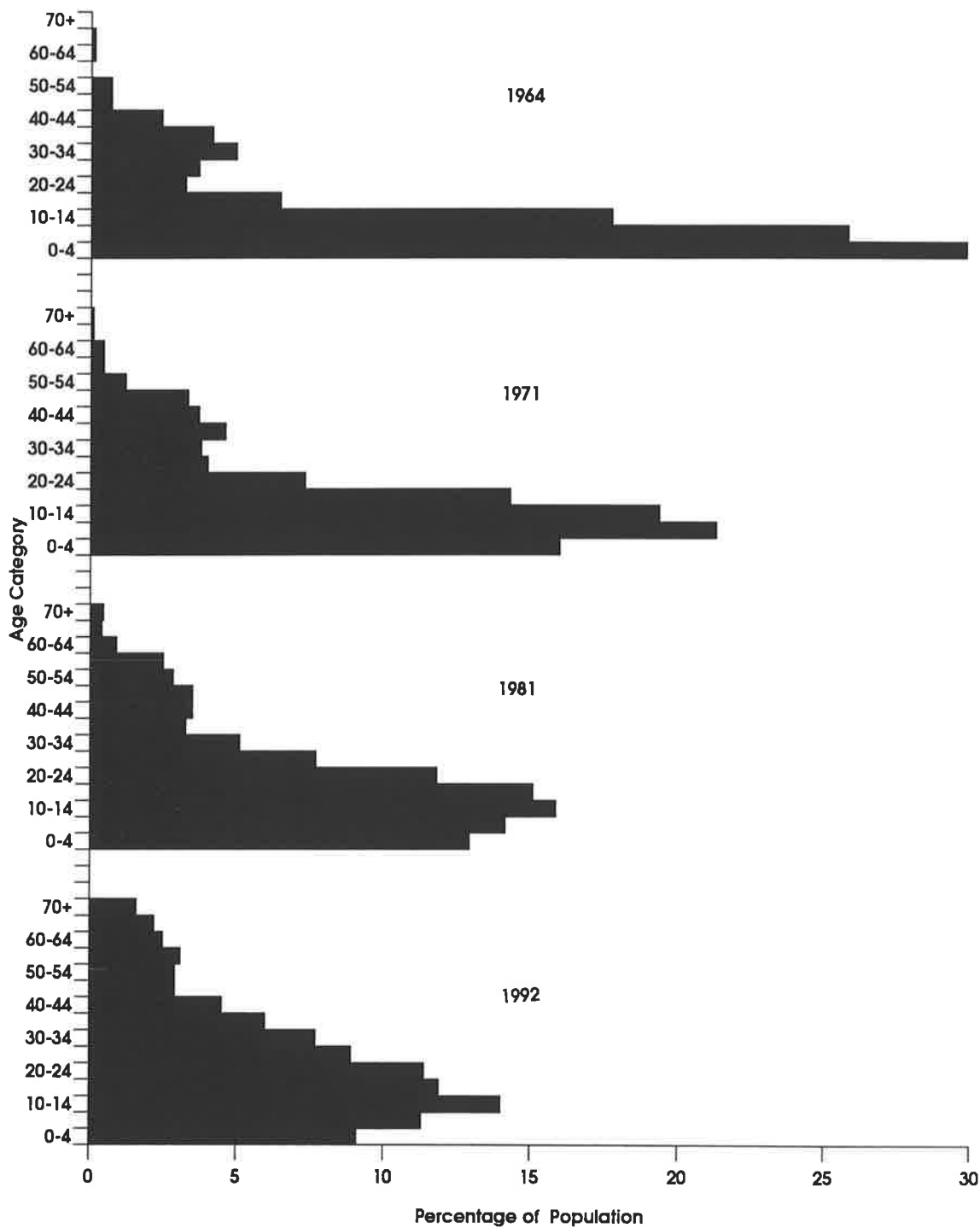
Unlike in other areas, government investment in the health of settlers has been substantial since the inception of the programme, as malaria was a major threat to life in the settlement schemes (Farmer 1957 : 19-22). Specific measures were taken to provide medical facilities to the settlers free of charge through rural hospitals, maternity homes and dispensaries in the settlement districts in order to make the

Dry Zone settlements more attractive to incoming settlers. Consequently, the health of settlers improved remarkably over the years with the complete eradication of malaria and some other infectious diseases. Our survey data show that nearly 68 percent of first and second generation settlers were happy with the current health services available to them in the two settlement schemes, a slightly higher proportion than in the control area (62 percent).

Another important factor which may have encouraged higher fertility among the initial settlers was the low opportunity costs of child bearing in the settlement schemes. In contrast to urban based working mothers, the opportunity costs of child bearing among women in the settlement schemes was lower due to the general scarcity of off-farm work opportunities. As shown in Chapter Five, the highest unemployment in the settlement schemes was found among females. The low level of educational attainment and the lack of avenues for social mobility among settlement women did not discourage child bearing. Further, working on the paddy farms was also not incompatible with child bearing and rearing. The nature of agricultural activities undertaken by the women in the settlement schemes explains this phenomenon better. The labour intensive operations such as transplanting and weeding traditionally performed by women have declined in significance with the introduction of modern technology such as new seeds and chemical weeding (Senaka Arachchi 1990 : 36-37). The new biological technology and farm mechanisation particularly have displaced females more than males from the paddy agriculture (ILO/ARTEP 1986; Senaka Arachchi 1990 : 36).

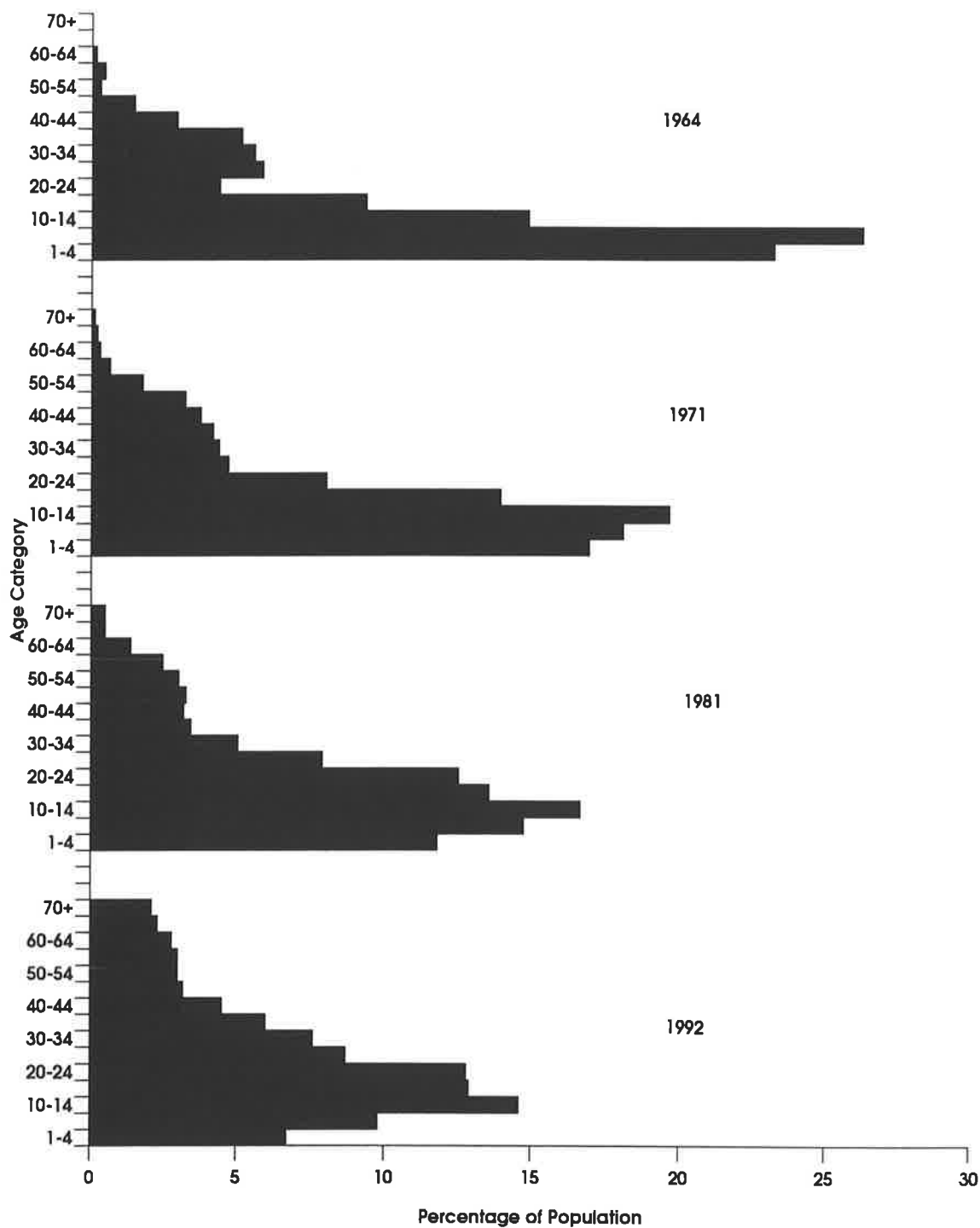
The trajectory of growth in the population in both settlement schemes has contributed to a significant shift in the age structure from that of the original population. The changes in the age structure of the population in each survey location from 1964 to 1992 are shown in Figures 6.1, 6.2 and 6.3. It can be seen

Figure 6.1 Age Structure in Rajangana 1964 --1992



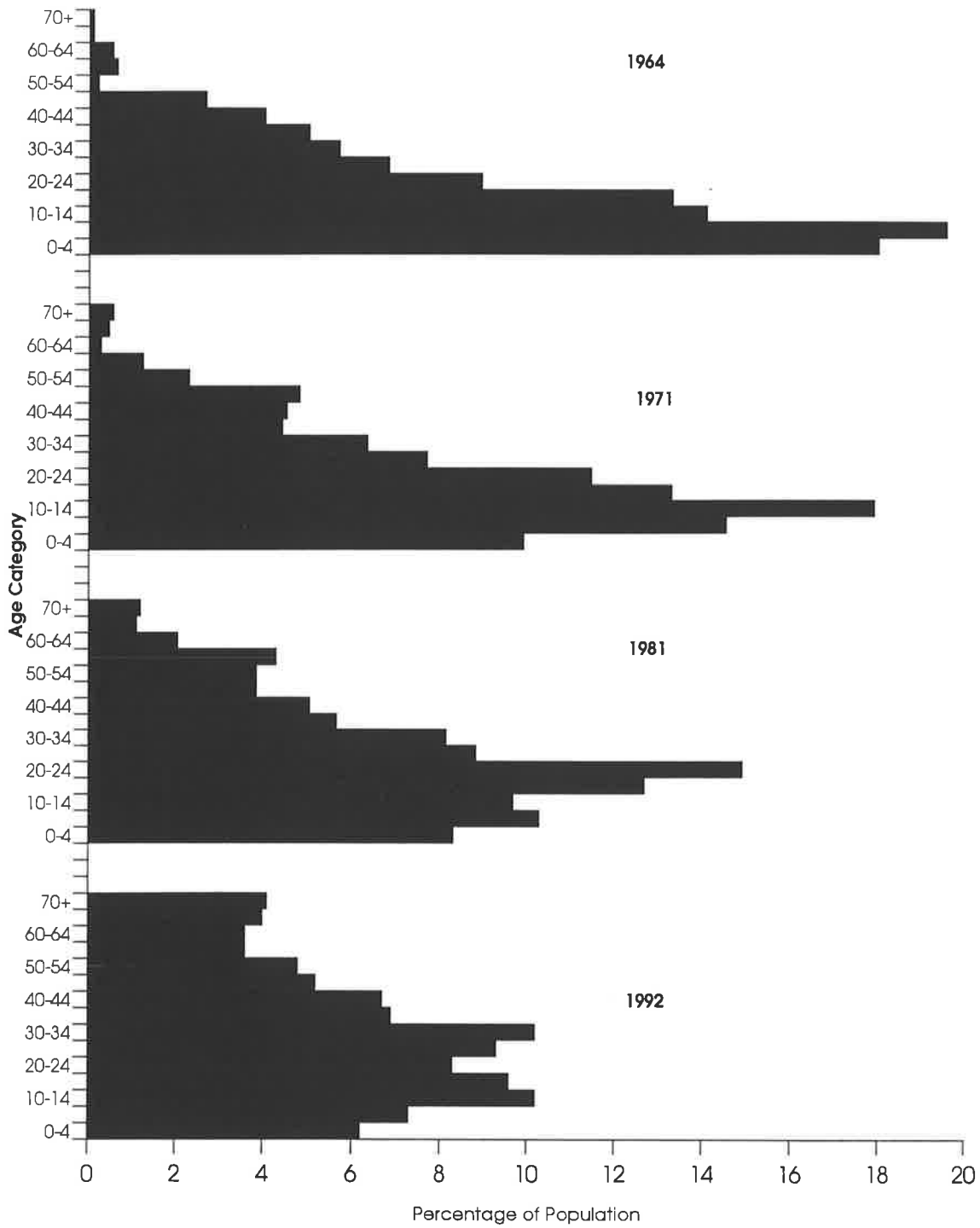
Source: Complete Enumeration of Households, 1992 and Records of Divisional Secretary Offices.

Figure 6.2 Age Structure in Siyambalangamuwa 1964-- 1992



Source: Complete Enumeration of Households, 1992 and Records of Divisional Secretary Offices.

Figure 6.3 Age Structure in Dedigama 1964-1992



Source: Complete Enumeration of Households, 1992 and Records of Divisional Secretary Offices.

that in the two land settlement areas the population was heavily concentrated in the young working ages when the new settlement areas were first opened up in the 1960s. A very large proportion of the population was made up of children in the dependent child age categories. The age structure of the population in the control area was however, quite different. Although the concentration of population in the younger age groups was still evident in 1964, there was also a sizeable proportion in the older working ages which was not the case in the settlement schemes in the initial years.

The age structures of the population in the respective settlement villages in 1971, shown in Figures 6.1 and 6.2, continued to have a bimodal pattern of a heavy concentration of the population in the young adult working age groups and the dependent child age groups. The more recent data on the age structure of the settlement population however, showed that the populations are in the process of maturing. The original settlers have now moved into their sixties and seventies, so there is a significant growth of the elderly population in the settlement schemes. The second generation, on the other hand, have moved into the adult working ages, with a third generation in the dependent child age groups becoming increasingly evident. There has also been a gradual reduction in the proportion of population in the very young age categories due to the natural declines in fertility and mortality referred to earlier. The population pressure on resources is extremely severe at this stage due to the increased demand for land, employment and other facilities particularly originating from the second generation members who have reached working age.

### **6.3 Land Problems**

A major outcome of the growing population in the settlement schemes has been the mounting population pressure on the land. Estimates of the density of population in

the sample locations are given in Table 6.3. Overall population density was, as expected, higher for both arable and cultivated areas in the Wet Zone control area as compared to the settlement schemes. However, as the proportion of the population working in agriculture was low in the Wet Zone control area compared

**Table 6.3 Density of Population to Land in 1992**

	Rajangana	Siyambalangamuwa	Dedigama
Total population	2138	1355	1246
Agricultural Population	1813	1244	498
Total arable land (ha.)	456	326	194
Total cultivated land (ha.)	342	189	162
Total population per 100 ha of arable land	469	416	642
Total population per 100 ha of cultivated land	625	717	769
Total agricultural population per 100 ha of arable land	398	382	257
Total agricultural population per 100 ha of cultivated land	530	658	307

Source: Complete Enumeration of Households, 1992.

to the land settlement schemes, the density of agricultural population in proportion to the arable and cultivated land area was also lower. Although the total population in proportion to the arable land areas was lowest in the Siyambalangamuwa scheme, the total population and the agricultural population per 100 ha of cultivated land was much greater in this scheme due to the actual cultivation of arable land area in one crop season in the absence of irrigation facilities for double cropping.

The population density per 100 ha of cultivated land was lowest in the Rajangana scheme compared to the other two locations, as a result of the highest extent of arable land area being brought under regular crop cultivation.

The responses given by second generation household heads to the question, "what was the most critical problem encountered by them in their villages?" showed a number of problems in relation to land. These problems include landlessness, inadequacy of land and problems with regard to the tenure and succession of land.

**Table 6.4 Types of Land Problems Reported by the Second Generation Households by Age, Household Size, Ownership of Paddy land and Highland in the Rajangana Scheme**

	N	Landlessness	Inadequacy of land	Problems with tenure	Problems of succession
<b>Ownership of paddy land</b>					
Landless	34	100	-	-	82
0-0.25 ha.	10	-	100	60	40
0.26-1.00 ha.	17	-	82	47	35
1.00+ ha.	9	-	78	44	22
<b>Highland</b>					
LDO whole allotment	9	11	33	22	33
Part of LDO land	22	73	41	41	73
Encroached land	38	42	50	18	53
<b>Age of household head</b>					
Less 30 yrs	24	83	17	8	75
31-40 yrs	37	35	68	38	54
40+ yrs	9	11	22	22	22
<b>Household size</b>					
Less than 3	17	82	12	18	88
4-6	46	39	52	28	46
6+	7	29	71	29	57
All	70	49	44	26	57

Source: Sample Survey of Households, 1992.

Problems of land stated by second generation household heads classified by current land ownership, age and size of household are given in Tables 6.4, 6.5, and 6.6.

**Table 6.5 Types of Land Problems Reported by the Second Generation Households by Age, Household Size, Ownership of Paddy Land and Highland in Siyambalangamuwa**

	N	Landlessness	Inadequacy of land	Problems with tenure	Problems of succession
<b>Ownership of paddy land</b>					
Landless	20	100	-	45	60
0-0.25 ha.	11	-	82	73	64
0.26-1.00 ha.	9	-	89	56	67
1.00+ ha.	4	-	50	25	50
<b>Highland</b>					
LDO whole allotment	15	13	13	27	13
Part of LDO land	19	53	68	84	95
Encroached land	10	80	40	30	70
<b>Age of household head</b>					
Less 30 yrs	13	77	23	69	62
31-40 yrs	18	44	56	61	78
40+ yrs	13	15	46	23	38
<b>Household size</b>					
Less than 3	7	71	29	71	57
4-6	30	43	40	47	70
6+	7	29	71	57	29
All	44	45	43	52	61

Source: Sample Survey of Households, 1992.

Landlessness was stated as the major problem by 49 and 45 percent of the household heads in the Rajangana and Siyambalangamuwa settlement schemes in comparison to 38 percent of the households in Dedigama. These responses suggest that lack of access to land was perceived to be more important for second generation households in the two settlement schemes than in the control area due to the fact that the majority of them rely upon the land for their livelihood, either as agricultural operators or wage labourers. Other studies conducted in Sri Lankan

**Table 6.6 Types of Land Problems Reported by the Second Generation Households by Age, Household Size, Ownership of Paddy Land and Highland in Dedigama**

	N	Landlessness	Inadequacy of land	Problems with tenure	Problems of succession
<b>Ownership of paddy land</b>					
Landless	46	48	-	-	
0-0.25 ha.	7	-	71	57	29
0.26-1.00 ha.	3	-	67	33	67
1.00+ ha.	2	-	50	50	100
<b>Age of household head</b>					
Less 30 yrs	16	25	6	6	13
31-40 yrs	25	24	12	12	36
40+ yrs	17	71	24	12	41
<b>Household size</b>					
Less than 3	17	18	6	6	12
4-6	33	48	15	12	36
6+	8	38	25	13	50
All	58	22	8	6	18

Source: Sample Survey of Households, 1992.

settlement schemes have indicated that accessibility to land was a crucial factor determining the relative income levels of settlers in land settlement schemes, confirming the importance of land to settlers (Wanigaratne 1984; Samarasinghe and Samarasinghe 1984).

Those who referred to landlessness as a crucial problem in the two settlement schemes tended to be;

- a) households with no paddy land.
- b) households heads belonging to the youngest age group (less than 30 years).
- c) households with the smallest household size
- d) households who lived in part of LDO highlands belonging to their parents.

Landlessness was particularly severe among the young household heads in the settlement schemes. In contrast, those who cited landlessness as a crucial problem

in the Wet Zone control area were mainly older household heads with four or more household members. Landlessness among older second generation members in the two settlement schemes was found to be lower, because second generation members who entered into married life earlier than their young siblings were able to encroach onto state land due to the availability of reserved lands in the early stages of settlement. On the other hand older households in the control area cited landlessness as a major problem more than their younger counterparts as they had comparatively larger numbers of household members to support. Consequently, landlessness was reported more often by larger households. The proportion of second generation members who stated that the land available was inadequate shows an inverse relationship with the amount of the paddy land currently owned by them. On the other hand, this proportion shows a positive relationship with the current size of household. Inadequacy of land was also reported as a problem by second generation households who were occupying highland encroachments as well as those living on a part of the land belonging to their parents.

Incidence of tenurial problems was found to be inversely related to the size of the paddy land owned by second generation households. In the case of Siyambalangamuwa, tenurial problems were greater among second generation households belonging to the youngest age group with a smaller number of household members. Therefore landlessness, as well as problems regarding tenure were encountered mainly by the younger members of the second generation. Problems pertaining to the succession of land were also more common in the two settlement schemes in comparison to the control area. Second generation settlers were well aware of the uncertainty with regard to the succession of settlement land from their parents due to the rules and regulations prescribed under the land laws. The Land Development Ordinance of 1935 prescribes unitary succession, however a subsequent amendment to the ordinance allowed two successors, which conforms

to the minimum fraction rule of not less than 1.5 acres. The order of priority was stipulated as offspring, followed by blood relatives (Government of Ceylon 1956). All the members except two are therefore to be displaced from land inter-generationally by strict adherence to the rules and regulations prescribed in the Land Development Ordinance. This resulted in more second generation household heads expressing their concern over the problems of succession. The household heads who owned relatively large land holdings in the control area also reported succession of land as a problem. This is attributable to the joint ownership of land prevailing in the area, particularly with respect to the large land holdings.

The land ownership details of the second generation households are given in Table 6.7. Absolute landlessness among second generation households was uncommon

**Table 6.7 Percentage Distribution of Second Generation Household Heads by Ownership of Land Holdings**

Land Size Category (ha.)	Rajangana		Siyambalangamuwa		Dedigama	
	High land	Low land	High land	Low land	High land	Low land
Landless	1.4	48.6	4.6	45.5	10.3	79.4
0.01<0.25	52.9	14.3	43.2	25.0	65.5	12.0
0.26-0.50	14.3	7.1	27.3	9.1	15.5	-
0.51-1.00	22.8	17.1	22.6	11.3	3.4	5.2
1.00 >	8.6	12.9	2.3	9.1	5.3	3.4
N	70	70	44	44	58	58
Median size of holding (ha)	0.41	0.37	0.39	0.26	0.24	0.13

Source: Sample Survey of Households, 1992.

accounting for 1.4 percent and 4.6 percent respectively in the Rajangana and Siyambalangamuwa schemes (Table 6.7). In contrast, the absolutely landless

among second generation households in the Wet Zone control location amounted to 10.3 percent. With regard to paddy land, the percentage of second generation households without any access was reported to be as high as 79 percent in the Wet Zone control area. However, over a half of second generation households in Rajangana and Siyambalangamuwa had ownership rights to paddy land. As far as the operational right to lowlands was concerned, those who had not operated any paddy land amounted to 29 and 16 percent of the second generation households in Rajangana and Siyambalangamuwa respectively. This figure was 59 percent among second generation households in Dedigama.

The median size of highland holding owned by second generation members was 0.41 ha in Rajangana (Table 6.7) and over half of the households owned less than a quarter of a hectare of highland. The situation was similar in the Siyambalangamuwa scheme. Less than 20 percent of respondents were found to have more than a quarter of a hectare of highland in the Wet Zone control area, reflecting the unfavourable land ownership situation in that area .

The smallest sized highland allotments are used exclusively for housing second generation households. Studies in land settlement schemes have shown the neglect of highland allotments in settlement schemes as being one of the major problems of land use in the Dry Zone land settlement schemes, so that their contribution to overall household income has been limited (Farmer 1957; Fonseka 1966 :15-16, 1971). The situation has however, dramatically changed in more recent years with the promotion of cash crop cultivation (Chapter Eight). The ability of individual households to generate an adequate crop income is largely dependent upon the extent to which they had been able to gain access to paddy land. Table 6.5 shows that a little over half of second generation households owned paddy lands. Nearly 80 percent of second generation households in the Wet Zone control area did not own any paddy land.

Second generation households who owned paddy land were generally those who had inherited LDO allotments from the original allottee or who had gained permanent access to land via land purchase or encroachment. The median size of land holdings shown in Table 6.7 indicates that second generation households were not given access to the entire land holdings which were originally allotted to their parents, as the median land size owned by the second generation settlers was smaller than the standard size of the originally allotted land holdings (Chapter Seven). Ownership of lowland holdings among second generation households in the Wet Zone control area involved only a small number and the median size of paddy land holding amounted to a little over one eighth of a hectare. Such minute land holdings were operated purely for the production of subsistence crops rather than the cultivation of crops for any commercial purposes.

Details on the land operated by second generation households are provided in Table 6.8, which shows that those who did not own any land gained access to some land

**Table 6.8 Second Generation Households by Extent of Lowlands Operated (Percent Distribution)**

Land Size (Hectares)	Rajangana	Siyambalangamuwa	Dedigama
0	29	16	58
0.01 - 0.25	11	32	26
0.26 - 0.50	17	16	07
0.51 - 1.00	26	29	07
1.01 - 2.00	10	07	02
2.00 +	07	-	-
All	100	100	100
N	70	44	58

Source: Sample Survey of Households, 1992.

through temporary acquisition (Chapter Eight). In Rajangana, although 34 households did not have any ownership right to lowlands, the number of households who had not operated lowlands amounted to only 20 households (29 percent). In Siyambalangamuwa only seven households had not operated any lowlands,

although 20 households had no ownership rights. However in the Wet Zone, second generation households could not even gain temporary acquisition to land due to the general scarcity of paddy land. Hence accessibility to agricultural land was a significant problem for many second generation households in the Wet Zone. The problem however, was perceived to be more severe in the settlement schemes where the income avenues outside agriculture were rather limited.

### **6.3.1 Subdivision of Land**

When population is increasing and there is no commensurate increase in cultivated area, the size of the individual holding is likely to be reduced (Wanigaratne 1984 : 130). However, the extent of land subdivision is very much dependent upon the prevailing system of land tenure. Although subdivision and fragmentation of land holdings was often cited as being a problem in Wet Zone districts (Sarkar and Tambiah 1957; GOC 1951 : 91), the problem has been replicated in the settlement schemes. A number of micro-level studies have shown the presence of hidden tenancy arrangements and widespread land fragmentation among settlers in the oldest settlement schemes in Sri Lanka, as well as in the more recently established settlement schemes like Mahaweli (Wickramasekara 1985 :115; Wanigaratne 1979 : 24-25; Siriwardena 1981; Samarasinghe and Samarasinghe 1984: 178-184).

The subdivision and fragmentation of settlement land has occurred due mainly to increasing population density, high land values and lack of alternative employment opportunities locally and the immobility of labour and capital. The traditional inheritance practices have also caused the subdivision of land in certain Wet Zone villages where the bequeathing of the land among all children (or all male children) has been common (Sarkar and Tambiah 1957). In addition, studies have shown that the accumulation of settlement land by non-settler investors has also contributed to the subdivision of land in Udawalawe (Amunugama 1965), in Minipe (Amarasinghe 1977; Wanigaratne 1979), in Galoya (Widanapathirana 1986) and in

the more recently established Mahaweli settlement scheme (Siriwardena 1981; Wickramasekara 1985; Krimmel 1986).

In the land settlement schemes the current operational status of land originally allotted to initial settlers clearly indicates the extent of subdivision of settlement land. As shown in Table 6.9, land allotted to 67 original settlers was found to have

**Table 6.9 Extent of Land Subdivision Originally Allotted to First Generation Settlers**

	Rajangana		Siyambalangamuwa	
	Highland	Lowlands	Highland	Lowlands
Total land area allotted (ha)	46.83 (67)	70.72 (70)	46.97 (58)	71.05 (58)
Median size of area allotted (ha)	0.70 (67)	1.01 (70)	0.81 (58)	1.23 (58)
Median land size with access (ha)	0.79 (70)	1.08 (70)	0.84 (58)	1.31 (58)
Median land size operated (ha)	0.49 (38)	0.50 (47)	0.57 (28)	0.84 (31)
Total number of parcels	107	130	90	93
Number of operators	127	175	96	156
Median land extent per operator (ha)	0.43	0.43	0.51	0.49

Source: Sample Survey of Households, 1992.

Note: Number of Households are given in parenthesis.

been subdivided into 107 parcels over the 27-year history of the Rajangana scheme. The subdivision of paddy land was even greater in the same location, amounting to 130 parcels from the original 70. The number of operators has also dramatically increased over the same period. The subdivision of highland and paddy land show similar trends in Siyambalangamuwa. The number of agricultural operators on paddy land alone increased over threefold. The average extent of land available to

an agricultural operator sharply declined with the increasing population in both settlement locations. The total land area available for cultivation however, marginally improved due to the expansion of the area through encroachment.

Although the subdivision of LDO land holdings is prohibited under the land laws, de facto land subdivision has occurred in order to accommodate the increasing population on settlement land. The subdivision of highland allotments in settlement schemes was not as common as in the lowlands, due to the fact that the need for highland allotments was largely met by encroachment onto state land. As can be seen in Table 6.9, the majority of second generation households operate small-sized holdings in comparison to the large holdings originally allotted to initial settlers as a result of the subdivision of land holdings. The median sizes of operational holding of paddy land available per household were 0.50 ha and 0.84 ha respectively at the time of survey in Rajangana and Siyambalangamuwa, compared to the originally allotted land parcels of 1.01 ha and 1.23 ha in the respective locations. The available land extent per operator was even smaller, amounting to 0.43 ha and 0.49 ha in Rajangana and Siyambalangamuwa respectively.

The main outcomes of land subdivision were micro sized land holdings and complicated patterns of land ownership. The constant subdivision of land has resulted in farm sizes becoming too small to support a family. Studies in many Sri Lankan settlement schemes have shown a positive relationship between output and holding size (Wanigaratne 1984 : 182), therefore the subdivided holdings in settlement schemes were most likely to be associated with poor output and low incomes for the growing families of the second generation.

#### **6.4 Lack of Employment**

The rapid growth of population has also resulted in an increasing demand for non-agricultural employment among second generation settlers. As pointed out by

Wanigaratne (1987), many settlement schemes are located well away from the major urban industrial centres of the island. Consequently, there has been very little investment in the settlement schemes for the development of non-farm employment opportunities. The lack of alternative non-agricultural employment opportunities within the settlement schemes is one of the most pressing problems currently being encountered by the children of the original settlers.

Paddy crop cultivation is characterised by peaks and troughs of labour activity, the peaks being predominantly at the times of land preparation and harvesting operations. The seasonal demand for agricultural labour during periods of peak agricultural activity in the land settlement schemes has largely been met by the growing labour force of second generation members, particularly those having little or no access to land and capital. The households which operate small land holdings also have to look for wage work within and outside settlement land during the peak periods of agricultural activity since their land does not provide a sufficient income for living (Wickramasekara 1977 : 21). The current occupational pattern of the second generation members classified by migrant status is given in Table 6.10.

**Table 6.10 Second Generation Members by Employment and Migration Status (in percentages)**

Employment	Rajangana		Siyambalangamuwa		Dedigama	
	Non-migrant	Migrant	Non-migrant	Migrant	Non-migrant	Migrant
Farming	75	48	78	36	8	6
Wage Labour	11	23	13	31	20	11
Blue Collar Work	4	7	1	16	21	37
Trade Related	2	6	2	7	13	21
Skilled Crafts	2	8	1	6	14	8
Armed Services	2	3	3	1	6	9
White Collar Work	4	5	2	3	18	8
All	100	100	100	100	100	100
N	578	189	420	153	306	95

Source: Complete Enumeration of Households, 1992

Over 75 percent of second generation members who live in the settlement schemes are tied to the land, either employed as agricultural operators or wage labourers. Less than 15 percent of second generation members in the settlement schemes pursued non-farm employment. There were a few second generation members in public sector jobs like clerks, teachers and security personnel, however the second generation members in the control area have pursued a much more diverse range of occupations. Those employed in agriculture amounted to only eight percent. Second generation members who had migrated out of the area however, have taken up non-agricultural employment in all sample areas (Chapter Ten).

More non-agricultural employment opportunities were available in the control area compared to the two settlement schemes. A resource survey carried out in the Warakapola Divisional Secretary's division, which also includes our control sample villages, identified 149 small industries employing 1934 people and 1235 home industries employing 2561 individuals (MPPI 1990). These industrial activities take diverse forms such as brick-making, stone quarrying and digging for sand, the apparel and handloom industry, blacksmithing, goldsmithing, brass and bronze work and the Beedi (local cigars) industry.

Analysis of the working hours of employed members of second generation households (including the heads of household) in the control area showed that employment opportunities were largely seasonal and there was a very high level of competition among workers for the limited opportunities available within the village. There was also a high level of underemployment among employed second generation members. Although rubber tapping or wage work on small-sized coconut lands were possible forms of employment in the control area, not all second generation members had the same degree of access to such employment. Further, skilled labourers were always preferred for such employment over the large amount of available unskilled labour. Those who find work within the village

very often work only a few hours a day due to the nature of the employment. For instance, rubber tappers complete their tapping operation by midday which accounts for only a half day's work. Bad weather also often interrupts agricultural work in the Wet Zone villages, forcing wage workers to remain idle for days (Crooks and Ranbanda 1981 : 42). Therefore, underemployment was inevitable even during the crop season for those who could find work in and around the village. As can be seen in Table 6.11, on average an employed second generation member worked only 4.3 days during the week prior to the date of the field survey

**Table 6.11 Average Number of Days and Hours worked by Employed Members of Second Generation One Week Prior to the Date of Survey**

Employment category	Rajangana		Siyambalangamuwa		Dedigama	
	Days	Hours	Days	Hours	Days	Hour
Farming	3.5 (111)	21.0	3.9 (76)	25.2	5.0 (6)	22.0
Wage work	2.9 (15)	20.6	2.5 (12)	20.0	2.3 (24)	20.5
Blue collar work	6.0 (1)	40.0	5.8 (4)	51.5	5.2 (13)	42.9
Trade related work	6.3 (4)	36.0	6.5 (2)	00	5.8 (6)	48.3
Skilled workers	4.5 (2)	28.0	00 (0)	00	4.7 (18)	33.9
Armed service	00 (0)	00	7.0 (1)	54.0	5.5 (6)	58.9
White collar work	5.0 (2)	40.0	6.0 (1)	40.0	5.7 (6)	33.8
All	3.6 (135)	21.9	4.0 (135)	26.4	4.3 (79)	34.5

Source: Sample Survey of Households, 1992.

Note: Number of respondents given in parenthesis.

in Dedigama. The average number of days worked by an agricultural worker in Siyambalangamuwa and Rajangana during the one week period were respectively 3.25 and 3.98 days. The number of hours worked by employed persons in individual sample locations are also given in Table 6.11 and they indicate that underemployment was a serious problem among second generation members across the sample areas, as the number of hours worked per week is small except for those who have regular employment. This underemployment is mainly involuntary due to the lack of opportunities for available labour. Those who work less than a normal working week often mentioned that the seasonality of their work was the main reason for this.

The number of employed persons available for further work is obviously the best indicator of the extent of underemployment among second generation members. The number of employed workers available for further work amounted to 56, 33 and 31 percent respectively in Dedigama, Rajangana and Siyambalangamuwa. Hence the highest incidence of underemployment was found in the control area, in spite of the diversity in the employment structure in that area. Limited access to paddy land holdings was the major reason for nearly one third of the employed second generation workers being available for further employment in the two settlement schemes.

The responses given by the second generation households to the general question on the most critical problems encountered by them in their villages related to the lack of farm and non-farm employment. These responses classified by the characteristics of second generation household heads are given in Table 6.12 and indicate that the lack of agricultural employment was reported as being a problem by half of the second generation households in each settlement scheme. By contrast, this was cited as a problem by only seven percent of respondents in the control area, possibly because they aspired to employment in the non-farm sector.

In terms of current paddy land ownership, those who were either landless or owned only a small land holding cited agricultural employment as a major problem, in comparison to those who had relatively large holdings. The older household heads and those with a large-sized household also stated the lack of agricultural employment as a problem, more than those who were young and had small numbers

**Table 6.12 Second Generation Households Who Reported Problems of Farm and Non-farm Employment by Age, Household Size and Ownership of Paddy Land (in percentages)**

Paddy land	Rajangana			Siyambalangamuwa			Dedigama		
	N	Farm	Non-farm	N	Farm	Non-farm	N	Farm	Non-farm
Landless	34	65	94	20	60	90	46	7	48
0-0.25 ha.	10	60	90	11	55	82	7	14	29
0.26-1.00 ha.	17	41	88	9	33	78	3	-	33
1.00+ ha.	9	22	89	4	25	75	2	-	-
<b>Age</b>									
Less 30 yrs	24	21	92	13	14	100	16	-	56
31-40 yrs	37	70	97	18	50	78	25	4	52
40+ yrs	9	67	67	13	77	77	17	18	18
<b>Household size</b>									
Less 3	17	12	94	7	14	100	17	-	47
4-6	46	65	96	30	53	87	33	9	45
6+	7	71	57	7	71	57	8	13	25
All	70	53	91	44	50	84	58	7	43

Source: Sample Survey of Households, 1992.

of household members. A similar pattern was observed with regard to responses on the lack of non-agricultural employment. Although the lack of non-farm employment was reported as a problem by over 80 percent of household heads in both settlement schemes, a large proportion of such respondents are landless, young household heads and those with smaller-sized households. The pattern was found to be similar in the control area, despite the fact that the overall percentage of households citing lack of non-farm employment as a problem was only 43 percent.

During the focus group interviews, respondents in the land settlement schemes stated that employment opportunities over the last ten years had more or less remained unchanged in their villages. Some respondents also expressed a view that there had been a gradual decline in available non-farm employment opportunities. The respondents of the control area however, indicated positive changes in the employment situation in their villages. The respondents in land settlement schemes stated that additional available employment was mainly created not in their own areas but off the settlement schemes. For instance, since the initial stage of land development in the Mahaweli scheme the supply of labour for both agricultural and non-agricultural activities has come from nearby labour surplus land settlement schemes including the two sample schemes. Participants specifically mentioned that the demand for wage labour in the Mahaweli scheme during the off-season and particularly in the water-scarce Yala season, was a major source of income for many second generation households in Siyambalangamuwa. Settlers commute daily to the Mahaweli fields during Yala season due to the inadequate working opportunities available in their own villages.

### **6.5 Low Incomes**

Low incomes were another problem identified by second generation respondents in the sample villages. Low income was linked to poor accessibility to land and the general scarcity of employment opportunities. As shown in Chapter Five, poverty was more common among second generation households compared with their parents

Slightly over 75 percent (Table 6.10) of the non-migrant children of the initial settlers in both settlement schemes pursued farming as their major form of employment. The levels of income of these settlers have varied depending on the successful cultivation of paddy. Consequently low income was most often

associated with the low returns from paddy cultivation. As shown in Table 6.13, the problems pertaining to paddy cultivation are diverse. With regard to land, insufficiency, quality and tenure were reported as factors responsible for variability in crop income. Infertile land was cited by 48 percent of the respondents as a dominant factor responsible for their low income in the Siyambalangamuwa scheme. Problems over tenure was another issue related to land, with approximately 20 percent of respondents in each location having encountered such

**Table 6.13 The Factors Responsible for Low Level of Paddy Income Identified by Second Generation Paddy Farmers by Location.**

Type	Rajangana	Siyambalangamuwa	Dedigama
<b>Land</b>			
Insufficiency	74	86	90
Infertile land	10	48	16
Tenurial problems	19	16	19
<b>Water</b>			
Insufficiency	21	82	48
Excess water	1	-	-
Defective Structures	9	43	3
<b>Farm power</b>			
Not available in time	41	34	7
High price	27	75	22
Lack of pasture for cattle	-	5	10
<b>Farm inputs</b>			
High price	29	86	40
Not available in time	-	36	9
<b>Marketing</b>			
Low price	83	82	14
Lack of marketing channels	31	14	14
Exploitation by middlemen	56	41	2
Transport problem	6	16	3
<b>Capital</b>			
Difficult to get from institutions	26	18	9
Lack of own capital	69	98	10
High interest rate	-	5	3
N	55	39	24

Source: Sample Survey of Households, 1992.

problems related to tenure. The availability of water was identified as a crucial problem in paddy cultivation by 82 percent of the respondents in Siyambalangamuwa. This problem was compounded by the defective irrigation infrastructure in this scheme. Other problems associated with crop cultivation included obtaining necessary production inputs and farm power, including tractors and buffaloes.

The Agrarian Services Centre in each area is responsible for the distribution of the necessary production inputs such as fertilizer, seed and agro-chemicals. In addition, there are privately owned stores for the sale of such inputs. In the Rajangana scheme alone there were 14 such stores. Although second generation members in Rajangana did not complain of the lack of availability of such inputs, 36 and nine percent respectively in Siyambalangamuwa and Dedigama had difficulties in obtaining inputs when they were needed.

Difficulties in the procurement of good quality seed paddy for distribution among farmers was seen as a problem by settlement-level agricultural extension officers as a result of the small number of registered seed paddy producers in the area. The lack of good quality seed for agricultural operators in the settlement scheme also resulted in poor crop output levels.

Eighty-six percent of the settlers in the Siyambalangamuwa scheme stated that the high prices of agricultural inputs was a major bottleneck to investment in modern technology. Second generation agricultural operators often had to purchase their agricultural inputs on credit from private dealers as they were not eligible for institutional credits (credit offered by the state-owned banks and cooperatives). Accordingly, they had to pay exorbitant prices to private dealers for their input requirements.

High prices and non-availability when and where they were needed were seen by many respondents as problems of getting the required farm power (tractors and buffaloes). Seventy-five percent of the respondents in Siyambalangamuwa complained of the high price of farm power. The high price of hiring tractors was also seen by the second generation households as a major contributory factor in increasing their production costs and narrowing their profit margins.

Inadequate marketing outlets in settlement schemes also resulted in a low crop incomes for settlers. Lack of marketing outlets was found to have led to the exploitation of settlers by middlemen. The defective road network also incurred heavy portage costs in the delivery of agricultural produce to the sale outlets. In the Rajangana scheme cultivation of cash crops was closely monitored by a group of traders who provided the necessary capital for settlers to undertake cash crop production anticipating produce to be traded with them on the basis of a price determined at the time of harvest. This provided an opportunity for traders to fix prices for agricultural produce even below the market value.

The lack of required funds to undertake crop production activities independently led many second generation settlers to depend on non-institutional borrowing. The second generation settlers often did not have any legal title for the land they operated so that they were denied institutional credit facilities due to the fact that their land was not accepted as collateral by commercial banks. Consequently, second generation members were at the mercy of money lenders and businessmen (Mudalali) for obtaining their capital requirements. Whenever they secured credits for crop cultivation they had to pay exorbitant rates of interest (10-20 percent per month) either in cash or kind. The difficulties in obtaining the necessary capital for crop cultivation invariably led to limited investment in crop cultivation, ensuring a poor return. The second generation settlers who engaged in paddy cultivation, were

therefore found to have encountered a wide range of difficulties in achieving better crop income.

## **6.6 Conclusion**

In this chapter, we have discussed the problems encountered by second generation members in the sample areas. The major difficulties encountered by them were associated with accessibility to land and employment opportunities. It should be mentioned that the land settlements schemes were originally designed to overcome these twin problems among the initial settlers who were brought to the Dry Zone from other parts of the country. Although the problems of the first generation were mitigated to a great extent by the provision of cultivable land, the problems of the source areas tend to have been perpetuated with the growth of the second generation. This has compelled initial settlers to look for ways and means of sharing available resources with their children.

It was found that a large majority of second generation members have remained either unemployed or underemployed due to the seasonality of available economic opportunities. Lack of employment opportunities is seen by many of the second generation as the major factor responsible for their low income and low standard of living. As the majority of second generation members reached working age and in the absence of alternative employment, they were left with no other choice but to depend upon the land. This has created a situation where the available resources are shared by a growing number of family members continuing their subsistence mode of production. Planners have particularly failed to provide avenues for the diversification of economic activities on settlement land as a result of the paddy growing focus of settlement planning. This has led to uncertainty over the future among the second generation as there is hardly any other realistic way of living other than pursuing agricultural related employment. Those who have taken up

farming on the other hand, have inherited a number of problems associated with the cultivation of paddy.

Second generation settlers were also in a disadvantaged position due to their limited educational attainment and the lack of vocational training which has largely prevented them from obtaining employment outside agriculture. Those who had agricultural skills on the other hand, did not have access to land, capital and other inputs to be able to contribute to the agricultural output. The alternatives available to them under such circumstances is an important area of our investigation. The first generation as the dominant group who legally controls the settlement resources such as land was found to have undertaken several strategies to relieve the problems encountered by their children. The next chapter will provide an insight into the first generation's contribution to reducing the problems encountered by the second generation.

## CHAPTER SEVEN

### STRATEGIES FOLLOWED BY THE FIRST GENERATION TO RELIEVE "SECOND GENERATION PROBLEMS"

#### 7.1 Introduction

The achievements of first generation settlers as pioneers of the new land have considerable repercussions for the lives of their offspring. Those who failed to generate a net surplus from their land generally could not provide their second generation with meaningful avenues of livelihood. The contribution made by first generation households towards the welfare of the second generation is not universally positive. Evidence from the two settlement schemes surveyed here suggests that in some cases the first generation are responsible for depriving the second generation of their future livelihood. For example, certain first generation households were found to have disposed of their land by illegal means even before the second generation had reached adulthood.

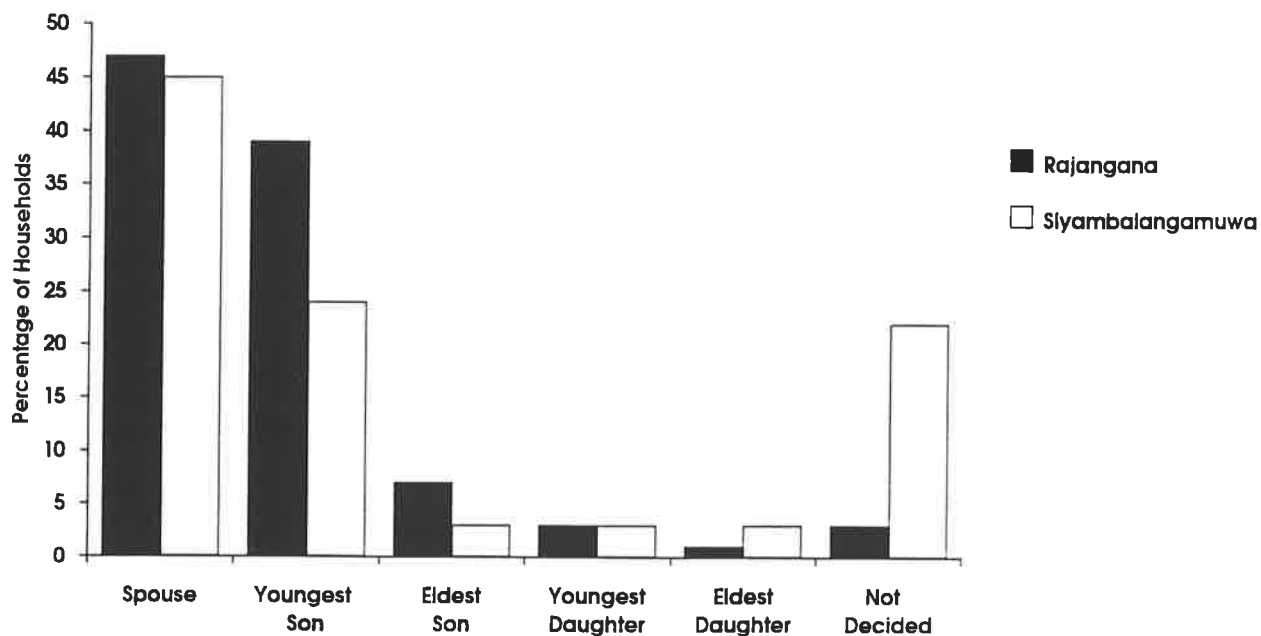
The scope for accommodating the growing second generation population within settlement schemes was limited for several reasons. Firstly, the first generation were the only group provided with economic resources in the land schemes by the settlement authorities since the inception of the programme. Legally the control of land resources in the settlement schemes was made the sole responsibility of the permit holder so that the nomination of a single heir to the land was a matter to be decided by that single permit holder. Consequently, the retention or the ejection of offspring from land was left by land laws to the personal preference of the permit holder. This situation has led to the legal displacement of the majority of the second generation from settlement land. Secondly, the lack of readily available

alternative employment opportunities and income generating avenues in settlement schemes has made it difficult for the displaced second generation members to establish themselves independently of the land. Nevertheless, many first generation households have taken measures to maintain family welfare by way of accommodating their children without breaching the basic principles of the laws governing settlement land. This chapter attempts to identify the responses of first generation households to accommodate offspring within the limits of their available resources in a situation where the conditions are unfavourable to the second generation. The first part of the chapter deals with various strategies followed by first generation households as legitimate owners of settlement lands (permit holders) to accommodate their offspring on the land. The second part is devoted to the discussion of other measures followed by the first generation to provide a livelihood for their children.

## **7.2 Strategies of Land Transmission**

As discussed in the previous chapter, landlessness has been one of the major problems encountered by second generation households. The demand for land in settlement schemes by second generation members for both residential purposes and for the cultivation of crops, is dependent upon the occupational preference of individuals and the extent of their desire to remain on the settlement scheme. The demand for land has proved to be enormous, due to the slow rate of outmigration and limited availability of local opportunities outside agriculture. The restrictions imposed on the subdivision of settlement land has effectively displaced all second generation people from the land, except those who inherit their parent's property intact. Hence, those who received these sole inheritance rights over the land can be considered as the fortunate members of the second generation.

**Figure 7.1 Nominated Successor for the Land by the First Generation Households**



Source: Sample Survey of Households, 1992.

In reality, the extent to which there is sole inheritance of the settlement land is determined by a number of factors including the original demography of the family, the extent of outmigration and the relative prosperity of individual offspring. Although the land law favours unitary succession, the first generation was compelled to adopt *de facto* subdivision of the original land holding whenever more than one offspring deserved land for their living. This was found to be the only available option to overcome legal restrictions imposed on the subdivision of land allocated to settlers. At the same time they nominated one successor to the land in order to fulfil the legal requirement.

Abeyratne (1982 : 88) has shown that in the Gal Oya irrigation and settlement scheme, sole inheritance of land had also been influenced by the birth order of individual members of the family. The majority of the sole inheritors in that

settlement scheme were either the eldest son/daughter or the youngest son. The succession also varied according to the ethnic origin of the settlers. The Sinhalese settlers favoured the youngest son in contrast to the eldest daughter who tended to be preferred by Tamil settlers. The types of successor nominated by the original settlers in the two sample settlement schemes<sup>1</sup> are given in Figure 7.1.

As can be seen, the greatest preference was given to the surviving spouse followed by the youngest son for the majority of the original settlers. Except in the Gal Oya scheme, females were the least preferred successors by original settlers, a trend consistent with the traditional system of land tenure. Female members of the second generation were given least preference as they were expected to move out from the original cottage after their marriage. During the focus group interviews, the preference given to the spouse instead of the offspring was attributed to the original settler's intention to provide old age security for the surviving spouse (usually a woman) so that she would not have to rely upon the generosity of offspring. In legal terms, one who inherits the original allotment has the sole authority over the management and disposal of the land, therefore nomination of the spouse as the successor is seen as a way of cooling off the tension among offspring over land during the lifetime of the first generation. In the survey, the nomination of the mother as the successor was mostly accepted by all offspring respectfully and unchallenged, in contrast to the responses to the nomination of a single sibling.

### **7.3 Method of Highland Allocation**

The first generation households were found to have taken a number of measures to provide their second generation with a piece of land to set up their own independent

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<sup>1</sup> All the sample households were Sinhalese in ethnic origin in both Siyambalangamuwa and Rajangana

living arrangements. Types and ownership of homesteads where the sample households of second generation were residing are given in Table 7.1. As can be

**Table 7.1. Place of Residence of Second Generation Households by Type of Land (in percentages)**

	Rajangana	Siyambalangamuwa
Cottage of original allottee (solely inherited)	13	12
Cottage of original allottee (no ownership)	4	16
Cottage of original allottee (living under the same roof as a separate household with parent) (no ownership)	-	7
Part of the highland allotment given to original allottee (no ownership)	19	42
Part of the paddy allotment given to original allottee (no ownership)	3	-
Encroached land (no legal ownership)	54	23
LDO land owned by a relative (no ownership)	3	-
LDO land purchased (no ownership)	4	-
All	100	100
N	70	44

Source: Sample Survey of Households, 1992.

seen, in addition to the illegal occupation of encroached land which was the most common among the second generation, the first generation often give over some of their highland allocation to their offspring to allow them to set up a homestead. In effect they often share the operational right of their highland allotments with second generation households and this was evident for 42 percent of second generation households in the Siyambalangamuwa scheme. Second generation households

residing in cottages originally given to first generation settlers amounted to 17 and 35 percent of the respondents in Rajangana and Siyambalangamuwa respectively. The ownership right to such highland allotments was found to have been not legally handed over to the occupants, except in the case of those who had solely inherited the land. Only 13 and 12 percent of the second generation households in the Rajangana and Siyambalangamuwa schemes respectively reported having solely inherited homesteads from the initial settlers. These successions were found to have taken place due to the advanced age, bad health or after the death of the original settlers. The survey data indicated that of the original settlers, slightly more than a quarter had died by the time of the survey and their land had been passed on to either the surviving spouse or one of their offspring. It should also be noted that the second generation households who solely inherited the highland allotment (homesteads) where the original cottage is normally located, do not necessarily inherit the entire paddy allotment which is physically located away from the homestead. The rights associated with highland allotments are quite independent of operational rights to paddy land. On the other hand, the second generation head of household who was residing in the original cottage of the initial settlers does not necessarily hold ownership of the total original land allotment. The most common pattern of residence found for second generation members in the settlement scheme was residing on part of the original land allotment in a house constructed some time after the arrival of the original settlers. This could be either a portion of the highland or a part of the lowland allotment. In the Rajangana scheme, the original settlers were allotted three land holdings consisting of a lowland allotment, a highland allotment for a homestead and a highland allotment with lift irrigation facilities for cash crop cultivation. The original settlers have very often given over their highland allotments for the use of their offspring. In fact the original settlers have been able to allocate their holdings located in different

places within the settlement scheme to more than one offspring without physically partitioning individual allotments.

Only four percent of second generation heads of households in the Rajangana scheme were able to gain access to land by way of purchasing settlement land allotted (LDO land) to others. The scope for purchasing LDO land allotments is highly restricted in settlement schemes due to the strict regulations regarding land disposal. When such land is available, it has either belonged to settlers who have deserted the scheme or to those who had no heirs to whom the land could be transferred. Further, the purchase of settlement land requires a substantial amount of capital which is very often beyond the reach of second generation settlers, unless there is some kind of financial contribution from their parents. The survey data show that the second generation members who had purchased LDO land were offspring of a smaller number of first generation settlers who had accumulated capital by diversifying their income sources.

The other form of residence found among married second generation members was the sharing of the original household with their parents or living as two households under the same roof of the original house. However, this was not a very popular arrangement, as young members tend to prefer to live as nuclear families. The second generation married members who resided under the same roof as their original settler parents, but as a separate household can be regarded as absolutely landless or as having only temporary access to land resources. They are also generally the youngest children of the original settler households.

The majority of second generation households have gained access to highland through illegal encroachment. According to the available evidence in both sample schemes and in some other older settlement schemes in the country, possibilities of encroachment on to state land within and around the settlement schemes diminishes

with the passage of time. Most of the encroachment takes place at a very early stage of settlement, particularly by the first generation settlers in anticipation of future scarcities of land (Wanigaratne 1987). These lands are subsequently passed on to the second generation when they get married and seek to make a livelihood on their own. Therefore, much of the encroached land occupied by second generation members within the settlement schemes was in actual fact initially procured and reserved for them by the first generation. The members living on encroached land in the two sample schemes according to their duration of occupation are given in Table 7.2. As can be seen, 46 percent of the encroachment in the Rajangana

**Table 7.2 Encroached Land by Duration of Occupation and the Age of Occupants in Two Settlement Schemes**

Duration	Rajangana Age of encroacher				All	Siyambalangamuwa Age of encroacher				All
	Less30	31-40	41-50	50+		Less30	31-40	41-50	50+	
Less 5	38	11	4	8	18	5	2	0	3	3
6-10	31	51	23	19	36	2	7	-	-	3
11-20	19	30	48	56	33	30	24	30	9	23
21+	12	8	25	17	13	64	67	70	89	72
All	100	100	100	100	100	100	100	100	100	100
N	116	138	69	36	359	44	42	30	35	151

Source: Records of Colonisation Officer

scheme was for longer than 10 years, whereas this proportion was 95 percent in the Siyambalangamuwa scheme, with some 72 percent of the encroachments being longer than 20 years. As far as the age of the encroachers is concerned, 71 percent of them were found to be less than 40 years of age in the Rajangana scheme, as compared to 57 percent belonging to that age category in the Siyambalangamuwa scheme. Twelve and 67 percent of encroachers less than 30 years of age from the Rajangana and Siyambalangamuwa schemes respectively had occupied land that had been in the family's possession for over 20 years. This land had initially been encroached upon by the original settlers and later had been transferred to their children.

#### 7.4 Allocation of Paddy Land

The first generation settlers tend to have given prime attention to the sharing of paddy land with their children in comparison to the sharing of unirrigated highland, due to the fact that the economic value attached to the paddy land was much greater. The household interviews with the original settlers sought to obtain details on the paddy land transmissions at the time of the 1991/92 Maha season (the cultivation season, immediately prior to the field survey).

Table 7.3 shows that 47 and 50 percent of the original settlers in the Rajangana and Siyambalangamuwa schemes respectively operated their entire paddy holding by themselves without sharing with their children. Twenty-one and 22 percent of them from the same areas respectively have operated only part of the original allotment and given other portions to offspring or non-relatives for operation under various types of tenure. Those who have not cultivated their allotted paddy land at all and have given that land to others for operation either as an entire block or in divided parcels amounted to 32 and 22 percent respectively from the Rajangana and Siyambalangamuwa schemes. The sole operation of lowlands by first generation households without subdividing among offspring can be attributed to several demographic characteristics of the households. As can be seen in Table 7.3, the current household size and the number of unmarried offspring still remaining in the households have a positive influence on the sole operation of land left undivided by the first generation households. The households with more female heads, a large number of married offspring who live independently and a higher average age of the household head were found to have been associated with the operation of part of the original land block or the giving out of the entire land block for others to operate. Evidence from other settlement schemes in the country, such as the Parakrama Samudra Scheme in Polonnaruwa, has shown that the crucial determining factor for operating undivided original colony allotments was the age structure of the sons in the family (Samarasinghe and Samarasinghe 1984 : 185-

186). This study found that the average age of sons was only 10 years among those who operated undivided holdings. The pattern was similar in the two sample areas,

**Table 7.3 Demographic Variables of Households by Operational Method of Paddy Land By First Generation Households (In percentages)**

	Rajangana Method of cultivation				Siyambalangamuwa Method of cultivation			
	Entire area	Part of area	None	Total	Entire area	Part of area	None	Total
Number of households	33	15	22	70	29	16	13	58
Percentage of households	(47)	(21)	(32)	(100)	(50)	(28)	(22)	(100)
Household size	5.4	4.9	3.3	4.6	4.7	4.4	4.2	4.5
Average number of children	6.6	6.8	7.0	6.8	5.9	6.7	6.9	6.3
Average number of married children	3.9	4.3	4.9	4.3	3.3	4.4	4.9	4.0
Average number of unmarried children	2.7	2.5	2.1	2.5	2.6	2.3	2.0	2.3
Percentage female headed households	12	40	32	24	19	21	54	28
Mean age of head of household	61	61	63	62	61	63	66	63
Mean age of sons	26	37	42	31	29	38	43	34

Source: Sample Survey of Households, 1992.

where the average ages of sons in holdings solely operated by the first generation households were lower than in those which were partly operated or given out to others to operate as entire land blocks . The presence of unmarried young children

in the household has resulted in a low mean age. The female members, however, do not claim birthright to their parent's property unless they were given property as dowry gifts and therefore, their contribution to the land subdivision was less. Outmigration of married male offspring and the taking up of non-agricultural occupations away from home has also contributed to the operation of undivided holdings by first generation settlers.

#### **7.4.1 Allocation of Land Shares**

The first generation households who do not operate their land block at all and those who operate only a portion of the land area have given land to their children following a number of different land allocation methods namely:

- 1) Allocation of land in equal size shares
- 2) Allocation of land in unequal size shares
- 3) Allocation of an entire land block to a single person.

Informal discussions revealed a number of conditions attached to these land allocation methods. In the allocation of the original land allotment among various operators legal partition of land has not occurred, rather it has taken place on the basis of informal agreements between the permit holder and the operators. If the original settler is dead the agreement is usually between the nominated successor and other birthright claimants to the land, if there are any. The agreement is very often restricted to a fixed term depending on the type of operators. There could also be changes in land transmission by crop season as the flexibility of the agreement on land allocation is considered an important criteria. The permit holder is at liberty to change accessibility to the land for each member depending on his situation, such as the changing economic position of the individual's offspring and the standing of his own household economy. Land transmission was also found to

have occurred during the major agricultural season Maha, due to the dependability of crop cultivation during this season.

Table 7.4 indicates that the majority of first generation households in both locations allocated their land in unequally sized shares and there were several reasons for this

**Table 7.4 First Generation Households by Forms of Land Share Allocation**

Size Category	Rajangana		Siyambalangamuwa	
	No of households	No of parcels	No of households	No of parcel
Equal	11	30	08	24
Unequal	24	75	15	36
Entire block	2	2	06	06
Total	37	107	29	66

Source: Sample Survey of Households, 1992.

(Table 7.5). The allocation of equal land shares among offspring was consistent with the customary law in relation to land subdivision. The bequeathing of land

**Table 7.5 Reasons for Allocation of Equal and Unequal Land Shares Among Offspring**

Reason	Rajangana % Response	Siyambalangamuwa % Response
<b>Equal Shares</b>		
To follow the customary tenure	68	56
To avoid family conflicts	48	44
All have no other source of income and have large families	78	87
Total number of case	11	8
<b>Unequal Shares</b>		
Unequal sources of income	32	24
Need to give more to youngest son	45	56
More land to those with large families	49	39
Need to give more to sons than daughters	14	18
Unequal quality of land	16	19
Need to give more to those without any encroached land	23	19
Total number of cases	24	15

Source: Sample Survey of Households, 1992.

Note: Total adds up to over 100 due to multiple answers.

among all sons recognised by the father and accepted by his close kinsmen has been observed predominantly in the Kandyan region (Yalman 1967 : 131). This principle implies that all the children are equally valued by the parent. Our study found that the equal land share allocation principle was followed in order to maintain mutual cooperation and intra-family harmony among offspring. Since all the offspring were equally disadvantaged and had large families to maintain, equal share allocation was thought to be the most appropriate land allocation method by 78 and 87 percent of settlers respectively in Rajangana and Siyambalangamuwa. Wanigaratne (1984 : 145-148) also had similar findings in the Kaltota scheme.

The first generation has taken more practical reasons into account in the allocation of unequal shares among offspring. These include age, sex, family size, current occupation, accessibility to other land and the current income of individual offspring. The relative economic condition of offspring was considered by the first generation as an important factor in allocating varying sizes of land shares. Those who had already gained accessibility to land by way of encroachments or temporary acquisition were given either no share or smaller land shares. The allocation of land shares to daughters was rare and whenever it occurred they were in smaller shares as compared to the shares given to sons.

The quality of land shares was another important factor which was given serious consideration by the original settlers in the allocation of unequally sized land parcels. It was not unusual to have substantial variations in land productivity on the same land allotment due to the differences in soil characteristics and irrigability. Therefore, the allocation of large shares of poor quality land, as against small shares of better quality land was seen to be a more rational course of action taken by the initial settlers.

The retaining of the largest land share for the person who inherited the legal land right also resulted in the allotment being divided into unequal shares. The original cottage was very often given together with this land share to the potential successor. As described earlier, the youngest son was the most preferred member among the second generation to inherit the legal right over the parental land. As found in the Gal Oya scheme, the preference given to the youngest son to inherit the original allotment is the result of some practical reasons which were equally valid in the case of the present sample areas (Abeyratne 1982 : 95). For instance the oldest son who made a livelihood before his younger siblings, generally had access to encroached land within the settlement schemes as the demand for unoccupied land was relatively small at the early stage of settlement. By the time the youngest son, who was normally the last to get married, looked for land to set up his own residence there was unlikely to be unoccupied land within settlement schemes without any claimant. Therefore the transfer of the original cottage (where the permit holder usually lived) on to the youngest sibling could be treated as the most logical way of land allocation by the original settlers. The person who became the legal successor to the original allotment frequently operated the largest share of the land as the permit holder usually retained a relatively larger share in the informal allocation of land shares among his other offspring.

It was found in the Kaltota settlement scheme that unequal land share allocation came into being through the need to give more land to the eldest son for his contribution to decision-making within the family. Further, the nominated successor who resided in the permit holder's house was the most destitute among other family members and deserved to have more land allocated to him (Wanigaratne 1984 : 148).

In our study areas, the eldest son was often excluded from land share allocation mainly because the accessibility to the encroached land among them was better than

that of his younger siblings. Moreover, the reason behind the allocation of the largest share to the person residing in the permit holder's house was quite unrelated to the justification given in Kaltota.

The allocation of an entire land holding for a single person occurred under quite different circumstances. There were 2 and 6 original settlers respectively from the Rajangana and Siyambalangamuwa schemes who had temporarily allocated their entire land block to a single offspring. In this case, there was no guarantee that the operator was going to be the successor to the land after the permit holder died. However, the operating sibling was chosen from the others on the basis of his current accessibility to land as well as his capacity to operate the land successfully. The incapacity of the original settler to operate his land and the need to accommodate offspring who do not have access to land was the idea behind this kind of temporary allocation.

#### 7.4.2 Types of Operators on Allocated Land

Analysis of the type of operators in original paddy allotments revealed that they were currently being operated by the original settlers and their offspring, as well as non-relatives. Table 7.6 shows that the most common pattern is for the land to be

**Table 7.6 Types of Operators on Land Given to Others by First Generation Households**

Operator	Rajangana		Siyambalangamuwa	
	No: of household	Land* unit	No: of household	Land* unit
Son	16	24	36	54
Son-in-law	5	7	12	13
Non- relative	14	18	17	19
Other relative	2	2	3	3
Total	37	51	68	89
N	31		47	

Source: Sample Survey of Households, 1992.

\* Includes both entire land blocks and parcels

operated by sons, followed by non-relatives. The proportion of settlers who had given out part of their holding to non-offspring for operation was relatively larger in Siyambalangamuwa as compared to the proportion given in the Rajangana scheme. The non-relatives were generally local business entrepreneurs, government servants and fellow farmers in the scheme. The land shares given to non-relatives were on the basis of cash leases, mortgages and produce-share arrangements. Therefore, these shares were allocated entirely by taking economic factors into consideration.

Another important form of land allocation on a regular basis for persons other than sons, was the handing out of certain land parcels as dowry gifts to sons-in-law of the original settlers. Although the customary practices allow sons whether married or unmarried to inherit equally from their father, the inheritance of a parent's property by daughters is largely determined by their post-marital residence. In this context the two major forms of marriage found among the Sinhalese are important. Women can enter into either a deega (virilocal) or a binna (uxorilocal) marriage according to the customary marriages prevailing in the country. In deega marriage the woman comes to live on the land belonging to her husband and she lives the rest of her life with the kinsmen of her husband. In binna marriage the man comes to live on the property belonging to his wife and becomes a part of the kin group of his wife (Pieris 1956 : 195-228).

According to Yalman (1967 : 122-127) binna marriages have taken place in rural settings for two reasons. Firstly, if parents have no sons, very often they wish one of their daughters to remain with them and bear children for the continuation of the family. Secondly, if sons are too small to help on the family farm, extra farm labour is added by way of a daughter entering into a binna marriage.

In general, deega married daughters are not entitled to the property of their parents except whatever they receive at the time of their marriage as dowry gifts. Informal

allocation of land in settlement schemes as dowry gifts and sons-in-law living in the households of original settlers were found in both sample settlement schemes. The data available with regard to the allocation of land by the original households show that five households out of 58 in Siyambalangamuwa had allocated seven parcels of land to their daughters as dowry gifts, whereas in Rajangana 12 households out of 70 had given 13 parcels to their daughters as dowry gifts.

In binna marriage the daughter remains in the parental house with her spouse, therefore she does not normally receive any dowry. The data pertaining to our sample of second generation households shows that out of the total of 70 households, three have contracted binna marriages and lived in the cottage occupied by the original settlers in Rajangana. The number of second generation households who had entered into binna marriages and live in the original settler household in the Siyambalangamuwa scheme was seven out of 44 households. None of these households had solely inherited the property owned by the fathers-in-law (original settlers) but were allowed to live in his house as a separate household and given operational rights to a portion of the paddy land.

The allocation of land in settlement schemes as a dowry gift is determined by the economic status of the married daughters and the decision of couples to remain in the settlement schemes. Land is not generally allocated to daughters who married in deega and live far away from settlement schemes. The analysis of the background of the daughters who received land as dowry gifts revealed that they were all living in the settlement scheme and their spouses had no access to other land. Such marriages cannot be classified in a strict sense as either binna or deega. The woman does not live on the property belonging to her husband, therefore cannot be regarded as being in a deega marriage; on the other hand, the couple considered themselves as a separate household living under the same roof of the house belonging to the wife's parent. They do not contribute to the income of the

parent's household as their marriage is called binna. In actual fact, a piece of land for the subsistence of the second generation daughter has been allocated by her parents mainly because the son-in-law came from a landless background. On the other hand operational rights given to sons-in-law were not regarded as permanent unless they were to be nominated as legal heirs to the land. This would occur only if the claimants to the land of the original permit holder were all females or there was no one else to claim the parental property.

The tenure of paddy land given to sons-in-law showed that the land has not always been allocated free of charge as one would expect to see in ordinary dowry gift situations. In the Rajangana scheme two land parcels were allocated to sons-in-law as dowry gifts, but the original settlers expected them to operate the land under a share-cropping arrangement. The dowry in this case is regarded as giving operational access to the land. The continuation of this arrangement however, remains very much in the hands of the nominated successor due to the fact that such kinds of land transmission do not hold any legal validity. Our in-depth interviews did not reveal any conflicts over the operation of land allocated as a dowry gift after the death of a permit holder. The nominated successor usually allows his brother-in-law to continue his operational right uninterrupted. However, this situation is not universal. For instance, on the basis of his research in the Kaltota schemes Wanigaratne (1984 : 157) concludes that

"the permit holding successor is not under obligation to allow his brother-in-law to continue to hold the dowry right. Even if he does so, it will not in any case devolve upon his sister's children".

The typical pattern of land allocation, tenure and the operator's relationship to the original permit holder can be demonstrated by citing the case of T.D. Ukkurala's (pseudonym) family. Ukkurala was a pioneer settler who came to the Rajangana scheme in 1969. He has four sons and three daughters. His wife died five years ago. None of the children have education beyond grade 5, as Ukkurala wanted

them to help on the family farm when they were still young. All his children are married and have their own children (third generation members). They all live in the settlement scheme except the third son who received some land in the recently established Mahaweli scheme and one daughter who was married on deega to a son of one of Ukkurala's distant relatives in his original village. Of the other two daughters, one is married to a second generation settler in a nearby settlement village. She is living on encroached land and has gained access to LDO paddy land belonging to the parents of her spouse. The other daughter is married to a landless husband who was originally a seasonal migrant to the settlement scheme. This couple has been allowed to set up their dwelling on a part of the LDO highland belonging to Ukkurala. They have not cultivated paddy land on their own and have earned their living by working as wage labourers. Two sons of Ukkurala are living on encroached highlands within the settlement scheme. These highlands were originally encroached upon by Ukkurala and later he passed them on to his sons. The youngest son Jinadasa, lives with his own children in the original cottage belonging to Ukkurala, as he is the nominated successor to the settlement land. Ukkurala has informally subdivided 1.2 ha of paddy holding into unequal shares among his three sons (0.3 ha share for each of two sons and 0.6 ha for one son). He is given a crop share by each of his sons except one who lives with him. Jinadasa was given the operational right of the largest land share (0.6 ha) as he has to look after the welfare of Ukkurala who is currently living with him. After the death of Ukkurala, the land right is to be transferred to the nominated successor, Jinadasa. He is expected to honour the informal transmission initiated by Ukkurala even after his death.

The above case demonstrates that the female members are given lower priority in the allocation of land. One daughter has been given a piece of highland because her husband is landless. However, she has been denied access to the economically

more important paddy land. All the sons have been given access to a piece of land except one who has received land elsewhere. Those who were given a share of paddy land were expected to compensate Ukkurala as the permit holder of the land. Since the land transmissions were informal the offspring cannot legally challenge the unequal right to settlement land or deny the payment if this is demanded by the permit holder. The arrangement of land succession cannot be challenged either as it is a matter to be decided entirely by the permit holder.

#### **7.4.3 Tenure of Land Allocated to Various Operators**

In order to accommodate offspring on land, the first generation settlers were found to have changed operators, land parcels and tenure seasonally. The tenure of land could be either of a permanent or temporary nature, depending on the number of offspring dependent upon original land holdings. The operational details on land at the time of survey revealed that all unoperated land other than land fallow due to unirrigability, were allocated to various operators by first generation households. The tenure of these lands was highly complex and variable, depending on the type of operators. The bulk of the land shares allocated to offspring was given free of charge, including those given as dowry gifts (Table 7.7). The second most popular tenancy arrangement found in the two sample schemes was sharecropping. The land shares were allocated under this tenancy to both sons and other relatives. Out of the total of 54 land parcels allocated to sons in the Rajangana scheme, 18 parcels were given under share tenancy arrangements. The allocation of land to offspring on a sharecropping arrangement occurred whenever the permit holder did not want to operate his/her own share due to incapacity arising from lack of funds or bad health. Under such circumstances a land share was usually given up for others to operate. The first generation settlers often preferred their own offspring to operate their land before considering any other candidates. Further, they would allocate their own shares to the best cultivators among their own children due to the fact that

the neglect of land shares by bad cultivators resulted in low yields and hardship for the family. Under the share tenancy arrangements, tenants were required to pay

**Table 7.7 The Tenure of Allocated Land Parcels Belonging to First Generation Households by Their Operators**

Tenure	Rajangana Operator				Siyambalangamuwa Operator			
	Son	Son in law	Relative	Non-relative	Son	Son in law	Relative	Non-relative
Free	20	11	1	-	10	7	1	-
Sharecropping	18	1	1	5	4	-	-	-
Fixed crop share	1	1	-	5	7	-	-	2
Mortgaged	4	-	1	6	-	-	-	10
Outright sale	-	-	-	-	-	-	-	2
Leased	3	-	-	3	-	-	1	3
Token share	8	-	-	-	3	-	-	-
Unauthorised occupation	-	-	-	-	-	-	-	1
Total	54	13	3	19	24	7	2	18

Source: Sample Survey of Households, 1992.

rent to the land owner in the form of a fixed proportion of the produce after the harvest. The division of shares between permit holder and tenant was usually determined by the conditions of the tenancy agreed upon by both parties. The land owner usually claimed only one quarter of the harvest if he did not provide any production inputs. This was quite consistent with the rent prescribed<sup>2</sup> by tenancy legislation for paddy land. However, if the permit holder provided production input such as seed and fertilizer he was able to claim 50 percent of the harvest. The division of shares between the land owner and the tenant was not strictly followed according to the prevailing tenancy regulations when the tenant was an offspring of the original settler. The shares given to the landowner were very often determined by the mutual agreement between the landowner and the tenant. As one respondent put it,

<sup>2</sup> The Paddy Land Act of 1958 fixed a maximum rent for share cropped land to be either 25 percent of the harvest or 12 bushels per acre.

"We (permit holders) always try to be fair to our sons (tenants), and make sure their crop shares are sufficient for the survival of their families until the next harvest is due".

Although this cannot be treated as a common rule, presumably the first generation settlers appear to take a generous stand in crop sharing arrangements in the event of a crop failure or whenever their offspring entirely depend upon land owned by the original settlers.

The allocation of land among offspring in anticipation of a "token share" (symbolic share without demanding any specific amount) for survival was another form of tenancy adopted by first generation households. Under this arrangement permit holders divided all their land shares among their children without retaining any share for their own use. The offspring were expected to give part of the harvest according to their means for the survival of the permit holder. The land shares that were allocated to sons by first generation households on this basis amounted to eight parcels in the Rajangana scheme as compared to only three in the Siyambalangamuwa scheme. The difference between share tenancy and "token share" arrangements was that in share tenancy, the share to be paid to the permit holder was predetermined by the parties involved. The share was termed as "token" in a token share arrangement, due to the fact that the share to be paid to the land owner was neither pre-determined nor demanded by the permit holder. The operating offspring had the liberty to decide the share to be paid depending on his overall income level.

In more recent years, new types of tenancy have been adopted by settlers in order to minimize the risk of operating marginal land and also to cut down the increasing input costs. Under the agreement, the tenant is required to pay a fixed share of the produce (vi poronduwa) irrespective of the total output. At the time of the survey, the prevailing rate of fixed produce share was in the range of 50 to 60 bushels per hectare. This type of tenancy compelled tenants to operate land more intensively in

order to gain the maximum benefit as his profit ultimately was dependent upon whatever he could produce over the fixed produce share demanded by the land owner. This arrangement was beneficial to the landlord as the risk of cultivation is effectively passed on to the tenants. The first generation households have allocated land under this tenancy agreement to both their offspring and fellow settlers (non-relatives) in the sample schemes. In the Rajangana scheme more land was allocated to non-relatives than offspring under this tenure. The reverse was observed in the Siyambalangamuwa scheme.

An attempt was made to ascertain the reasons behind the allocation of land among offspring on a fixed crop share basis during focus group sessions with first generation settlers. They came up with the following two explanations:

- a) Neglect of land holding by offspring whenever the land was allocated on the basis of other methods of share tenancy.
- b) Sub-letting of shares given to offspring.

The neglect of land shares given to offspring often compels first generation households to change the tenure attached to the allocated land shares as the land transmissions to children were not necessarily permanent. Fixed crop share tenancy therefore drives offspring to work hard and yield the maximum output of the allocated share or experience the risk of losing their land shares in the following season.

Secondly, the sub-letting of land shares given to the second generation is a common practice in both settlement schemes. This is due to the lack of operational capital among second generation settlers who undertake employment in wage labour having sublet their land shares to others. The demand for a fixed crop share by permit holders has put extra pressure on them to pay more attention to the allocated land share and get the maximum benefit out of it.

The other popular form of tenancy in operation is the cultivation of the total land allotment by all of the second generation together and the sharing of the total produce in proportion to the shares nominally given to each offspring. Under such a system, physical sub-division of the original allotment has not taken place. The land is jointly cultivated by all the land share holders (exclusively offspring) and with a portion of the harvest having been set aside for operational expenses and inputs, the harvest is shared by the operators in proportion to nominated individual land shares, so that subdivision in actual fact has occurred not in land but in the produce of the land. This cultivation method has also been able to eliminate the problem of unequal quality of land which operators very often have to tolerate in the allocation of equal land shares.

Cash leases and mortgages are the other tenurial forms found in the settlement lands. The land is given out under cash leases and mortgage tenure in order to obtain immediate cash for the requirements of the family. Such tenure is preferred by households as all the other tenancy transactions required the landowner to stay the whole crop season to receive his share. Therefore, the land is mortgaged in settlement schemes to raise money for family emergencies. There were five first generation settler households who had mortgaged their entire land holdings to non-relatives. In one case, the mortgagee was one of the children who had settled a previous mortgage loan due to a non-relative on behalf of his father. Having redeemed the land, he had gained cultivation rights from his father for that land. The new mortgage agreement remained between the father and the son. There were seven households which had given up entire land blocks on a share crop arrangement to operators other than offspring. When allocating entire land holdings to non-offspring, first generation settlers take necessary precautions to gain maximum benefit out of the land. According to one settler, a share crop

arrangement with a good cultivator was much better than allocating land to his own offspring who may badly neglect the land.

"Allocation of paddy land to my own children brings hardship to all of us, therefore I would rather give it to a person who could feed us during the whole year".

Difficulties with operational capital to adopt proper crop management practices can be overcome by giving land on temporary tenure to someone who could make an investment and reap the maximum potential benefits from the land. If the tenure was on the basis of sharing the crop produce, the land owner also gets the benefit of a good crop yield. Therefore, temporary land transmission to resource-poor offspring may not be attractive to those who are solely dependent on the income from the land. As shown in Table 7.7 the outright sale and unauthorised occupation of the original land allotment, though extremely limited, does still exist in settlement schemes.

### **7.5 Other Accommodation Measures.**

Land was the only resource available to many first generation households for their survival as well as to provide a way of living for their descendants in land settlement schemes. First generation households have made every effort to accommodate their children on the land in order to fulfil at least the subsistence requirements of each of the families. However, the land plays a minor role in providing a source of income among the first generation households in the control area of the Wet Zone. Consequently, the strategies followed by the first generation in the control area are expected to be different from the course of action followed by their counterparts in the settlement schemes. The responses given to a question on whether the first generation had taken any measure for the future of the second generation tabulated against the number of children in the family are given in Table 7.8. First generation households who had a large number of children often had

**Table 7.8 Number of First Generation Households According to Measures Taken to Provide for the Future of Their Children**

Category	Rajangana		Siyambalangamuwa		Dedigama	
	Number	%	Number	%	Number	%
Measures taken	47	67	42	72	22	36
No measure taken	23	33	16	28	39	64
All	70	100	58	100	61	100

Source: Sample Survey of Households, 1992.

done little for the future of their offspring compared to those who had fewer children. The majority of respondents in settlement schemes stated that they had done something for the future of their children, while this was not the case with respondents in the Wet Zone control area (Table 7.8). Those who had done something for the future of their offspring were further questioned to ascertain specifically what they had done (Table 7.8). As shown in Table 7.9, more first generation households had taken measures beneficial to all members in Siyambalangamuwa and Dedigama as compared to the respondents in Rajangana. In terms of specific methods, allocation of a share of the land was the most

**Table 7.9 The Specific Measures Taken by First Generation Households for the Future of Their Offspring (in percentages)**

Action	Rajangana		Siyambalangamuwa		Dedigama	
	All offspring	Some offspring	All offspring	Some offspring	All offspring	Some offspring
Saving money	6	6	0	0	25	50
Given reasonable education	13	29	59	75	100	100
Encroached state land for them	13	48	26	38	0	0
Allocated LDO	75	65	29	88	1	0
N	16	31	34	8	20	2

Source: Sample Survey of Households, 1992.

Note: Due to multiple answers total responses exceed 100 percent.

common method adopted by the first generation in two settlement schemes. Out of those who had done something for the future of all second generation members in Rajangana, 75 percent were found to have given the second generation a share of land which had been originally allotted to them. Another 13 percent had passed encroached-upon state land on to the second generation for their use. However, providing of a reasonable education for their children was cited by the respondents in the control area as a major measure taken toward the future welfare of the second generation.

In the two settlement schemes, the allocation of shares of the LDO land allotments and the encroachment of state land for future use were cited as the major measures taken by the first generation to ensure the future of their second generation. Further, a large proportion of first generation households in the Siyambalangamuwa scheme and Dedigama responded that their contribution consisted mainly in providing a reasonable education for their children. However, the review of the educational achievements of settler's children given in Chapter Five does not support such a claim given the low actual levels of educational achievements of the second generation. As is shown in Chapter Five, the educational achievements of the second generation was significantly higher than that of the first generation households but were still inadequate to satisfy the minimum requirements for white-collar, public sector job in accordance with the aspirations held by many first generation heads of household. Further, our focus group interviews with first generation households found that the majority had failed to educate all of their children in an equal manner due to factors beyond their control. For instance, the eldest children were particularly disadvantaged by not having proper schooling arrangements available when they first came to the settlement village.

There is evidence in the settlement literature to indicate that the demand for farm labour in the initial years of settlement placed extra pressure on first generation

households to mobilise the entire family as labour, disregarding the importance of the education of their children. The outcome has been a high rate of school drop out (Abeyratne 1982 : 137). However, it was clear that the first generation had been able to give some form of education to their children despite the fact that their achievements were inadequate to acquire remunerative employment. The younger members of the second generation were found to be better educated than their elder siblings and had higher aspirations consistent with those educational achievements. Among other specific measures taken by first generation households, the incidence of monetary savings made for the future of their offspring was found to be insignificant as it was beyond the economic means of many settlers.

## **7.6 Conclusion**

The objective of this chapter was to review the contribution being made by the first generation settlers towards the long term welfare of their offspring. A number of factors were found to have made the second generation settlers dependent upon the generosity of the first generation. Firstly, the control of economic resources in settlement schemes in legal terms was in the hands of first generation settlers so that any access to such resources had to be obtained from the first generation legitimate settlers. Secondly, population pressure, the lack of alternative employment opportunities and income generating avenues and the poor levels of educational attainment among second generation settlers restricted their economic advancement, compelling them to depend upon the land. This again made them dependent upon the generosity of the first generation.

The land was the only economic resource available to most of the first generation households, therefore the allocation of this asset had to be done thoughtfully. It was found that the legal restrictions on land subdivision had not prevented distribution of land among offspring who deserved to be looked after. The adoption

of a wide range of informal arrangements on tenure effectively overcame the legal restrictions imposed upon settlement land. The consideration given by the first generation to economic, demographic and other differentials among second generation children made it possible to fulfil the welfare objectives more effectively and fostered mutual cooperation and intra-family harmony among offspring. The informal land transmissions were also consistent with the traditional system of land tenure which was legally discouraged in settlement land. The first generation also showed economic motives in the allocation of land among non-offspring in contrast to the family welfare principles followed in the allocation of land among offspring.

The numerous tenurial arrangements followed by first generation households on settlement land were also associated with the principles of accommodating an increasing population and maintaining the productivity of land. The tenancy arrangements such as share cropping, were not strictly followed when the tenants were offspring. Further, the first generation wanted to have tenancy arrangements favourable to them whenever the shares allocated to the offspring were neglected. There were cases where land shares given to offspring were brought under fixed crop share tenancy in order to prevent the neglect of land shares. All such behaviour was directed towards achieving one common objective of realising family welfare among the settlers.

Finally, there was enough evidence to believe that the first generation settlers helped their offspring to overcome their problems in a variety of ways within the means available to them. The second generation members, on the other hand, were not entirely dependent on the support extended by their parents. They also took a series of measures on their own in order to overcome their problems. The next chapters will look into the responses and adaptation measures taken by the second generation to overcome their problems.

## CHAPTER EIGHT

### ECONOMIC RESPONSES TO POPULATION PRESSURE

#### 8.1 Introduction

In the face of high levels of population pressure on agricultural land, second generation households make a multitude of responses. These responses range from short term temporary measures to more long term permanent measures. Second generation members do not necessarily rely upon a single strategy to address their problems, but often adopt a combination of strategies. The objective of this chapter is to identify and explore the diverse measures taken by them as well as, to seek the factors which determine the adoption of particular strategies. This chapter deals only with the economic responses adopted by the second generation settlers and a later chapter will address various demographic responses adopted by them. The chapter is divided into two parts. In the first part, the range of economic responses likely to occur under population pressure are briefly discussed in line with the theoretical explanations given in Chapter One. In the second part, an attempt is made to assess the extent to which these responses are taken up in the study communities.

A schematic representation of the analytical framework followed in this chapter is provided in Figure 8.1. In that, economic responses to population pressure are divided into agricultural and non-agricultural measures. Boserup (1965) considered the expansion of the cultivated area, more frequent cropping of existing arable land and the adoption of more intensive systems of crop cultivation as agricultural responses to population pressure. On the other hand, non-agricultural, economic

measures include pursuing small scale crafts and industrial activities at home and a range of off-farm activities, including wage labouring (Grigg 1980 : 63).

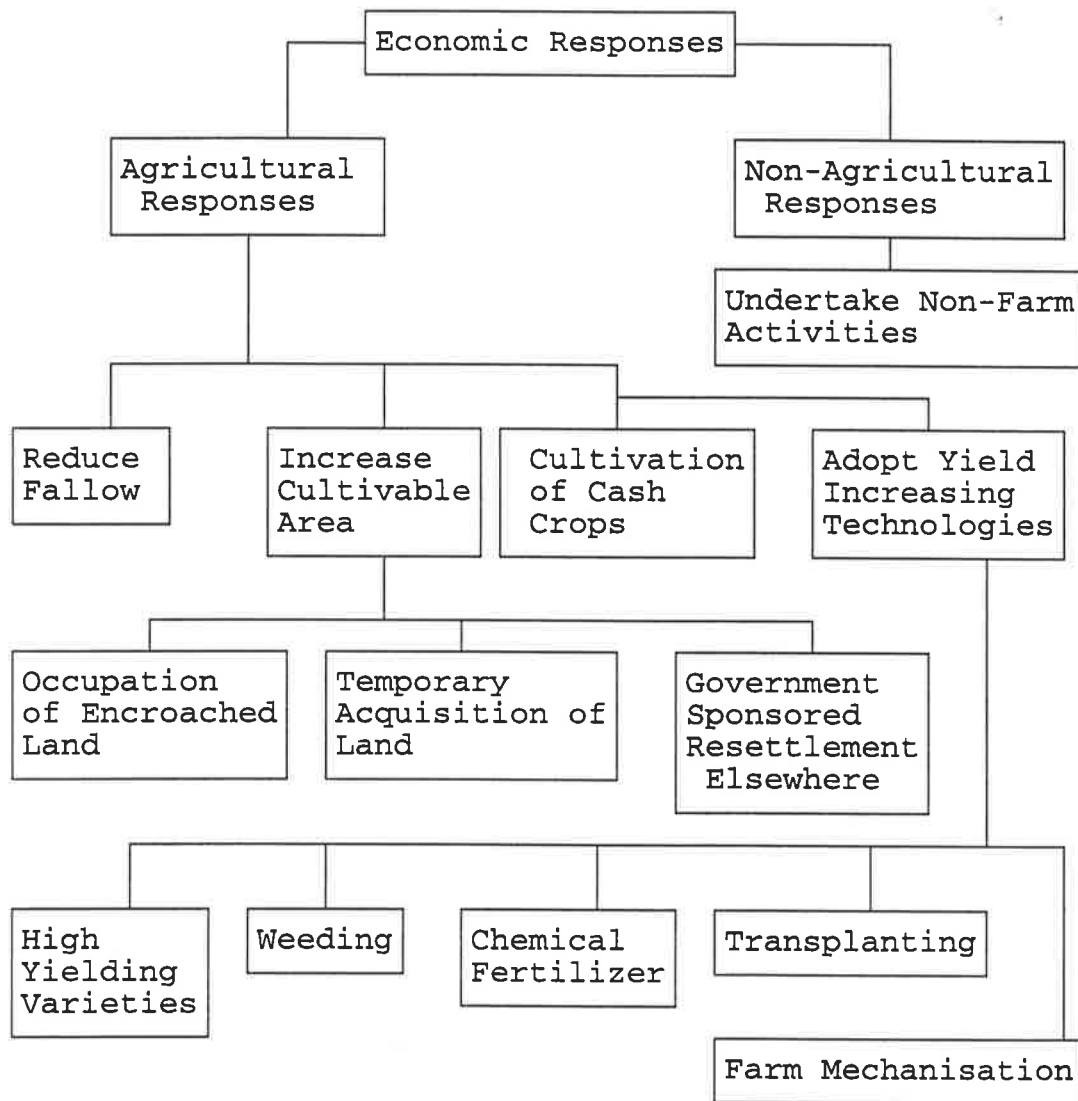


Figure 8.1 Schematic Representation of Economic Responses to Population Pressure (Adopted from Grigg 1980 : 63)

Billsborrow (1987 : 188-190) has identified the factors that determine the types of responses to population pressure in rural areas of contemporary developing countries as follows:

- a) the existing standard of living of the population
- b) the availability of untapped potentially cultivable land

- c) the availability of off-farm rural employment opportunities including urban employment avenues
- d) the potential for technological change
- e) the existing crop structure and its capacity for change
- f) the potential for labour intensive, land saving technological change
- g) the existing size of landholdings and their distribution
- h) the institutional structure of rural areas.

The relative significance of these factors are taken into consideration where possible in the discussion of the particular nature of the economic responses followed by second generation households in the study communities.

## **8.2 Increase in Crop Cultivation Area**

As discussed in Chapters Six and Seven, inadequate access to cultivable land was a major problem experienced by second generation agricultural households. Despite a small number of second generation households who inherited their parents' land holdings intact, the majority of them have gained access to cultivable land by sharing-operation rights with either parents or siblings. Chapter Seven identified a number of strategies which have been followed by first generation households to accommodate their offspring on legally available settlement land. Apart from the operation of legally allotted land, the encroachment upon state land and the operation of temporarily acquired land were the major alternatives available to expand the existing cultivable land base in the settlement schemes.

### **8.2.1 Expansion of Land Area by Encroachment**

Encroachment is defined as the unauthorised occupation of state land in settlement schemes. In any major settlement scheme, in addition to legally allotted land, there is land reserved in watershed areas and individual villages for both future expansion and community purposes such as village forests and pastures, community

playgrounds and cemeteries, the right of way for irrigation canals and roads etc. At the time of our survey all such lands were found to have been encroached upon by settlers and their offspring as well as by outsiders. According to our informants, at the initial stage of settlement, encroachers had been careful to occupy only superior land. However, with the growth of the second generation, they were compelled to occupy even waste lands consisting of rock outcrops due to the general scarcity of land.

The types of encroachment found in the sample settlement schemes were of two major types:

- (1) The first type of encroachment was merely an amalgamation of land blocks adjacent to the land allotments given to individual settlers. This kind of encroachment was usually undertaken by first generation households and was subsequently passed on to the offspring when they reached adulthood. The land holdings encroached on in this manner were generally small in size.
- 2) The second type of encroachment varied in size, ranging from a small strip of land holding to a relatively large land block. These lands were predominantly highlands. The occupants of such lands came from either the second generation members or outsiders. These encroached lands were located well away from the allotments of the original settlers.

Studies relating to settlement schemes have described encroachments as a major coping mechanism adopted by the children of settlers to overcome their land hunger (Government of Sri Lanka 1990 : 229; Wanigaratne 1984; Abeyratne 1982 : 94-95). The survey results discussed here suggest that the second generation households have gained access to highland much more than lowland. These highland allotments provided for the residential needs of the second generation, as well as giving limited opportunities for the cultivation of cash crops.

Eighteen percent of second generation households in Rajangana were found to have encroached upon lowlands as compared to 63 percent which encroached upon highlands. Encroachment on lowlands was low in the Siyambalangamuwa scheme

where only eight percent of households have lowland encroachments. Twenty-four percent of the households had only highland encroachments in this location. Wanigaratne (1987: 34) suggests that limited lowland encroachments in any major settlement scheme is a result of the regular incorporation of lowland areas into the irrigation system during the formative stage of settlement. The other reasons include official intervention in blocking irrigation access to encroached lowland and the requirement for large-scale capital input and labour in any attempt to convert highland into viable paddy lands. The relative size of the settlement scheme also determines the extent of land available for encroachment after completion of the legitimate land allocation.

The records of the Project Office of the Irrigation Management Division (IMD) estimated the total number of encroachments in the entire Right Bank system of the Rajangana scheme in 1992 as 1157, covering an area of 345 ha (about 10 percent of the officially allocated land), hence suggesting the importance of encroached land area in the entire scheme. Although official estimates of the cultivated extent of encroachments were not available, it is reasonable to assume that the bulk of this land was under both paddy and cash crop cultivation due to the availability of reusable drainage water in some parts of the scheme. Although the encroachers were barred from legal accessibility to irrigation water because of the better water supply situation in the Rajangana scheme, they were able to illegally siphon off water from irrigation channels for both highland and even for paddy cultivation without much resistance from fellow villagers who had legal rights over the irrigation water. This was not surprising due to the fact that 51 and 69 percent of the encroachers in the Rajangana and Siyambalangamuwa schemes respectively were offspring of the legal permit holders of the settlement land.

The official estimates of encroachment in the Siyambalangamuwa scheme were likely to be an under estimation due to the fact that a large number of minuscule

size encroachments were found to have been missed out in official records. The Colonisation Officer (CO) in charge of this scheme indicated that over 50 percent of the existing boundaries of the original allotments cannot be compared with the original Blocking Out Plan (BOP) as a result of the extension of boundaries by settlers on adjacent state-owned land reservations. The records of the CO showed that 36 ha of such encroachments were by 69 first generation settlers. In addition, 146 ha of land reserved for community purposes in the schemes were encroached upon by 219 encroachers, comprising both second generation members and outsiders. However, our survey enumerated 151 encroachers occupying 52 ha of highland and 24 ha of lowland in two settlement scheme villages out of five suggesting that the number of encroachers in the whole scheme was much higher.

Encroachment on state land was a popular land augmenting strategy among second generation households for two reasons. Firstly, encroachment was the easiest way to acquire land in a situation where the second generation members could not afford to acquire land by other means such as leases, mortgages or outright purchases. Secondly, the encroachment within the settlement scheme enabled the second generation settlers to be self-dependent as well as to remain in the village with their immediate kin. The encroachments within the settlement village or in nearby areas also provided them with the opportunity to share the land belonging to the first generation households.

### **8.2.2 Temporary Acquisition of Land**

Second generation households were able to increase their cultivable land area by the temporary acquisition of land belonging to others. This did not, however, increase the total land area available to the settlement community due to the fact that the temporary acquisition allowed only the exchange of operational rights of land already available within the community. At the individual household level

however, temporary acquisition of land was one of the common methods of increasing cultivable land area.

As shown in Table 8.1, the proportion of temporarily acquired land among all the second generation households living in the sample villages was found to be higher in the two settlement schemes in terms of the extent of land area, as well as the number of households having such land other than in the control area. The paddy lands available for temporary acquisition was low in the control area due to the

**Table 8.1 Percentage of Second Generation Households by Land Area Temporarily Acquired\* by Land Size Categories**

Size of land	Rajangana		Siyambalangamuwa		Dedigama	
	Percentage households	Percentage land holding	Percentage household	Percentage land holding	Percentage household	Percentage land holding
0	69.3	0	64.3	0	79.6	0
0.01 - 0.25	4.8	4.5	9.9	9.4	17.6	65.0
0.26 - 0.50	11.8	22.7	12.1	23.1	1.9	16.2
0.51 - 1.00	7.5	25.9	8.2	30.0	0.9	18.8
1.00 +	6.6	46.9	5.5	37.5	0	0
All	100	100	100	100	100	100
N	228	46.7	182	37.2	108	4.4
Average area		0.67 ha		0.57 ha		0.2 ha

Source: Complete Enumeration of Households, 1992

\* Includes all land temporarily acquired through rent, mortgage and share crop arrangement.

scarcity of such land. The availability of land for temporary acquisition was, however, dependent upon a number of factors. Land was normally given out on temporary tenure under special circumstances by permit holders in the settlement schemes. Research in settlement schemes has shown that people often mortgage or rent out their land in family emergencies due to a lack of working capital or household labour (Thilakasiri 1986 : 19). Difficulties in getting irrigation water and the need to purchase technical inputs, foods and other consumables were also cited as other reasons behind the allocation of land on temporary tenure (Wanigaratne nd 14-15; Thilakasiri 1986). Factors considered by the first

generation in allocating their lands to others were discussed in Chapter Seven. Despite the need to accommodate second generation households on settlement land, factors associated with giving land to others in the two sample schemes were very similar to the reasons observed elsewhere.

The major factor that had a negative effect on acquiring available land on temporary tenure mentioned during the focus group interviews by the second generation participants was inadequate capital. Lack of capital at the time lands were offered for rent or mortgage, as well as the lack of working capital to operate land acquired on temporary tenure were mentioned as major constraints.

Consequently, the land available for rent or mortgage was very often found to have accumulated in the hands of non-settlers (businessmen, money lenders and government employees) who could afford to pay ready cash (Wanigaratne 1987 : 37-40). Of the settler community, those who possessed physically better endowed land also stood a better chance of acquiring additional land (Samarasinghe and Samarasinghe 1984 : 188).

The focus group interviews further revealed that second generation households had a fair chance of acquiring lands that were offered on a share tenancy basis. These lands were offered to non-family members on a crop sharing arrangement, with or without the necessary inputs being provided by the land owners. Whenever the lands were offered on a crop sharing basis, land owners looked for tenants who were well known to them and who were good cultivators.

The focus group interviews also showed that the temporary land transactions usually took place during the most difficult period of the crop season, that is between land preparation and harvesting when the cash flow was low. Therefore the financial situation of second generation households at this difficult time was important in any attempt to acquire available land for rent or mortgage, and this

was particularly difficult for second generation households who were still living at subsistence level. All the second generation members who had acquired land by mortgage and rent arrangement came from better-off households according to the classification of households by their economic standing discussed in Chapter Five.

In the Wet Zone control area the patron-client relationship between land owners and tenants was very strong and hence the possibilities for emerging landless second generation members to get into the new share tenancy contracts with a handful of landlords were extremely rare. In his village study of the Kandyan highlands (Wet Zone), Gunasinghe (1990 : 84) has shown that the relationship between landlord and tenant often runs through generations and they perpetuate the old share crop (Ande) arrangement rather than resorting to new forms. There were only 30 landlords who had given their land on a share crop basis to fellow villagers in the control area. Since all the paddy lands under share tenancy were within the jurisdiction of the Paddy Land Act of 1978, land owners were not legally in a position to evict tenants who were already operating their land and replace them with new tenants. The tenancy should also be inherited according to the tenancy legislation and therefore the contracts were expected to remain within the tenant families. Consequently, growing numbers of landless second generation settlers were found to have limited opportunities to become tenants.

In settlement land on the other hand, the disposal of land through various tenurial arrangements was illegal. Despite this whenever the legitimate land owners wanted to have share tenancy contracts with new tenants, they always preferred to have tenants who could maximise the returns (Wanigaratne 1984: 144-145) because tenancy contracts with capital-poor sharecrop partners always led to poor crop output.

The second generation households (chosen for indepth interviews) in the settlement schemes can be classified into several groups on the basis of access to combinations of highland and paddy land under a variety of tenure forms (Tables 8.2 and 8.3). This classification provides a better understanding of the importance of encroachments and land acquired by temporary means in the overall extent of land available. As shown in Table 8.2, 54 percent of the second generation sample

**Table 8.2 Second Generation Households by Access to Land in the Rajangana Scheme (in percentages)**

Type of paddy land by ownership		Parent original cottage	Type of highland by ownership			Total
			Parent LDO Part of the block	Self Encroached	No land	
Parent	LDO whole block	6	0	0	0	6
Parent	LDO part of the block	0	11	6	0	17
Self	Encroached	0	0	14	0	14
Others	LDO/ Encroached	1	9	18	0	28
Parents/ Others	LDO/ Encroached	6	6	0	0	12
	No Land	0	6	16	1	23
	All	13	32	54	1	100

Source: Sample Survey of Households, 1992.

Note: All the percentage values calculated for N=70

households in the Rajangana scheme, had gained access to encroached highland. Another 14 percent had access to encroached paddy land. The total percentage of households who had temporarily acquired paddy land belonging to others amounted to 40 percent, and hence this was found to be one of the most important strategies followed by the second generation. In fact it was second in importance only to the acquisition of land through encroachments. The situation in the

Siyambalangamuwa scheme differs marginally (Table 8.3). None of the sample households reported having encroached paddy land due to the general scarcity of

**Table 8.3 Second Generation Households by Access to Land in the Siyambalangamuwa Scheme (in percentages)**

Type of paddy land by ownership		Parent original cottage	Type of highland by ownership			Total
			Parent LDO Part of the block	Self Encroached	No land	
Parent	LDO whole block	0	0	0	0	0
Parent	LDO part of the block	6	41	9	0	56
Self	Encroached	0	0	0	0	0
Others	LDO/ Encroached	5	11	2	0	18
Parents/ Others	LDO/ Encroached	2	5	5	0	12
	No Land	5	2	7	0	14
	All	18	59	23	0	100

Source: Sample Survey of Households, 1992.

Note: All the percentage values calculated for N=44

such land in the scheme. However, 23 percent of sample households had gained access to encroached highland. Second generation households predominantly (56 percent) had been occupying LDO land originally allotted to their parents, followed by (30 percent) temporarily acquired land belonging to others. The second generation households who had either encroached land or had acquired land belonging to others on temporary tenure can be regarded as those who had actually expanded their land holding.

As can be seen in Tables 8.2 and 8.3, of the 76 percent of households having such land in Rajangana, 54 percent had encroached upon highlands and another 22

percent had access to lowland belonging to others. The percentage of households with access to either land encroached upon or temporarily acquired amounted to only 46 percent in the Siyambalangamuwa scheme, consisting of 23 percent with encroached highlands and another 23 percent with temporary acquired lowland. There were limited opportunities available for the expansion of land area in this scheme because of its smaller size and the fact that paddy could be cultivated only during the Maha season. The percentage of second generation households who were able to increase their overall cultivable land area therefore was lower in Siyambalangamuwa compared to those in Rajangana.

### **8.2.3 Government Sponsored Resettlement Elsewhere**

The receipt of land from government-sponsored land schemes elsewhere in the country was the next option available to increase access to land among second generation members. The acquisition of such land was a long-term objective of many second generation respondents in the sample in both the settlement and control areas.

The second generation settlers of the Rajangana scheme had benefited from the construction of large scale irrigation and the settlements of the Mahaweli "H" system in 1978 because of the allocation of land to encroachers<sup>1</sup>. Such encroachers were occupying government land which was later brought under the control of the Mahaweli scheme on the periphery of the Rajangana scheme. This kind of encroacher was absorbed into the scheme and allotted one hectare of land.

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<sup>1</sup> Krimmel and Massler (1982) identify five different groups of settlers in the Mahaweli "H" area by their origin, i.e (a) "Purana" villagers whose land was acquired by the Mahaweli. They represent almost 70 percent of the settlers; (b) The reservoir evacuees whose land was submerged under the newly constructed reservoirs; (3) Landless people with some agricultural background selected on electoral basis by district administration and politicians; (4) Encroachers who came from adjacent old colonisation schemes where they were rendered landless as the second generation of the old settlers and (5) Old Settlers from the pre-Mahaweli settlement scheme under Kalawewa.

Seventeen and seven percent respectively of the offspring of first generation settlers from Rajangana and Siyambalangamuwa who had moved out from the original home after marriage were found to be living in land allotted under the Mahaweli scheme (Table 8.4). None of the second generation members who had moved out

**Table 8.4 Percentage of Second Generation Married Members by Tenure of Highland Occupied**

Tenure	Rajangana	Siyambalangamuwa	Dedigama
	Percentage members	Percentage members	Percentage members
Joint	0	0	15.6
Encroached	29.5	28.1	0.8
LDO	21.5	28.1	10.5
Rented	1.8	0.8	5.0
Freehold	12.8	14.9	59.5
Parental	16.2	20.8	4.3
Mahaweli	17.0	7.3	0
Other	1.2	0	4.3
All	100	100	100
N	512	370	257

Source: Complete Enumeration of Households, 1992

Note: The tenure of the main land parcel was ascertained during interviews

of the control area were found to have received land in major irrigation schemes. Nevertheless, 11 percent of them were living in the LDO land allotments allocated under the Village Expansion Schemes.

The receipt of land in settlement schemes elsewhere can be regarded as a strategy to cope with the problems of limited land availability in the settlement schemes. However, the number of second generation settlers who were able to benefit from this was extremely low in view of the extent of the land hunger prevailing across the survey areas.

#### 8.2.4 Reduction of Land Fallowing

The Boserup theory of agricultural intensification recognises the increased frequency of cropping existing agricultural land as a common response to population pressure (Boserup 1965). She argued that since labour productivity is high in the long fallow system of farming, farmers are only likely to intensify their land use if there is some urgent need to increase production, as in the case with an increase in population. Despite the increase in the incidence of double cropping in many parts of Asia, Grigg (1976: 150) points out that the extension of double cropping is constrained by the length of the growing season and the availability of an adequate water supply. In Sri Lankan settlement schemes the water supply is regulated by a central agency (Department of Irrigation) so that farmers are not allowed to increase the frequency of cultivation on their own volition. Therefore, the analysis of the extent to which farmers have been able to cultivate entire landholdings during the Yala and Maha cultivation seasons is important here.

The cropping intensity index provides a better picture of the extent of land fallowing in each individual scheme. The settlement administration usually aimed to achieve double cropping in major settlement schemes depending on the storage level of the major reservoir. The cropping intensity index<sup>2</sup> calculated for the cultivation year prior to our survey shows substantial differences in the extent of land fallowing in the two settlement schemes. In Rajangana, 452 households were reported to have a total cultivable extent of 221.7 ha. However during the 1990/91 crop year, only 386.3 ha (total land area cultivated in two seasons) of land was cultivated. Hence the cropping index for this year was 194 percent. Non-cultivation occurred in some areas due to water logging, poor levelling of land and unsuitable soils in some parts of the sample area. None of the farmers reported land

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<sup>2</sup> Cropping Intensity Index =  $\frac{\text{Total Cultivated Area}}{\text{Total Cultivable Area}} \times 100$

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Total Cultivable Area

fallowing due to labour or capital constraints or other problems. Therefore the fallowing of land was not an outcome of the shortages of water in this scheme.

On the other hand, the low cropping intensity index in the Siyambalangamuwa scheme was a function of the non cultivation of paddy land during the Yala season due to water scarcities. Of the total, 170.8 ha of paddy land which belonged to 293 households, only 178.9 ha were cultivated during the 1990/91 cultivation year. All the cultivable land, was brought under cultivation in this scheme during the Maha season. The cropping intensity index therefore amounted to only 105 percent. Lack of water was reported by all respondents as the main reason for fallowing land during the water deficient Yala season.

The dearth of time series data for both sample schemes, however, prevents us from reaching a definite conclusion regarding the general trend in the extent of land fallowing. However, secondary sources show that the problem of getting irrigation water for the Yala paddy cultivation had been a long term problem in the Siyambalangamuwa scheme (Jogaratnam 1974 : 11-12; Senaka Arachchi et al 1987). Jogaratnam (1974 : 11) has shown that only 49 percent of farmers had irrigation facilities for the cultivation of paddy during the 1972 Yala season in Siyambalangamuwa. The cropping intensity index pertaining to 110 farmers for 1972/73 was estimated by him as 153 percent. This estimate was much higher than the cropping intensity index (105 percent) estimated for the 1990/91 crop year. The sample respondents in the Siyambalangamuwa scheme were not able to cultivate paddy for 4 consecutive seasons prior to our field survey, and hence the cropping intensity index was very low. The poor cropping index in this scheme has been attributed to difficulties in getting irrigation water (Jogaratnam 1974 : 13). The supply of irrigation water worsened in later years due to the continued negligence of the irrigation delivery system in this scheme.

Unlike many other major irrigation schemes, the Siyambalangamuwa scheme was never brought under a major rehabilitation programme initiated by the government since the establishment of this scheme in 1958. Silted canal beds, broken control gates and eroded canal banks are common sights in the scheme. Hence it is difficult to control water deliveries even when water is available in the main reservoir. The important question here is whether second generation farmers have taken any other steps to improve the utilisation of existing water supplies in the absence of any initiative by the settlement authorities. The farmers could improve the water management practices by way of adjusting or shifting their cropping patterns and adopting better water control on individual farms. This has not occurred in the Siyambalangamuwa scheme. Paddy land remains virtually fallow during Yala seasons. Farmers have not even attempted to grow highland crops on the paddy land. The cultivation of highland crops (cash crops) on such land requires a substantial amount of capital which was beyond the reach of many second generation settlers. Instead, the second generation settlers during the Yala season hire out their labour in the nearby Mahaweli "H" area where regular crop cultivation takes place during both the Yala and Maha seasons.

Government efforts to increase water management efficiency in major irrigation and settlement schemes through farmer participation have been attempted in both sample schemes through the implementation of the Programme for Integrated Management of Major Irrigation Schemes (INMAS). The Rajangana scheme was brought into the programme in 1987, whereas the Siyambalangamuwa scheme was only just included in the programme a few months prior to the initiation of field work. The immediate concerns of this programme were to increase the agricultural production per unit of land and water, and also to obtain farmer participation in the management and maintenance of the irrigation scheme (Perera 1986). Although it is premature to evaluate the impact of the programme in Siyambalangamuwa, the

assessments of the effectiveness of the programme in other schemes where the programme has been in operation for longer periods have shown mixed results (ARTI 1991 : 30-49, 119-143). The programme was found to have increased cash crop cultivation and farmers' adherence to a common cultivation calendar which has indirectly contributed to the saving of irrigation water for the following season. The programme has also been able to obtain the active participation of farmers in the management of the irrigation scheme which hitherto was limited. However, there was not enough evidence to support an increase in the cropping intensity due to the implementation of the programme in the survey areas.

### **8.2.5 Adoption of Modern Technology by Second Generation Farmers**

The productivity of land can also be enhanced by the adoption of modern crop cultivation methods. The technology available and used by second generation farmers cannot be analysed without understanding the technological package promoted in the small holding sector of agriculture by the government. Successive Sri Lankan governments since independence were committed to increase crop output in the paddy sector to achieve self sufficiency in rice production. The methods adopted to increase in the early years were extensive (increasing cultivable land) in contrast to the more intensive methods (increased productivity per unit of land) followed in recent times. Achievements in the paddy sector in fact have been remarkable over the past two to three decades (CBS 1993).

Hameed (1977 : 22-23) writing on the rice revolution in Sri Lanka identify several major factors which contributed to the growth in the output of paddy. Apart from considerable expansion in the area devoted to the production of rice, including implementation of land settlement schemes in the Dry Zone, the major factors identified by them are:

- (a) Increased use of bio-chemical inputs such as High Yielding Varieties of Seeds (HYVS), weedicides and fertilizer.

- (b) Mechanization of agricultural operations.
- (c) Institutional support for credit, marketing and agricultural extension.
- (d) Implementation of price incentive schemes such as the Guaranteed Price Scheme (GPS) and crop insurance.
- (e) Institutional reforms including tenancy and land reforms.

The separate independent contributions made by each one of these factors to overall output growth is difficult to isolate but a few of them are considered in some detail below.

#### **8.2.5.1 Adoption of High Yielding Varieties (HYVS)**

In addition to the expansion of area through land settlement schemes much of the per acre output growth of paddy in Sri Lanka was achieved by the promotion of a seed-fertilizer technology package. The adoption of HYVS to enhance output is a significant factor at the national level (Ranaweera 1985 : 29). HYVS in Sri Lanka have been introduced in two stages. Old High Yielding Varieties (OHYVS) known as "H" varieties were introduced in the mid fifties. The diffusion of these varieties in the Dry Zone settlement schemes was very rapid (Wickramasekera 1980). Since the 1970s New High Yielding Varieties (NHYS) which have higher yield potential and short duration of growth, have spread rapidly to most rice growing districts. These paddy hybrids mainly include BG varieties developed at the Batalagoda Rice Research station in Sri Lanka. Estimates have indicated that nearly 90 percent of the total sown area in the country is now under NHYS (DCS 1989 : 133). The diffusion of the NHYS was rapid in many major dry zone settlement schemes. However, Jogaratnam (1974) in his survey of six major colonisation schemes in 1973 found that the adoption rate of NHYS of paddy which include BG varieties, was less in Siyambalangamuwa compared to other schemes. The farmers of Siyambalangamuwa favoured "H" varieties (OHYVS) (62 percent) to NHYS (32 percent) at the time of his survey. As much as 27 percent

of the farmers in Siyambalangamuwa used Traditional Varieties (TV). NHYVS were cultivated in almost all farms in Rajangana during both 1981/82 Maha and 1982 Yala seasons (WMSP 1983 : 93-94).

As shown in Table 8.5, NHYVS were found to have been universally adopted by second generation households in both sample settlement schemes whereas both TV and OHYVS were still grown in the Wet Zone control area. Environmental factors

**Table 8.5 Type of Seed Paddy Used by Second Generation Farmers (in percentages)**

	Rajangana	Siyambalangamuwa	Dedigama
Traditional Varieties (TV)	0	0	7.7
Old High Yielding Varieties (OHYV)	0	0	7.7
New High Yielding Varieties (NHYV)	100	100	84.6
All	100	100	100
N	55	39	26

Source: Sample Survey of Households, 1992.

and less access to extension services were the causes of the poor adoption rate among Wet Zone farmers. Moreover farming in the Wet Zone control area was not a full time occupation pursued by many second generation members (only eight percent of second generation members reported farming as their main occupation) and therefore the attention paid to realising the maximum benefit of the paddy land by way of adopting superior technology was limited. On the other hand, the increasing pace of adoption of NHYVS in settlement schemes was an outcome of the better extension coverage.

### 8.2.5.2 Transplanting

Transplanting and weeding remain the most important cultivation practices associated with the modern rice varieties (Barker et al 1985). Transplanting reduces weed growth, increases labour absorption and substantially contributes to enhance the per acre paddy output. The extent of transplanting reported by second generation farmers is given in Table 8.6. The adoption of this yield increasing

**Table 8.6 The Method of Planting in Paddy Adopted by Second Generation Farmers (in percentages)**

	Rajangana	Siyambalangamuwa	Dedigama
Mud sowing	89.1	97.0	3.8
Transplanting	10.9	3.0	96.2
All	100	100	100
N	55	39	26

Source: Sample Survey of Households, 1992.

practice was found to vary widely across the sample areas. Transplanting was extensively practiced in the Wet Zone control area (96 percent). The national estimates identify the district of Kegalle in which the control sample villages are located as an important area practicing transplanting (Senaka Arachchi 1990 : 43). However, it was found that transplanting was practiced only on a limited scale in both of the Dry Zone settlement sample schemes. Only 11 percent of second generation households reported having transplanted paddy during the 1990/91 Maha season in Rajangana, compared with only three percent of the second generation households in the Siyambalangamuwa scheme. However, previous studies show that transplanting was popular among settlers in both sample settlement schemes in the early years of settlement. As much as 45 percent of the paddy acreage had been transplanted by 55 percent of the farmers in the Siyambalangamuwa scheme during the 1972/73 Maha season (Jogaratnam 1974 :

25). The significance of transplanting in the settlement schemes thereafter has been reduced.

As regard to the national picture, the total land area transplanted with paddy remained at less than one third of the total area cultivated in the country with large variations across districts. The district estimates further suggest that the practice is confined to the areas endowed with a good supply of water and abundant labour in the mid country Wet Zone (Senaka Arachchi 1990 : 43).

Differentials in transplanting practice by Wet and Dry Zone are attributable to a number of factors. The small size of land holdings, a better supply of water and greater availability of labour encouraged the practice of transplanting in the Wet Zone control area. The traditional practice of Attam<sup>3</sup> (exchange) labour is particularly popular in the Wet Zone villages (Wickramasekara 1977 : 75-77). On the other hand some studies have found the total absence of traditional Attam labour in major settlement schemes in the country as a result of the commercialisation of paddy agriculture (Crooks and Ranbanda 1981 : 37; Senaka Arachchi 1987 : 33; Senaka Arachchi and Samad 1988 : 49). This has discouraged labour intensive practices like transplanting in the Dry Zone settlement schemes. Studies have further shown the inability of settlers to carry out transplanting due to labour constraints in Dry Zone settlement schemes (Fonseka 1971 : 69-75; Senaka Arachchi 1987: 29; ARTI 1991). To adopt transplanting, farmers need to employ hired labour, in addition to their family labour and this was becoming increasingly prohibitive for many operators due to the escalating cost of labour (Senaka Arachchi 1990 : 44).

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3 In Attam labour, one person helps several others in their farm activities without receiving any payment. These people in turn work on the farm of this particular person without receiving any payment. This is a form of reciprocity of labour supply with no financial involvement.

In major irrigation schemes in the Dry Zone, the issue of water for cultivation is time-scheduled making it necessary for each cultivator to complete all cultivation operations within a limited time period. This restricts labour intensive operations like transplanting (Senaka Arachchi 1990 : 40-44). An ILO/ARTEP study (1986) has shown several other factors responsible for the limited amount of transplanting in many parts of the country. Transplanting had suffered some set backs with the popularisation of short maturing paddy varieties for both agricultural seasons. This was confirmed in a subsequent study of ARTI (1991) where the majority of farmers in ten major irrigation schemes had adhered to the recommendation made by the project management to adopt short maturing paddy varieties, particularly during the Yala season as a part of the plan to conserve water. This had adversely affected transplanting practices which were very popular in many settlement schemes at one time. The ILO/ARTEP study (1986) has further shown that the Department of Agriculture, who was responsible for the agricultural extension activities, did not do enough to promote transplanting in the paddy sector, as the experiments had shown that there was hardly any yield difference between transplanted or broadcast NHYVS of paddy under perfect weed control.

Questions were specifically asked during focus group interviews to explain the return to the old practices of broadcasting by second generation farmers. The explanations for this were very clear. The increasing cost of labour was cited as one of the major constraints for the adoption of the transplanting technique, as family labour alone could not cope with the demand for labour for transplanted paddy, particularly as the time period set aside by the project management authority for planting was inadequate. Although transplanting was possible during the Maha season due to the favourable water supply situation, the farmers had been prevented from undertaking this practice due to the rising cost of wage labour. The average

female labour wage had risen from the level of Rs 20 in the 1980s to over Rs 50 per adult female at the time of the survey in early 1992.

### 8.2.5.3 Weeding

The universal adoption of NHYVS among sample households was not always accompanied by the practice of weeding. Manual weeding was found to be minimal among sample households in settlement schemes as a result of the availability of chemical alternatives like weedicides and herbicides (Table 8.7). Those who had

**Table 8.7 The Method of Weeding Adopted by Second Generation Farmers in Paddy Cultivation (in percentages)**

	Rajangana	Siyambalangamuwa	Dedigama
Manual only	3.6	5.1	42.3
Chemical only	81.8	82.0	50.0
Manual & Chemical	9.1	10.2	7.7
Not done	5.5	2.7	0
All	100	100	100
N	55	39	26

Source: Sample Survey of Households, 1992.

not done weeding at all amounted to less than three and six percent of second generation households in Siyambalangamuwa and Rajangana respectively. Chemical weeding was done irrespective of the size of operational holding.

Manual weeding was popular in the control area because of the smaller sized holdings, availability of labour and the environmental factors favourable to reduce weed growth. The weed control pattern observed in sample areas was quite consistent with the national estimates. The use of chemical weeding in the paddy sector was found to have substantially increased over the last two decades replacing the importance of manual weeding (Senaka Arachchi 1990). Chemical weeding

was the most popular method of weeding in the Dry Zone districts, whereas manual weeding was found to be common in the Wet Zone districts. The popularity of chemical weeding in Dry Zone settlement schemes could be attributed to several factors. Firstly, weeds cannot be easily controlled without resorting to chemical measures in paddy lands which suffer from frequent water problems. Secondly, good land preparation and plant establishment methods like buffalo ploughing and transplanting ease the problem of weeds, but unfortunately both of these practices have gradually faded away in Dry Zone settlement schemes. However, except for very few households (less than six percent) all the other paddy cultivating second generation households had adopted some form of weeding as it was crucial to achieving higher crop yields.

#### **8.2.5.4 Farm Power**

This section attempts to explain the extent to which farm mechanisation is used by second generation farm households. Buffaloes have traditionally been used in both land preparation and threshing operations in addition to manual labour in many Dry Zone settlement schemes (Jogaratnam and Schickele 1969). However, the present trend in farm mechanisation was an outcome of the government attempt to modernise the paddy sector. Capital-using, labour-saving technologies, particularly in land preparation and threshing operations, have been promoted in paddy agriculture since the 1960s (Farrington and Abeyratne 1982 : 20-30). The use of the tractor in land preparation has been justified by a shortage of labour and draught animals in the context of new agronomic practises and new farming systems (Farrington and Abeysekara 1979).

As can be seen in Table 8.8, the most important feature of farm mechanisation in the two sample settlement schemes was the use of two wheel tractors (80-86 percent) for land preparation and the common use of 4 wheel tractors (92-95

percent) for threshing operations. None of the farmers use manual labour for either land preparation or threshing operations irrespective of the size of the land holding. On the contrary, the sample respondents in the control area were found to have extensively used buffaloes for land preparation (69 percent) and mechanical threshers (96 percent) for threshing operations. The tractorisation of major agricultural operations in the two sample settlement schemes however, is not a

**Table 8.8 Type of Farm Power Used in Land Preparation and Threshing by Second Generation Farmers**

	Rajangana	Siyambalangamuwa	Dedigama
<b>Land Preparation</b>			
Manually	0	0	7.7
Buffalo	12.7	12.8	69.2
Two wheel tractor	85.5	79.5	23.1
Four wheel tractor	1.8	7.7	0
All	100	100	100
<b>Threshing</b>			
Buffalo	0	0	7.7
Four wheel tractor	94.5	92.3	0
Thresher	5.5	7.7	96.2
All	100	100	100
N	55	39	26

Source: Sample Survey of Households, 1992.

recent phenomenon. Jogaratnam and Schickele (1969) showed that tractors were increasingly replacing buffaloes in providing the draft power for tillage and threshing in major schemes during the late 1960s. A greater dependence on buffaloes for land preparation over tractors was reported in the Siyambalangamuwa scheme in the 1972/73 Maha season due mainly to the sudden global increase in fuel prices in the early 1970s (Jogaratnam 1974). At the time of our survey people found to had replaced buffaloes with two wheel tractors in this scheme (Table 8.5).

In the Rajangana scheme tractors were popular from the earliest stage of settlement (Jogaratham and Schickele 1969). The WMSP Report (1983 : 93) found that 53 percent of the farmers either had used four wheel or two wheel tractors for tillage operations in this scheme. About 30 percent of the farmers were found to have used only two wheel tractors in the 1981/82 Maha season. The threshing operation had been universally done by the use of tractors. At the time of our survey, more people were reported to be using two wheel tractors for tillage and four wheel tractors for threshing operations over other alternatives (Table 8.5).

The relative importance of alternative sources of farm power in the sample areas was found to be associated with the agro-climatic factors. Buffalo and manual labour for land preparation and threshing were primarily used in the Wet Zone where the paddy fields were small and the soil was boggy. On the other hand, studies, have shown that farmers in settlement schemes were compelled to use farm mechanisation for land preparation due to the regulation of the activities with the issue of irrigation water (Farrington and Abeyratne 1982 : 4). Ahamed (1974 : 68-69) stated a number of reasons for the choice of tractors over buffaloes in many Dry Zone rice producing districts and the most important reasons given by him include:

- 1) Lack of an assured water supply at the beginning of the Maha season and the possibility of land preparation without waiting for monsoon rain, as the tractors are equipped with suitable implements to break the dry and hardened soil during the long dry spell in the Yala season.
- 2) Poor quality of draught animals and the possibility of relieving farmers from the drudgery of working long hours with buffaloes.
- 3) Threshing is much easier with tractors compared to the use of buffaloes as the HYVS are highly resistant to the shedding of grains.

The Department of Agriculture, in their regular cost of production surveys of paddy conducted in major rice producing Dry Zone districts, have identified farm power as a major cost component of paddy production ranging from 30-48 percent in the overall production cost (DOA 1990). The farmers have been compelled to use

tractors due to the technology packages promoted by the settlement authorities in the Dry zone settlement schemes which are biased towards tractorisation. Tractorisation in Dry Zone settlement schemes has failed to increase either productivity or cropping intensities, but it has contributed to the displacement of family labour in the range of 20-30 persondays per hectare (Farrington and Abeyratne 1982 : 78-99; Fieldson 1980; ILO/ARTEP 1986). The only cost-effective replacement of farm power in recent years was the extensive use of two wheel tractors for land preparation in the Dry Zone. One study conducted in 10 major irrigation schemes has shown that the farmers still perceived the use of buffalo as far superior to other methods in terms of the quality of work (ARTI 1991 : 34). Lack of grazing ground for rearing buffaloes as a result of the occupation of all available land reserves by settlers or their children, has contributed to diminishing stocks of buffaloes in settlement schemes leading to the greater use of tractor power. The current level of farm mechanisation in the sample areas by the second generation households can be related to a host of factors beyond the control of the settlers. There appeared to have been no attempt to increase the farm area or output through mechanisation in the face of population pressure.

#### **8.2.5.5 Chemical Fertilizer**

The application of chemical fertilizer is an important yield augmenting cultivation practice observed across the sample areas. The application of fertilizer in the early stage of settlement schemes was virtually non-existent. The use of chemical fertilizer commenced for the first time in the 1967/68 Maha season in the Rajangana Scheme (Jogaratnam and Schickele 1969 : 8). In that season only five percent of the farmers used fertilizer, amounting to four percent of the total paddy acreage. This situation was very similar in the Siyambalangamuwa scheme during the early years of settlement. Only 26 percent of farmers applied fertilizer over 24 percent of the total paddy area in the 1972/73 Maha season (Jogaratnam 1974 : 25).

However, at the time of our survey, all of the first and second generation households reported having applied fertilizer for paddy crop (Table 8.9). Yet, there appeared to be a considerable gap between the recommended quantity and the actual quantity applied by farmers. The WMSP Report (1983 : 95) has shown that the quantity of fertilizer applied in terms of total recommended weight was only 86 percent in the Rajangana scheme in the 1981/82 Maha season. However at the

**Table 8.9 Application of Chemical Fertilizers by Second Generation Farm Households**

	Rajangana	Siyambalangamuwa	Dedigama
Applied	100	100	92
Not applied	0	0	8
All	100	100	100
N	55	39	26

Source: Sample Survey of Households, 1992.

time of our survey, 75 percent of the second generation farmers in the Rajangana scheme have not used the recommended quantity of fertilizer. This percentage was even greater (85 percent) in the Siyambalangamuwa scheme (Table 8.10). None of

**Table 8.10 Application of Recommended Quantity of Fertilizer**

Quantity Applied	Rajangana	Siyambalangamuwa	Dedigama
Less than recommended	74.5	84.6	100
More than recommended	5.5	5.1	0
Recommended dosage	20.0	10.3	0
All	100	100	100
N	55	39	24

Source: Sample Survey of Households, 1992.

Note: Recommended rates of fertilizer per hectare of paddy land in the Dry Zone by the Department of Agriculture consists of 190 kg of Basal mixture, 95 kg of Urea and 126 kg of TDM.

the second generation farmers in the control area had applied recommended quantities of fertilizer. The application of nitrogen fertilizer was found to be disproportionately higher than the application of the basal mixture. The application of quantities below the recommendation by more farmers, particularly during 1990/1991 Maha season, was partly attributed to the removal of the paddy fertilizer subsidy in January 1990 by the government.

Overall, the adoption of modern farm technology among second generation households in the settlement schemes was greater than among their counterparts in the Wet Zone villages. A number of factors were associated with the application of comparatively modern technology in paddy agriculture among the second generation farmers. Firstly, the extension coverage in the rice producing settlement schemes was greater than in the Wet Zone villages. There was one extension officer for at least 500 farmers in settlement schemes while, no extension official was available in the control area responsible. During the focus group interviews, questions related to recommended quantities of fertilizer and the timing of application were responded to by the second generation households in the settlement schemes with over 90 percent accuracy, whereas in the control area none of them could recall either the recommended quantity or the appropriate timing of application, demonstrating the poor knowledge in agricultural practices among Wet Zone farmers. However, the better knowledge of Dry Zone farmers had not been put into practice as the majority of them had failed to apply recommended quantities of fertilizer. This failure was, however, attributed to the lack of capital rather than poor knowledge among second generation settlers by the participants of the focus group interviews. They also stressed the point that unlike first generation farmers, the second generation farmers were denied institutional credit facilities as they often did not have legal title to the land they operate. This was found to have limited their investments on fertilizer.

### 8.2.5.6 Paddy Output

The adoption of modern technology by the second generation farmers should be reflected in the paddy output achieved by individual farmers. In principle, the variability in paddy output is caused by the physical environment of the land and the differences in the adoption of cultural practices. In order to understand the differences in yield level created by the management practices, the sample farmers were categorised into "modern", "intermediate" and "traditional" in accordance with the extent of adoption of modern methods of cultivation practices. Each cultivation method adopted by an individual household was given a score depending on the modernity of the cultivation method. On the basis of the total scores, households were classified into the above three groups. For instance, those who adopted NHYVS were given the highest score whereas the users of traditional varieties were assigned the lowest score. A detailed account of the method of assigning scores is given in Appendix Table 8.1. Table 8.11 shows the average yield with respect to each of these categories. The results were in accord with expectations of a positive association between modern cultivation practices and higher yield across all locations. The poor crop average among those who adopted traditional crop management practices was striking as the yield gap between intermediate and traditional categories was much higher than the yield gap between intermediate and modern categories. This classification also provides evidence that a small number

**Table 8.11 Average Yield Reported by Second Generation Households Classified by Adoption of Modern Cultivation Methods**

Farmer Type	Rajangana		Siyambalangamuwa		Dedigama	
	Average yield per ha.(kg.)	N	Average yield per ha. (kg.)	N	Average yield per ha. (kg.)	N
Modern	4368	8	3847	4	2892	2
Intermediate	4062	13	3463	8	2678	5
Traditional	3609	34	2763	27	1927	19
All	4013	55	3201	39	2298	26

Source: Sample Survey of Households, 1992.

of second generation farmers were adopting modern cultivation practices and yielding higher paddy outputs than traditional cultivation practices. For instance in the Rajangana scheme, only 15 percent of the farmers have adopted modern cultivation practices. In the Siyambalangamuwa scheme, 10 percent of the sample farmers have adopted similar cultivation practices. In this scheme the difficulties with regard to irrigation water may have prevented the majority of the second generation settlers taking the risk of adopting expensive modern cultivation practices. In the control area, the majority of farmers (73 percent) have adopted poor cultivation practices, as expected and have realised poor output.

An overall assessment of the performance of paddy cultivation by second generation households is that the majority of them had failed to gain the maximum possible paddy output. The inadequacy of resources at their disposal and unfavourable factors affecting sustainability of small holder paddy cultivation as a viable enterprise was responsible for this. Kelegama (1994 : 21-23) argues that the overall performance of the paddy sector in Sri Lanka in recent years has been at a crisis point due to the stagnation of the average paddy output at 3400-3500 kg per ha. The necessity of using modern inputs such as chemical fertilizer, weedicides, pesticides etc. and the greater use of tractor power with the introduction of NHYVS, have pushed upward the cost of production without an equivalent in returns to farmers. Net returns from rice farming are low compared to what it was possible to achieve through the cultivation of other field crops (Ranaweera and Somasiri 1990 : 108). The extent to which the second generation settlers have taken this option as an income increasing strategy is discussed in the next section.

#### **8.2.6 Cash Crop Cultivation**

The cultivation of subsidiary food crops (SFC) under irrigation was not attempted by farmers in settlement schemes until recently. The SFC were traditionally grown

under chena condition (slash and burn cultivation). However, with the provision of lift irrigation facilities, the Rajangana schemes has become one of the major SFC production areas specialising in the production of crops like chillies and vegetables (DPD 1990). The SFC are grown under both irrigated and rainfed conditions in both settlement schemes. SFC are predominantly produced in the Maha season with the exception of gingelly. (Navarro et al 1988) classify the districts of Kurunegala, Anuradhapura, Badulla and Monaragala as the main production areas of SFC. Both of the sample settlement schemes are within these major SFC producing areas.

The settlers in the sample schemes who were recruited from the area (about 63 percent in Siyambalangamuwa and 48 percent in Rajangana), were all experienced chena cultivators and were used to cultivating a variety of crops under extensive methods of cultivation before they became settlers in the respective schemes. Jogaratnam (1974 : 11) has shown that chena cultivation was practised extensively by the settlers in the early 1970s. Over 40 percent of the farmers in the 1972/73 Maha season cultivated a little over two acres of chena. Gingelly, chillies, finger millets (Kurakkan), maize, and vegetables in that order were the most important crops grown on chena land. All the farmers settled under the Advanced Alienation Programme (Chapter Three) in both settlement schemes were also expected to cultivate crops under slash and burn conditions until the irrigation water was delivered to their individual allotments. The time taken to deliver irrigation water was unusually long, therefore settlers spent a longer period cultivating a variety of SFC crops. The cultivation of cash crops was therefore no longer a new experience to the first generation settlers and their offspring.

A socio-economic survey of nine settlement schemes conducted in the 1967/68 crop season showed that Rajangana farmers were mainly cultivating land with chena crops (Jogaratnam and Schickele 1969). The cultivation of chena land in recent

years has declined in importance due to the government restrictions on the clearing of virgin land for slash and burn cultivation in order to protect the environment (Government of Sri Lanka 1990 : 240). The land development programme, like Mahaweli, also converted much of the available chena land into irrigated paddy land. At present, the cultivation of cash crops is taking place on more established farms either on rainfed or unirrigated highlands or in parts of the lowlands.

As far as macro level policies towards the promotion of SFC production are concerned, the government initiated the so-called "Food Drive Programme" in the 1970s, giving much needed support to the production of SFC around the country. However, this trend was reversed in 1977 following the liberalisation of imports. Subsequent policy adjustments resulted in the resumption of an upward trend in the production of many SFC. For instance, there has been an overall increase in the production of chillies, onions, ground nuts, green grams and cowpeas in subsequent years (Senaka Arachchi 1990 : 55-56). In the late 1980s a government initiative to promote private sector participation in the economy was to promote contract farming in order to produce crops, such as gherkins and asparagus, which have a comparative advantage in the export market (Dunham 1993 : 790). This was limited to the Mahaweli scheme rather than the old settlement schemes. There were some isolated attempts to produce green chillies for the export market in Rajangana under the "Export Village Programme". However, none of the sample farmers took part in the programme. Without any external support, second generation households continue to produce SFC for both home consumption and the domestic market. The availability of lift irrigation facilities has enabled second generation settlers who occupy parts of the LDO highlands to cultivate a variety of highland crops. Chilli was the major crop grown in Rajangana, followed by aubergines and vegetables. Chilli also was the main cash crop grown in Siyambalangamuwa.

The crops that were traditionally grown and those grown at the time of field work by the second generation households are shown in Table 8.12. There has clearly been a shift from the cultivation of coarse grains to high value cash crops such as chillies, vegetables and legumes in recent years. The cultivation of cash crops have generated employment opportunities for both men and women and even children during the slack period of the paddy cultivation in the two sample schemes. The cultivation of chillies has been identified as the crop with the most potential for employment generation due to the labour intensity<sup>4</sup> (Hafi and Erickson 1989).

**Table 8.12 The Changes in the Crops Grown More Intensively by the Second Generation Households (in percentages)**

Crops	Traditionally grown crops		Currently grown crops	
	Rajangana	Siyambalangamuwa	Rajangana	Siyambalangamuwa
Paddy	36	14	52	32
Coarse grain	40	36	10	6
Legumes	26	28	37	40
Vegetables	12	16	48	24
Chillies	6	4	51	38
Not reported	16	17	16	17
N	70	44	70	44

Source: Sample Survey of Households, 1992

Note: Due to multiple answers total adds up to more than 100.

Since chilli was the most extensively grown crop in the two settlement schemes, the employment generated due to the popularity of this crop could be considered as substantial. The total family labour input in SFC cultivation was 90 and 91 percent respectively in the Rajangana and Siyambalangamuwa schemes, suggesting that the cultivation of SFC had been able to keep more family labour employed during the crop season. Unlike farm mechanisation in the paddy sector, manual operations were common in all activities associated with the cultivation of SFC.

<sup>4</sup> On an average 510 persondays are required to cultivate one hectare of chilli under irrigation.

In Rajangana almost 80 percent of the sample second generation households derived income from cash crop cultivation and considered it as one of their main sources of income. Although the dependency upon cash crop cultivation among second generation settlers was not so strong in Siyambalangamuwa, nearly 38 percent of the settlers still derive some form of income from cultivating cash crops.

### 8.3 Non Farm Activities

With the increasing person:land ratio in the sample areas, the second generation members are compelled to seek employment outside agriculture. However, this option was less common in settlement schemes than in the control area. As shown in Chapter Six, the settlement schemes were primarily planned as agricultural schemes giving major importance to the production of paddy (Wanigaratne 1987). Infrastructure needed for non-agricultural activities was not incorporated into settlement planning. Writing on the non-farm employment situation in Gal Oya, Abeyratne (1982 : 103) found:

"The few examples of non-agricultural employment found in Gal Oya today are related to government sponsored service industries (such as extension or transport) and are not production related industries and are not the result of natural growth or of planned effort for such activities over time".

Studies undertaken by ARTI in five major irrigation schemes (Padaviya, Mahkanadarawa, Mahaviachchiya, Vaunikulam and Pavatkulam) in the late 1970s have shown that the agricultural employment (either in paddy or chena crop cultivation) was the dominant source of employment available to the settlers (ARTI 1979a, 1979b, 1980a, 1980b). These studies found that the hiring out of labour was the principal means of off-farm activity available to settlers. Due to the lack of non-agricultural opportunities, wage labouring was also exclusively in agricultural related activities. Settlers who earned their living primarily from wage labour activities accounted for about 10 percent of the labour force in these schemes,

whereas over 60 percent of the adult males had been hiring out their labour as a secondary occupation in schemes like Mahakanadarawa and Padaviya. Regular salaried employment in the state sector accounted for one to two percent of the total employed population. Employment in other services, including trading accounted for less than one percent in the Mahawilachchiya and Pavatkulam settlement schemes. Traditional village employment in the non-farm sector as carpenters, blacksmiths, masons etc. was limited due to the general bias in the selection of settlers towards those with agricultural experiences.

Research on non-farm employment has found that modernisation and overall growth in the economy has brought about substantial changes to the traditional employment scene in the rural sector over the last two decades (Senaka Arachchi 1985 : 27-28; Senanayake 1987). The government open door policies introduced since 1977 have significantly contributed to this change (Osmani 1987). The increased production in rice and other crops over the years was found to have generated new employment and the extensive use of machinery, equipment and implements in agriculture also created additional employment.

The employment generated through these avenues should be reflected in the non-farm employment structure revealed by the sample respondents. As shown in Table 8.13, the non-farm employment in sample areas was mostly related to the public sector services and retail trading. Employment in agro-processing industries, craft or home-based industries was absent in the sample areas as is the case in many other settlement schemes.

There were differences in the type of employment pursued by second generation members who have moved out of the parents' home and lived away from the original home after their marriage and those who still reside within the village.

Non-farm employment was more common among the second generation members who had moved out from the original household. As shown in Table 8.13, of the

**Table 8.13 Second Generation Members by Employment and Migration Status (in percentages)**

Employment	Rajangana		Siyambalangamuwa		Dedigama	
	Non Migrant	Migrant	Non Migrant	Migrant	Non Migrant	Migrant
Farming	75	48	78	36	8	6
Wage labour	11	23	13	31	20	11
Blue collar work	4	7	1	16	21	37
Trade related	2	6	2	7	13	21
Skilled crafts	2	8	1	6	14	8
Armed services	2	3	3	1	6	9
White collar work	4	5	2	3	18	8
All	100	100	100	100	100	100
N	578	189	420	153	306	95

Source: Complete Enumeration of Households, 1992

second generation members who had moved out, only 48 percent worked in agriculture in Rajangana, compared with 36 percent in Siyambalangamuwa. In the control area a consistently higher proportion of second generation members in both groups had pursued non-farm employment. The classification of employment into

**Table 8.14 Second Generation Non-Migrant Members by Secondary Occupation (in percentages)**

Occupation	Rajangana	Siyambalangamuwa	Dedigama
Farming	22	13	42
Wage labour	62	75	12
Petty trading	11	9	10
Other	5	3	36
All	100	100	100
N	340	242	87

Source: Complete Enumeration of Household, 1992

broad groups shows that wage labour was the most important occupation after farming. Wage labour was an important source of income for those who do not

have access to paddy land as well as for those who earn a meagre income from very small or fragmented land holdings. Wage labour in settlement schemes, in a strict sense, cannot be classified as non-farm activities due to the fact that wage labour work in such environments was almost exclusively connected to agricultural operations. On the other hand, wage work in the control area has taken diverse forms including both agricultural and non-agricultural activities. Agricultural work consisted of tapping rubber trees, plucking tea leaves in small tea holdings and wage work in small scale coconut and paddy lands. The non-agricultural wage work was not specific and included a variety of activities in production and services.

Wage labour was an important source of secondary employment for 62 and 75 percent of the second generation members who were remaining in their villages in Rajangana and Siyambalangamuwa respectively (Table 8.14). In contrast, farming was the prominent source of secondary employment among second generation members in the control area. In fact, those who had taken to non-farm employment were part-time farmers on minute land holdings in the Wet Zone control area.

The other most important non-farm employment among second generation households who had moved out and still remained in the sample villages were blue collar and white collar workers. The white collar workers were entirely represented by public sector employees such as teachers, clerks, technicians, field officers and nurses etc. The blue collar workers on the other hand included drivers, bus Conductors, cleaners, office peons, security guards, midwives etc. who worked both in the public and private sectors.

The proportion of second generation members employed in white collar and blue collar employment in individual locations corresponds to the proportion with the highest educational qualifications in the sample areas shown in Chapter Five. In

the control area, nearly 60 percent of male and female second generation members had achieved educational qualifications beyond G.C.E. (O'Level), which is the level required to obtain white collar jobs and even certain blue collar work in Sri Lanka. In the settlement schemes, the proportion with similar educational qualifications ranged between 21 and 28 percent. Low educational qualifications were a major barrier to second generation members finding work in white collar and blue collar employment outside farming.

According to the licenses issued by the Pradeshiya Sabaha (Divisional Council), there were about 370 and 987 business establishments in the Rajangana Right Bank and Warakapola Divisional Council Areas respectively. Of these business establishments, 54 and 22 were located in the Rajangana study village and in the control area respectively. The number of business establishments found in the Siyambalangamuwa study village was only 12, consisting of retail outlets, rice hullers, cycle repair shops, tea kiosks, groceries, furniture shops, petrol sheds and even Ayurvedic (indigenous medicine) medical centres primarily dealing with service sector activities. About three quarters were retail grocery shops and tea kiosks.

Over 40 percent of the shops found in the Rajangana settlement scheme belonged to the people who came to the settlement scheme as encroachers. Therefore, despite the presence of a large number of small business establishments in the area, the likelihood of either the first or second generation household members taking to trading as a profession was limited.

Those who have taken to trading as a occupation in the sample schemes showed that retail trading was entirely run by family members without any hired labour involvement. Therefore retail trading was not often identified as a main occupation by a single person. The proportion of those who mentioned retail trading as a

secondary occupation therefore, was found to be much higher than those who have engaged in trading on a full-time basis.

Migrants who pursued trade related employment consisted of those who run their own shops and employees in private sector trade establishments in major and suburban cities. Of the migrants in control area 21 second generation members reported working as shop assistants in drapery and grocery shops, waiters and kitchen-hands in hotels and restaurants, pump operators in petrol sheds both in suburban cities of Colombo and in the district capital of Kegalle. Eight members were reported to be working as pavement hawkers or itinerant vendors in suburban cities and six were retail shop owners in places where they currently live.

Employment in the armed services was limited until recent years, due to the maintenance of a small non-combatant armed force for ceremonial duties in addition to the regular police force of the government. However with the flare up of civil war in the Northern and Eastern provinces, a massive recruitment drive for both regular and volunteer forces took place surging the defence expenditure<sup>5</sup> to a record high. The new recruits came predominantly from rural Sinhalese villages. The physical and educational qualifications required to join the armed forces were also gradually relaxed in an attempt to attract more recruits, enabling less educated, unemployed people to join the armed forces. Service in the army thus became an option for the second generation.

In addition to employment in the armed forces, employment opportunities were also created in security services in private sector institutions and government owned establishments. Private security in both government and private establishments has been expanded in recent years due to the insecurity created by the civil war. The

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<sup>5</sup> The military expenditure as a percentage of GDP has increased from 1.2 percent in 1980 to 5.5 percent in 1991 (CBS 1991).

second generation members who found employment in private security institutions as security guards were classified under the category of blue collar workers in Table 8.9. Although the actual numbers involved are small, employment in this area was above the national average. Overall in Sri Lanka, 1.3 persons per 1000 population (Abeysinghe 1992 : 23) were in the armed forces compared to 19, 11 and 12 person per thousand population in Dedigama, Rajangana and Siyambalangamuwa respectively.

Occupations such as village drummers, fortune tellers, washermen and barbers, which were essentially caste based, were not found in either the settlement schemes or the control area. Some settlers (particularly in the Siyambalangamuwa scheme) were given land on the basis of the traditional service occupations pursued in their original villages, in anticipation that they would continue to practice their traditional village services in the settlement villages. However, none of them were found to be pursuing such occupations possibly due to the social stigma attached to these occupations (Senaka Arachchi 1985 : 13). They preferred their occupation to be identified as farming by their fellow settlers. The absence of such occupations in the control area was due to the selected villages being dominantly settled by Govigama<sup>6</sup> caste households (cultivator caste). There were only two second generation families belonging to the potter caste and three families of traditional blacksmiths in the control area and they were not currently practising their traditional profession. One blacksmith family had started a workshop which undertook diverse activities including crash-repairs of automobiles. Another family was running a welding shop which made window frames, grills, iron gates etc. required for building and construction activities. They have since both shifted to modern sector employment due to the higher remuneration and the social recognition of these occupations.

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6 Govigama caste is considered as the highest and most dominant caste group in Sri Lanka. Occupationally this refers to cultivators.

Cottage industries were very limited among second generation members in the settlement schemes. Only one second generation household was reported to be making sweets for the domestic market in the Rajangana scheme. No-one had undertaken such activities in the Siyambalangamuwa scheme. Beedi (local cigars) making was the main home based industry found in the control area. The industry was organised into a chain of labour intensive operations involving several intermediaries and was controlled by 42 businessmen in the Warakapola Divisional Secretary area (MPPI 1990). The businessmen supply the necessary raw materials to the small village businessmen who in turn pass them on to the workers. A person who could make 1000 Beedi per day could earn a sum of Rs 45. Our focus group interviews found that an experienced Beedi maker earned about Rs 75 a day. The number of second generation Beedi makers in the control area was 32 individuals. They were part-time workers, mainly housewives and unemployed young women. Children attending school also assisted in this industry. There were seven full time second generation Beedi makers in the control area.

The other major occupations followed by second generation women in the control area were dress making and work in the textile industry which was undertaken by very few women (only six). The collapse of the local handloom industry<sup>7</sup> with the introduction of liberal trade policies by the government in 1977 made a large number of women working in this industry redundant (Osmani 1987; Senaka Arachchi 1985 : 15). Participants in the focus group interviews indicated that over 50 percent of young women who had only primary and secondary education were working in the industry prior to the introduction of the new policy. None of the women were working in the handloom industry at the time of the field survey. However, a few women had found work in the newly established private sector

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<sup>7</sup> Osmani (1987) reports that there were over 111,000 handlooms in the country before 1977 and only about 15,00 by 1985.

textile mills including one located in Thulhiriya (eight km away from the control area).

Although some industries including the handloom industry have suffered<sup>8</sup> from the changes of policies in 1977 (Islam and Romijn 1988; Osmani 1987), certain new employment avenues have been opened up for the resident labour in rural areas. The increased participation of the private sector in economic development activities due to a range of generous tax incentives and liberal exchange facilities for manufacturing created a large number of investments of private sector capital from both local and foreign agencies in the country (CBS 1993). These investments were particularly concentrated in the major urban centres including the Katunayake Investment Promotion Zone created in 1978 under the government's new export development strategy for attracting export oriented private foreign investment. However, the second generation members employed in the newly created export-oriented industries as factory workers and in the construction industry as skilled workers (carpenters, masons, brick layers and plumbers) and manual labourers were limited. The factory workers were mainly found in the garment factories opened up in Katunayake Free Trade zone and later in other areas. Chapter Ten provides a detailed analysis of the employment found by the migrants of the second generation. The expansion of the local housing industry under government patronage also created a demand for building materials, encouraging industries like brick-making and stone-quarrying, although the number of second generation members employed in such industries was low.

During our indepth interviews, the second generation heads of household were asked whether they intended to change their occupation in the future. As shown in

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<sup>8</sup> One major local industry affected in the area by import liberalisation was the agro based cottage industry of treacle and jaggery making. This industry was thriving before due to the rationing of sugar.

Table 8.15, in all sample locations the majority of the respondents wanted to change their current occupation. Among those who did not want to change their

**Table 8.15 Second Generation Households by Intention of Changing Their Current Occupation (in percentages)**

	Rajangana	Siyambalangamuwa	Dedigama
Intend to change	84	86	90
Do not want to change	16	14	10
All	100	100	100
N	70	44	58

Source: Sample Survey of Households, 1992

present occupation the most important reasons were that their current employment provided them with sufficient income, a special liking for the current job and the general belief that they did not have adequate knowledge, education or capital to start a new job. Among those who intended to change their current occupation, Table 8.16 shows that their preference was generally for employment of a

**Table 8.16 Types of Future Employment Preferred by Second Generation Household Heads (in percentages)**

Occupation	Rajangana	Siyambalangamuwa	Dedigama
Driving	11	8	12
Petty trading	24	27	18
Any overseas employment	9	10	25
Dressmaking	7	3	7
Brickmaking	9	6	8
Public sector job	5	4	6
Carpentry	13	18	12
Masonry	12	16	12
Farming	10	8	0
All	100	100	100
N	59	38	52

Source: Sample Survey of Household, 1992

non-agricultural nature. Such employment was more remunerative than farming in small land holdings in the home villages. Petty trading was mostly preferred by the respondents in settlement schemes. Overseas employment was mainly preferred by the second generation members in the control area. Occupations such as driving, dressmaking, carpentry and masonry were particularly preferred in anticipation of either foreign employment in the Gulf states or longer term prospects in the domestic labour market. Members of the second generation were therefore found to be considering non-farm employment as a future strategy due to the fact that the person:land ratio was increasing and the productivity of the land was stagnant.

#### **8.4 Conclusion**

This chapter has shown a number of "economic responses" made by the second generation households in order to ease the effect of population pressure on local agricultural resources currently affecting their living environment. Conditions and factors that were associated with these responses were also explained in this chapter.

The relative importance of each strategy by location is summarised in Table 8.17 which indicates a wide variation in the responses among households. Pursuing non-farm employment was the strategy widely adopted in the Wet Zone control area by the second generation settlers. Agricultural responses were found to be dominant among the second generation in the land settlement schemes. Among them cash crop cultivation was the widely adopted strategy in the Rajangana scheme. Both "agricultural" and "non-agricultural responses" adopted by the second generation households were found to be lower in the Siyambalangamuwa scheme. However, future employment preferences among the second generation in all locations suggested that the employment strategies in all areas should be directed to the creation of more non-farm employment to be consistent with their aspirations. In

addition to the conditions and factors associated with the settlement environment itself, the changes in the macro- economic context of the country and in particular the policies of government and settlement authorities, were found to have had powerful effects on the choice of individual strategies by the second generation households. In addition to "economic responses" which have a variety of forms,

**Table 8.17 Second Generation According to the Adoption of Each Strategy by Location and Type of Sample (in percentages)**

Strategy	Rajangana		Siyambalangamuwa		Dedigama	
	All	Sample	All	Sample	All	Sample
<b>Expansion of land area</b>						
Encroachment						
Lowland	18	14	6	-	-	-
Highland	63	54	24	23	-	-
N	228	70	182	44	108	-
Temporary acquisition						
Lowland	31	40	36	30	20	-
Land settlement elsewhere	17	-	7	-	-	-
N	512	70	370	44	257	-
<b>Adoption of modern technology</b>						
Modern/Intermediate cultivation method						
	-	38	-	31	-	27
N	-	55	-	39	-	26
<b>Cash crop cultivation</b>						
		80	-	38	-	-
N		70	-	44	-	51
<b>Non farm employment</b>						
Non-migrant						
	25	-	22	-	82	-
N	578	-	420	-	306	-
Migrants						
	52	-	64	-	94	-
N	189	-	153	-	95	-

Source: Complete Enumeration of Households and Sample Survey of Households, 1992

Note: The analysis was based on the total households enumerated as well as households selected for indepth analysis. Migrants here are considered as individuals.

second generation households also have adopted a number of "demographic responses". The next chapter will attempt to discuss in more detail both short term and long term demographic responses of the second generation.

## CHAPTER NINE

### CONTROL OF FERTILITY AS A DEMOGRAPHIC STRATEGY TO OVERCOME POPULATION PRESSURE

#### 9.1 Introduction

This chapter attempts to understand the extent to which the control of fertility has been adopted by second generation settlers as a major demographic strategy to address the growing population pressure in settlement schemes. Societies faced with population pressure respond in a range of demographic ways according to Davis (1963 : 349) in his theory of multiphasic response (Chapter One). These responses include delay in marriage, use of contraceptives and outward migration. In pre-industrial societies, demographic measures such as delayed marriage and migration were adopted during times of economic downturn, as in the case of Ireland where famine and hunger led to migration on a massive scale and the control of births by way of delaying marriage (Kennedy 1973). Delayed marriage was particularly significant during this period in controlling births in Ireland since fertility decline within marriage only began after 1930 (Coale and Watkins 1986).

Drawing upon both theoretical and empirical evidence, this chapter attempts to identify the extent to which the theory of multiphasic response described in Chapter One is relevant in the context of the present study. Postponement of marriage and use of contraception are the major demographic areas given attention. The chapter is organised into two major parts. In the first, the current fertility of women in the sample areas is discussed in the context of the pattern of fertility behaviour in Sri Lanka. The second part of the chapter attempts to demonstrate the factors that have

contributed to the current fertility outcomes including various strategies followed by the second generation to control their fertility.

## **9.2 Current Fertility Among Second Generation Women**

In examining fertility responses to population pressure in the settlements, it is necessary to begin with a brief consideration of fertility trends in Sri Lanka over the last four decades. The Crude Birth Rate (CBR) which was 37 births per 1000 women aged 15-44 in 1960 had fallen to the level of 20 by 1992 (Figure 1.4). The decline from the 1960s to the mid 1970s has been attributed to rising female age at marriage (Wright 1968 : 750; Fernando 1972; Langford 1981 : 304). Since the mid 1970s marital fertility control is reported to have had a greater effect on fertility decline largely due to increased contraceptive use (Alam and Cleland 1981 : 41; Gajanayake 1984; ESCAP 1980 : 8-11).

Fertility decline in Sri Lanka has been rapid, particularly in the 1980s. The Total Fertility Rate (TFR) which fell from 5.3 to 4.1 between 1952 and 1972, falling to 3.2 in 1980 and 2.6 in 1987. The TFR was further reduced to 2.3 in 1993 (DCS 1994a; De Silva 1994 : 11). The Crude Birth Rate, as well as the total number of births have declined, despite the fact that the number of women of reproductive age increased substantially between 1981 and 1991 (Abeykoon et al 1992 : 2).

Marital fertility decline in Sri Lanka has been explained as an outcome of a number of social, economic and demographic factors such as high female literacy, changing role of women, decreasing infant mortality, high social welfare measures and greater acceptance of modern contraceptive methods through their increased availability (Alam and Cleland 1981; Gajanayake and Caldwell 1990 : 97).

Although overall fertility is declining in the country, large scale differentials by geographical location and socio-economic background are still present across the

country (Fernando 1976 : 165-172; DCS 1988a). By classifying AGA's divisions (Assistant Government Agent's Division) of the 25 districts in the country into three groups of high, moderate and low fertility areas on the basis of TFR calculated from 1981 census data, Abeykoon et al (1992 : 7) showed that the bulk of the high fertility areas are located in the Dry Zone districts where most of the settlement schemes are located. In certain areas the TFR was even found to be above 4.5, when the national average was 3.4. Table 9.1 shows that 1987 DHS data confirmed

**Table 9.1 Total Fertility Rates (TFR) by Major Zone 1982-1987**

Zone	TFR
Zone1 - Colombo Metro	2.2
Zone2 - Colombo Feeder Areas	2.4
Zone3 - South Western Coastal Lowland	2.6
Zone4 - Lower South Central Hills	2.7
Zone5 - South Central Hills	3.2
Zone6 - Irrigated Dry Zone	3.0
Zone7 - Rainfed Dry Zone	3.4
Total	2.8

Source: Demographic and Health Survey 1987

this pattern, revealing that in addition to the south central hills the highest TFRs were in the irrigated and rainfed Dry Zone regions. The bulk of land settlement schemes are located in the Irrigated Dry Zone while the rainfed Dry Zone is the area of origin of over 70 percent of recent settlers in the land schemes.

Table 9.2 shows the TFRs estimated from the complete enumeration of households in the 1992 survey areas and indicates levels higher than those evident from 1993 DHS data in all locations. However, women in settlement schemes had a marginally higher TFR value than the women in the control area. The age-specific fertility levels in Table 9.2 show that the fertility among women in the older age groups is higher in the control area as compared to the fertility of their counterparts in the settlement schemes. The age specific fertility among younger women in the

age groups of 20-24 and 25-29 is much higher in the settlement schemes. The low fertility among women over 35 years of age was an outcome of the widespread

**Table 9.2 Age Specific Fertility Rates and Total Fertility Rates**

Age Group	Age Specific Births per 1000 Women			
	Rajangana	Siyambalangamuwa	Dedigama	Sri Lanka
15-19	40	22	17	35
20-24	190	176	63	109
25-29	134	143	99	134
30-34	115	106	177	104
35-39	35	50	65	54
40-44	43	32	63	14
45-49	-	-	-	2
TFR	2.78	2.65	2.42	2.26

Source: Complete Enumeration of Households, 1992, Demographic and Health Survey-1993, Department of Census and Statistics, 1994.

acceptance of terminal methods of family planning by women in older age groups in the settlement schemes. Female sterilisation was reported by 46 percent of the second generation women over 40 years of age in the Rajangana scheme. The women who accepted such contraception in similar age categories in the control area was much lower (13 percent).

### 9.2.1 Cumulative Fertility Measures

The reported number of children ever born to women aged 45 years and over provides an estimate of cumulative fertility by the end of the reproductive period of the study population. All the first generation women in the respective sample areas had completed their fertility at the time of the survey. Table 9.3 shows that the highest fertility among first generation women was reported in the Rajangana scheme followed by their counterparts in the Siyambalangamuwa scheme. This is to be expected as large family size was one of the criteria used in the selection of settlers for the oldest settlement schemes. The lowest fertility was reported by women in the Wet Zone control area.

**Table 9.3 Mean Number of Children Ever Born to Women Who Completed their Fertility (aged over 45 years) by Generation**

Category	Rajangana			Siyambalangamuwa			Dedigama		
	Mean	Sd	N	Mean	Sd	N	Mean	Sd	N
First Generation	6.86	2.36	102	6.44	2.29	86	4.09	2.03	149
Second Generation	4.81	2.32	21	4.41	1.69	27	3.64	1.78	28

Source: Complete Enumeration of Households, 1992

Note: Sd = Standard deviation.

The second generation women on the other hand, consistently reported lower fertility than the older generation members in all locations, with the lowest fertility in the control location. The gap in the mean number of children ever born between those two groups was found to be slightly more than two children in both settlement schemes, but the difference was not pronounced in the control area. The lower fertility among second generation women who had already completed their fertility in comparison to the fertility of first generation women showed an acceptance of the norm of a small family among the second generation.

As shown in Tables 9.4, 9.5 and 9.6, there are substantial variations in the number

**Table 9.4 Percentage Distribution of Second Generation Mothers by Number of Children Ever Born and Current Age in Rajangana**

Number of Children	Current Age							All
	15-19	20-24	25-29	30-34	35-39	40-44	45+	
0	25.0	25.6	10.3	-	1.0	4.3	-	7.8
1	58.3	34.6	13.8	8.8	3.0	-	4.8	13.1
2	16.7	30.8	27.6	31.6	15.0	17.0	19.0	24.7
3	-	6.4	34.5	37.7	31.0	14.9	9.6	26.3
4	-	2.6	12.0	14.0	26.0	19.1	9.6	14.3
5+	-	-	1.8	7.9	24.0	44.7	57.0	13.8
Total	100	100	100	100	100	100	100	100
N	12	78	116	114	102	47	21	490
Average	0.92	1.26	2.30	2.82	3.57	3.96	4.33	2.77

Source: Complete Enumeration of Households, 1992

**Table 9.5 Percentage Distribution of Second Generation Mothers by Number of Children Ever Born and Current Age in Siyambalangamuwa**

Number of Children	Current Age							All
	15-19	20-24	25-29	30-34	35-39	40-44	45+	
0	54.5	13.6	2.8	3.4	2.7	2.4	-	5.9
1	36.4	50.8	26.9	18.0	5.4	2.4	3.7	20.2
2	9.1	25.4	39.4	28.1	24.3	12.2	7.4	25.3
3	-	8.5	23.9	34.8	29.7	19.5	25.9	24.2
4	-	1.7	7.0	10.1	24.3	12.2	18.5	11.6
5+	-	-	-	5.6	13.6	51.3	44.5	12.8
Total	100	100	100	100	100	100	100	100
N	11	59	71	89	74	41	27	372
Average	0.55	1.34	2.06	2.48	3.15	4.24	4.26	2.69

Source: Complete Enumeration of Households, 1992

**Table 9.6 Percentage Distribution of Second Generation Mothers by Number of Children Ever Born and Current Age in Dedigama**

Number of Children	Current Age						All
	20-24	25-29	30-34	35-39	40-44	45+	
0	16.7	19.0	12.3	3.4	-	-	8.8
1	66.7	42.9	21.9	6.8	9.7	14.3	22.7
2	11.1	28.6	47.9	42.4	35.5	25.0	36.7
3	5.5	9.5	11.0	37.3	25.8	14.3	18.7
4	-	-	6.9	10.1	22.6	14.3	8.8
5+	-	-	-	-	6.4	32.1	4.3
Total	100	100	100	100	100	100	100
N	18	42	73	59	31	29	252
Average	1.06	1.29	1.78	2.44	2.81	3.14	2.15

Source: Complete Enumeration of Households, 1992.

of children ever born by current age of mother. For example, in the Rajangana scheme 58 percent of the women in the 15-19 age group had only one child and the corresponding percentage for women in the age group 20-24 was 35 percent. The women in the oldest age group of 45+ had more than five children on average. In the control area, women who are currently over 30 years of age had on average only two children. The majority of the women who had completed their fertility (aged

45 and above) reported only 2 children in this location, indicating that the norm of a small family among the second generation women in the control area was strongly established.

Tables 9.7, 9.8 and 9.9 show a positive relationship between marriage duration and

**Table 9.7 Percentage Distribution of Second Generation Women by Number of Children Ever Born and Duration of Marriage in Rajangana**

Number of Children	Duration of Marriage					All
	0-4	5-9	10-14	15-19	20+	
0	33.7	3.4	1.8	1.1	-	7.8
1	42.4	15.4	4.4	2.3	-	13.1
2	19.6	41.8	27.4	14.1	11.8	24.5
3	4.3	30.8	39.8	31.5	21.1	26.5
4	-	6.8	17.7	31.5	17.1	14.3
5+	-	1.8	8.9	19.5	50.0	13.8
All	100	100	100	100	100	100
N	92	117	113	92	76	490
Average	0.95	2.28	2.99	3.54	4.55	2.77

Source: Complete Enumeration of Households, 1992

**Table 9.8 Percentage Distribution of Second Generation Women by Number of Children Ever Born and Duration of Marriage in Siyambalangamuwa**

Number of Children	Duration of Marriage					All
	0-4	5-9	10-14	15-19	20+	
0	22.7	1.2	4.1	-	1.5	5.9
1	58.7	16.5	16.2	5.8	1.5	20.2
2	13.3	52.9	23.0	23.2	8.7	25.2
3	5.3	23.5	37.8	33.3	21.7	24.2
4	-	5.9	13.5	21.7	18.8	11.6
5+	-	-	5.4	16.0	47.8	12.9
All	100	100	100	100	100	100
N	75	85	74	69	69	372
Average	1.01	2.16	2.58	3.26	4.17	2.69

Source: Complete Enumeration of Households, 1992

**Table 9.9 Percentage Distribution of Second Generation Women by Number of Children Ever Born and Duration of Marriage in Dedigama**

Number of Children	Duration of Marriage					All
	0-4	5-9	10-14	15-19	20+	
0	32.8	3.4	1.9	-	-	8.7
1	50.0	29.4	11.1	4.9	9.8	23.0
2	17.2	50.0	50.0	29.3	34.1	36.5
3	-	13.8	25.9	46.3	14.6	18.7
4	-	1.7	11.1	19.5	17.1	8.7
5+	-	1.7	-	-	24.4	4.4
All	100	100	100	100	100	100
N	58	58	54	41	41	252
Average	0.84	1.86	2.33	2.80	3.12	2.15

Source: Complete Enumeration of Households, 1992

the number of children born across all age groups in all locations. For example, in the Rajangana scheme 34 percent of the women were childless in the group with a marriage duration of 0-4 years. All the women who had a marriage duration of 20 or more years reported having two children or more. Fifty percent of the women in this group reported having less than five children. The most salient feature of these data is the general tendency to have much smaller families among second generation women across all areas in comparison to their parents' generation.

The mean number of children ever born by current age and age at marriage is given in Tables 9.10, 9.11 and 9.12. As can be seen, the women who completed their fertility and reported early marriages consistently had higher fertility than those who married at a later age. In the Siyambalangamuwa scheme, women aged 45 or more who married at the age of 15-19 had on average 5.78 children. In contrast, women in the same age category who married when their age was 25-29 had only 3.75 children. The mean number of children born for all women was also found to be negatively related to the age at marriage in all locations. Further, the mean number of children ever born was also found to be positively related to the current age of the women with few exceptions across all locations, revealing that the age at

**Table 9.10 Mean Number of Children Ever Born to Second Generation Women by Age at Marriage and Current Age in Rajangana**

Current Age (years)	Age at Marriage				All
	15-19	20-24	25-29	30+	
15-19	1.08	-	-	-	1.08
20-24	1.55	0.81	-	-	1.26
25-29	2.91	1.81	0.83	-	2.30
30-34	3.11	2.77	1.75	-	2.82
35-39	3.86	3.43	2.92	-	3.59
40-44	4.65	3.93	2.25	1.00	4.06
45+	5.92	5.17	-	1.67	4.81
All	3.10	2.45	2.03	1.17	2.77
N	276	170	38	6	490

Source: Complete Enumeration of Households, 1992

**Table 9.11 Mean Number Children Ever Born to Second Generation Women by Age at Marriage and Current Age in Siyambalangamuwa**

Current Age (years)	Age At Marriage				All
	15-19	20-24	25-29	30+	
15-19	0.55	-	-	-	0.55
20-24	1.56	1.00	-	-	1.34
25-29	2.42	1.88	1.00	-	2.06
30-34	2.70	2.53	1.85	1.00	2.48
35-39	3.78	2.86	2.40	1.80	3.20
40-44	4.40	3.36	3.75	2.00	4.26
45+	5.78	4.62	3.75	-	4.41
All	2.97	2.45	2.25	1.7	2.69
N	193	137	32	10	372

Source: Complete Enumeration of Households, 1992

marriage is a very important factor in determining fertility levels. This can be further substantiated by looking at the mean number of children born controlling for marriage duration.

Even after controlling for the effect of marriage duration however, the general trend is for a decrease in the mean number of children ever born with increasing age at

**Table 9.12 Mean Number of Children Ever Born to Second Generation Women by Age at Marriage and Current Age in Dedigama**

Current Age (years)	Age at Marriage				All
	15-19	20-24	25-29	30+	
20-24	1.27	0.75	-	-	1.05
25-29	2.00	1.38	0.44	-	1.29
30-34	2.69	2.04	1.50	0.60	1.82
35-39	2.56	2.78	2.25	1.43	2.44
40-44	4.00	2.93	2.50	2.50	2.81
45+	3.86	3.91	3.44	1.00	3.64
All	2.48	2.28	1.94	1.33	2.15
N	52	112	64	24	252

Source: Complete Enumeration of Households, 1992

marriage. Those who had a marriage duration of 20 years or over showed this general pattern in all sample locations. (Tables 9.13, 9.14 and 9.15). The women who married early and had a longer marriage duration in all locations reported very high fertility. As described earlier, the women who married early and had a longer duration of marriage consistently had higher fertility than those who married later in life and had longer durations of marriage. Overall, the above analysis indicates

**Table 9.13 Mean Number of Children Ever Born to Second Generation Women by Age at Marriage and Marriage Duration in Rajangana**

Marriage Duration (years)	Age at Marriage				All
	15-19	20-24	25-29	30+	
0-4	1.08	0.81	1.22	-	0.96
5-9	2.60	2.17	1.69	2.00	2.28
10-14	3.01	3.20	2.88	1.00	2.96
15-19	3.81	3.56	2.33	1.50	3.54
20+	4.80	4.56	-	-	4.50
All	3.10	2.45	2.03	1.17	2.77
N	276	170	38	6	490

Source: Complete Enumeration of Households, 1992.

**Table 9.14 Mean Number of Children Ever Born to Second Generation Women by Age at Marriage and Marriage Duration in Siyambalangamuwa**

Marriage Duration (years)	Age at Marriage				All
	15-19	20-24	25-29	30+	
0-4	0.90	1.06	1.00	1.50	1.01
5-9	2.19	2.15	2.33	1.80	2.16
10-14	2.59	2.54	2.43	2.00	2.58
15-19	3.39	3.04	3.00	-	3.32
20+	4.83	4.30	4.25	-	4.62
All	2.97	2.45	2.25	1.7	2.69
N	193	137	32	10	372

Source: Complete Enumeration of Households, 1992

**Table 9.15 Mean Number of Children Ever Born to Second Generation Women by Age at Marriage and Marriage Duration in Dedigama**

Marriage Duration (years)	Age at Marriage				All
	15-19	20-24	25-29	30+	
0-4	0.83	1.00	0.89	0.54	0.84
5-9	1.88	2.00	1.76	2.29	1.95
10-14	2.33	2.37	2.31	2.25	2.33
15-19	3.00	2.79	2.60	-	2.80
20+	3.83	3.53	3.20	-	3.48
All	2.48	2.30	1.94	1.33	2.15
N	52	112	64	24	252

Source: Complete Enumeration of Households, 1992

that the fertility among the second generation women is significantly lower than their parents' generation. This was evident when the fertility of women who had already completed their fertility is compared with the fertility of first generation women. The analysis of the fertility of second generation women already in the child bearing ages by different age and marriage cohorts indicates substantial differentials in fertility. Fertility among women who delayed their marriage was particularly found to be lower. The general tendency in fertility decline across the country may have considerable effects on the current fertility behaviour among

second generation women in the two settlement schemes. To what extent they have been using fertility as a strategy to overcome population pressure experienced in their villages is therefore difficult to isolate. However, it is important to note that the settlers of land schemes were drawn from a group of people with high fertility levels. The fertility of their children is not only remarkably lower than their parents' but also quite close to the fertility levels of second generation children in the control village who represent more of the general population. It is therefore logical to postulate that the pressure on resources in settlement scheme has had some significant effects on the fertility decisions of the children of settlers.

### **9.2.2 Fertility Differentials**

Examination of socio-economic differentials in fertility among second generation women may provide some insights into which particular sub-groups have adopted fertility control as a strategy towards population pressure in the sample villages. The educational level of second generation women is an important variable which appears to have had an effect on fertility. A number of studies have established an inverse relationship between female education and fertility (Cochrane 1979; UN 1983; Casterline 1984). However, a positive relationship between education and fertility has been reported in the Philippines (Harman 1970 : 27-39) and in West Java (Hull 1975 : 323). Several studies have also proven that the relationship between education and fertility is non-linear (Alam and Casterline 1984). The influence of education on fertility was given a new interpretation by Caldwell (1980, 1982 : 305) through his extensive field work in Africa and Asia. He points out that exposure through schools to western ideas and social values powerfully undermines traditional norms and familial relationships which favour high fertility. He has further shown that the fertility transition was dramatic in countries like Sri Lanka that achieved universal education ahead of economic development (Caldwell 1980 : 227).

The mean number of children ever born by level of education among second generation women is shown in Table 9.16. As can be seen, the relationship between the two variables is inverse across all the sample locations. The difference in the mean parity between those with no education and those having the highest educational attainment was nearly two children. The women with no education on average reported having one child more than the group with secondary education. However, the mean parity between women with no education and those with primary education has varied only marginally. Similarly the fertility between women with primary and secondary education reported only marginal variability, suggesting that a few years of schooling do not make much of a difference in fertility behaviour. Among the first generation women who had completed their

**Table 9.16 Mean Number of Children Ever Born by Education and Generation**

Level of Education	Rajangana		Siyambalangamuwa		Dedigama	
	Second Generation	First Generation	Second Generation	First Generation	Second Generation	First Generation
No Schooling	3.15	7.42	3.08	6.32	-	4.80
Primary	3.13	6.62	3.05	6.65	2.87	4.26
Secondary	2.66	5.93	2.42	6.63	2.33	4.20
GCE (O'Level)	2.13	-	1.78	1.00	1.98	3.50
Higher	1.41	-	1.35	-	1.62	3.3
All	2.77	6.86	2.66	6.44	2.15	4.09
N	490	102	372	86	253	149

Source: Complete Enumeration of Households, 1992

fertility (Table 9.16), the less educated women consistently reported higher fertility as compared to the more educated women, except in the case of the "no schooling" category in Siyambalangamuwa. Hence, the education of women was found to have a negative effect on fertility among second generation women. The educated women were likely to have desired a lower number of children and tended to have used modern contraceptive methods as a result their greater exposure to information disseminated through the media. As shown in Chapter Five the younger second

generation members were found to be more educated than the older members. Therefore, the more educated second generation women entering into child-bearing ages in the future are expected to have even lower fertility. Overall, the control of fertility is considered to be a major strategy adopted more by the educated second generation members in sample areas than the uneducated.

Among agricultural communities, ownership of land remained to be the most important source of subsistence and employment. Since paddy land was the major source of income among settlers, accessibility tended to have a crucial importance in their fertility decisions. The available literature on land-fertility relationships suggests that there are two major dimensions relevant to fertility behaviour (Schutjer and Stokes 1982; Stokes and Schutjer 1984; Cain 1985, 1986; Stokes et al 1986). The first hypothesis is that larger operational holdings support high fertility as they require more labour for the cultivation and supervision of land which can be achieved by utilising family labour more effectively (this is termed the "land labour" demand hypothesis). The second hypothesis is that the ownership of land has a negative long term effect on fertility because the people have enough income from land to support them in their old age, which obviates the need for a larger number of children for security in old age (this is called the "land security" hypothesis). The importance of land as a means of old age security and its substitutability has been a subject of debate in the literature (Cain 1985; Stokes et al 1986).

As far as the empirical evidence is concerned, historical studies in nineteenth century Germany and Russia observed a positive relationship between the size of the land holding and fertility (Knodel 1974 : 125; Coale et al 1979 : 60-67). However, findings regarding the land-fertility relationship in the contemporary developing world are not conclusive. Strong negative relationships were observed in Taiwan (Collver et al 1967), India (Kleinman 1973; Rosenzweig and Evenson

1977) and Mexico (Hicks 1974). However, a positive relationship has also been observed in India, Bangladesh (Mahmud and McIntosh 1980; Cain 1985) and Nepal (Niraula 1989). Using cross sectional data from 26 developing countries, Bilsborrow and Winegarden (1985) developed a model which provides stronger support for the proposition of a negative relationship.

The analysis of a land-fertility relationship in the context of the present study is particularly important as landlessness and inadequate access to land are major outcomes of the increasing population pressure observed in the sample areas. The extent to which the ownership and accessibility to land has affected the current fertility outcomes of the second generation members are investigated below on the basis of existing theory.

The mean parity among second generation women in the sample population by ownership and operational size of lowland holding is given in Table 9.17. As can

**Table 9.17 Standardised Mean Number of Children Ever Born to Second Generation Women by Owned and Operated Lowland**

Access to Land (ha.)	Rajangana		Siyambalangamuwa		Dedigama	
	Owned	Operated	Owned	Operated	Owned	Operated
Landless	2.48 (109)	2.69 (74)	2.53 (64)	2.85 (26)	1.92 (87)	1.80 (71)
0.01-0.5	2.79 (52)	2.64 (79)	2.73 (86)	2.66 (98)	2.06 (16)	2.21 (33)
0.5+	3.03 (67)	2.82 (75)	3.15 (32)	2.83 (58)	1.60 (5)	1.75 (4)
All	2.71 (228)	2.71 (228)	2.74 (182)	2.74 (182)	1.93 (108)	1.93 (108)

Source: Complete Enumeration of Households, 1992.

Note: Indirectly standardised using marital duration of women

be seen, the ownership of land is positively related to the mean parity only in the settlement schemes. In the control area the fertility was similar among those who are landless as well as those with smaller sized land holdings. In this area the

lowest fertility was reported by the households in the largest land holding category. Hence as income rises parents tend to have smaller families, supporting the "land security" hypothesis. Women coming from households owning over 0.5 ha of land had on an average one child more than those who were landless in the settlement schemes. The mean parity by operational size of holding however does not show the same trend as it did with the land ownership variable. For example, in land settlement schemes, the landless and those who operate the biggest land holdings show higher mean parity than those who operate smaller land holdings. Uncertainty with regard to tenure of operational holdings may be regarded as one explanation for this inconclusive pattern. In particular the households who operate land on temporary tenure have no guarantee of continuity so that the operational size of land has less effect on fertility decisions. The relationship between land holding and fertility in the control area is particularly weak as the majority of households are land poor and depend on non-agricultural occupations so that accessibility to land may not have played such an important role in their fertility decision.

### **9.3 Postponement of Marriage**

Age at marriage is one of the most important variables determining the fertility level in Sri Lanka as the births usually take place within marriages<sup>1</sup>. There are several studies which have attempted to explain the contribution of postponement of marriage to lowering fertility in Sri Lanka (Fernando 1985; Wright 1968 : 750; Immerwahr 1981; Langford 1981 : 304; Alam and Cleland 1981). The decline in fertility between 1963-69 has been attributed entirely to the change in nuptiality by

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1 Birth outside wedlock was not uncommon in early societies as marital relations and sexual relations were considered as casual (Knox 1681 : 146; Pieris 1956 : 197). However, with the spread of puritan values in the 19th and 20th century through the Christian mission schools as well as with the Buddhist revival pre-marital and extra-marital sex were considered as taboos and births outside marriage was regarded as unethical and disgraceful (Pieris 1978 : 84-85).

Fernando (1972). Alam and Cleland (1981) estimate that the postponement of marriage alone has contributed 59 percent of the decline during the 1963-71 period and 46 percent during the 1971-75 period. The changes that have taken place in nuptiality in the country as a whole over the years have impinged upon the marriage patterns among second generation members in the survey areas.

Table 9.18 shows that the proportion of women in the survey who had married between the ages of 15-19 years was 33 and 29 percent respectively in the Siyambalangamuwa and Rajangana schemes, but less than 5 percent of the women

**Table 9.18 Percent Married in Each Age Category by Sex (All Population)**

	Rajangana		Siyambalangamuwa		Dedigama	
	M	F	M	F	M	F
15-19	-	29.2	13.8	33.3	-	4.8
20-24	35.8	76.7	22.8	66.7	4.3	40.0
25-29	84.0	86.2	73.7	89.5	32.3	61.3
30-34	90.8	96.7	91.6	95.9	69.2	85.4
35-39	99.0	97.2	92.4	97.5	86.9	92.4
40-44	98.6	100	98.3	97.6	91.9	94.7
45+	100	95.7	98.0	100.0	90.2	97.0
Median	23.0	19.0	23.5	19.5	28.0	22.5
Mean	23.4	19.8	23.6	20.1	27.9	23.2
SD	3.9	3.1	4.2	3.4	4.7	4.4
All	76.5	83.2	74.1	82.4	54.3	64.9
N	462	490	342	372	198	252-

Source: Complete Enumeration of Households, 1992.

in this age group were married in the control area. The influence of urban values and higher aspirations due to better educational attainment among females in the control area tend to have influenced women in the 15-19 age group to delay their marriage. The proportion married rapidly increases after the age group 20-24. Over 60 percent of the women were reported as married in this age group in the settlement schemes, in contrast to 40 percent in the control area. The proportion married among males rapidly increases after age 25 in both settlement schemes, whereas in the control area more males were found to marry after age 30.

Therefore the postponement of marriage was found to be more common among both males and females in the control area. Over 90 percent of the women were married after age 35 in all locations. The incidence of permanent celibacy was insignificant in both settlement schemes and corresponds to the national estimate of three percent for males and females (CBS 1990). However in the control area, the incidence of permanent celibacy was found to be higher (about 10 percent) among male members.

The mean and median age at marriage for both men and women were found to be consistently higher in the control area as compared to those among settlers in the two settlement schemes. The singulate mean age at marriage estimated for Sri Lanka from the latest available census data which was 27.9 for males and 24.4 for females (MHWA 1992 : 19), was much higher than the mean age at marriage estimated for the second generation members in the settlement schemes. This indicates that the second generation members continued to marry earlier than is the case for the country in general. More recent estimates of singulate mean age at marriage for women calculated from the Demographic and Health Survey of 1987 (DCS 1988a : 22) were around 24.8 - still higher than the mean age at marriage reported by second generation members. However, the estimate of mean age of marriage for women in the control area was similar to the national average.

In order to estimate time trends in age at marriage, the mean age at marriage was calculated by age cohorts. Table 9.19 shows that the difference in the median age of marriage among female members between the oldest and youngest groups was in the range of 1-1.5 years in all survey locations. The median age for younger age cohorts was found to be rising as compared to the older women in the survey. The women who had completed their fertility consistently reported a lower median age at marriage when compared to those who were still in the reproductive age groups.

However, the gap between these two groups is not very large. The same trend could be seen for males in the sample locations.

**Table 9.19 Median Age at Marriage of Second Generation Members by Current Age and Sex**

Current Age	Rajangana		Siyambalangamuwa		Dedigama	
	M	F	M	F	M	F
20-24	20.0 (25)	20.0 (90)	22.5 (15)	19.5 (70)	23.0 (1)	20.0 (19)
25-29	23.5 (98)	21.5 (116)	23.0 (55)	22.0 (71)	24.0 (17)	23.0 (42)
30-34	24.5 (132)	19.0 (114)	24.0 (94)	20.5 (89)	28.0 (42)	24.0 (73)
35-39	22.0 (100)	18.0 (102)	22.5 (71)	19.0 (74)	28.0 (44)	22.5 (59)
40-44	21.0 (69)	18.0 (47)	21.0 (58)	18.5 (41)	26.0 (65)	21.0 (31)
45+	20.5 (38)	17.5 (21)	20.0 (49)	18.0 (27)	22.0 (29)	19.0 (28)
All	23.0 (462)	19.0 (490)	23.5 (342)	19.5 (372)	28.0 (198)	22.5 (252)

Source: Complete Enumeration of Households, 1992

Note: Total number of cases are given in parentheses

The increasing age at marriage however, is pronounced when median age at marriage is calculated by duration of marriage. Table 9.20 shows that the women who had marriages of shorter duration in all locations consistently reported higher median age at marriage than those who had marriages of longer duration suggesting strong evidence for delayed marriage. The gap between median age at marriage of more recently married men and those who got married many years ago was in the range of 2 - 4 years. Recently married male members were found to have married an average 4 years later than the male members who had married 20 or more years earlier. The inverse relationship between median age at marriage and the duration of marriage is consistent in all three sample locations across all duration groups. Although there was evidence of more recently married men and women having postponed their marriages in both the settlement and control areas, the second

**Table 9.20 Median Age at Marriage of Second Generation Members by Duration of Marriage and Sex**

Marriage Duration	Rajangana		Siyambalangamuwa		Dedigama	
	M	F	M	F	M	F
0-4	25.0 (102)	20.0 (92)	25.0 (64)	21.0 (75)	29.5 (42)	24.0 (58)
5-9	23.5 (116)	20.0 (117)	24.0 (89)	19.5 (85)	28.0 (47)	23.0 (58)
10-14	22.5 (117)	18.5 (113)	24.0 (72)	19.5 (74)	27.5 (52)	21.0 (54)
15-19	22.5 (63)	18.0 (92)	23.0 (52)	18.5 (69)	25.5 (40)	21.0 (41)
20+	21.0 (64)	18.0 (76)	20.5 (65)	18.0 (69)	24.5 (17)	19.5 (41)
All	23.0 (462)	19.0 (490)	23.5 (342)	19.5 (372)	28.0 (198)	22.5 (252)

Source: Complete Enumeration of Households, 1992

generation men and women in the settlement schemes were normally found to have married much earlier than their counterparts in the Wet Zone control area. The early entry into matrimony among Dry Zone settlers in comparison to Wet Zone villagers has also been noted in previous studies (Abeysekara 1984; Wanigaratne 1976 : 5).

As shown in Chapter 5, the proportion of first generation men and women who married at an early age was greater than the proportion for second generation members. The age at marriage of female members showed the same trend, with a relatively large proportion of women marrying at age 15-19 among the first generation and fewer being married among the second generation in the same age category (Figure 5.5). A clear difference was evident with regard to the age at marriage between the two generation groups in the land settlement schemes and in the Wet Zone control area. Firstly, more second generation members postponed their marriage in comparison to the first generation members in each location. This was true in the case of both sexes. Secondly, both first and second generation

members in the control area were found to have married later than their counterparts in the settlement villages. Therefore the survey data strongly established postponement of marriage as a demographic strategy followed by second generation members in comparison to their parents' generation. The second generation members in the control area being more educated were likely to have higher aspirations forcing them to delay their marriage in comparison to their counterparts in the Dry Zone settlement. The influence of urban values and western ideas was greater in the control area due to the location of the area is located in the most developed region of the country when compared to the remote Dry Zone settlement schemes.

During the focus group interviews, the reasons for delay in marriage among second generation members in the Wet Zone control area and relatively early marriages among their counterparts in the Dry Zone settlement villages were discussed extensively. Households with a large number of offspring, with more females, with more educated members and with limited access to land were reported to have a large number of members who had postponed their marriages. The participants of the focus group interviews in the Wet Zone control area stressed the point that the postponement of marriage was an outcome of the inability to satisfy current expectations with respect to dowry, property ownership and employment. It was found to be particularly difficult to arrange marriages for educated women when they were young as a result of the high degree of unemployment coupled with the high aspirations among them. The males on the other hand postponed their marriages until they found suitable employment which would provide a stable income for independent living. Second generation members in the middle and higher socio-economic groups postponed their marriages simply because they had not been able to find partners compatible with their perceived social standing.

According to the respondents of the focus group interviews, arranged marriages were still common in the Dry Zone settlement schemes, however the dowry plays an insignificant role. One first generation settler attempted to justify why he did not want to give dowries for his children in the following words:

"Dowry was never important in my life. I got nothing from my in-laws as dowry. I wanted to become a settler because I neither inherited anything from my parents nor received dowry from my in-laws. I was poor then, in the same way as I am now. So, how can anybody expect me to give dowries for my own children?"

It was reported that the settlers gave wedding gifts for their daughters when they got married depending on their financial ability. However, the inability to pay dowries had never held up marriages in the two settlement schemes. In contrast, in the control area dowry gifts were an essential component of the ceremonies of arranged marriage, so that inability to pay dowries was an important factor causing delays in marriage. Caldwell et al (1989 : 345) found that inability to meet the dowry cost caused delays in marriage in their seven study locations spread around Sri Lanka which did not include any Dry Zone settlement village, confirming the importance of dowry in other parts of the country including the Wet Zone. The importance of giving dowry in the control area therefore tended to result in delays in marriage among second generation members as observed earlier.

Marriages in Dry Zone settlement villages are also often arranged by parents and close relatives. However, it was reported during our informal interviews that the proportion of love marriages was increasing in both areas as the new generation did not like their parents making the decision on the selection of partners for them. Consequently, love affairs very often led to early marriages between couples. First generation members also stated that as parents, they respected their children's wishes if the proposed partners belonged to the same caste and were of equivalent social standing. Cross caste marriages were the subject of disagreement and

subsequent elopements. The couples who eloped due to parents' disagreement over love affairs were reported to be mostly teenagers in settlement villages.

Early marriages among second generation members in the settlement schemes could also be explained as an outcome of their relaxed attitudes towards marriage, particularly among those who came from traditional villages. Our survey found that a number of couples (11 males, 14 females) had entered into consensual unions<sup>2</sup> without registering their marriages. Out of these, six males and eight females belonged to the second generation. They were all from the Rajangana scheme and had originally come from traditional villages (Purana) from nearby areas. Although birth outside marriage is generally regarded as a matter to be ashamed of, the children of consensual unions were accepted by these communities. More importantly, those who had entered into the consensual unions were reported to be much younger than those who had legally married. The early marriage among second generation members in the settlement schemes was also the result of a variety of social factors as compared to the control group. The analysis of differentials in age at marriage is therefore important in order to identify which specific groups delay their marriage in the face of growing population pressure in the two settlement schemes.

### 9.3.1 Differentials in Age at Marriage

The impact of education on age at marriage is well documented in the literature (Cochrane 1979; Caldwell 1980; Jain 1981). The single most important socio-economic factor which has influenced both age at marriage and contraceptive use in Sri Lanka has been the rising educational attainment of females (MPPI 1992 : 86). As shown in Table 9.21, median age at marriage among second generation men and

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<sup>2</sup> The Kandyan law held that a man and a woman of the same rank who lived together as husband and wife were considered married.

**Table 9.21 Median Age at Marriage of Second Generation Members by Education and Sex.**

Educational level	Rajangana		Siyambalangamuwa		Dedigama	
	M	F	M	F	M	F
No schooling	21.5 (32)	18.5 (55)	21.5 (17)	18.5 (26)	25.0 (3)	20.0 (1)
Primary	22.5 (213)	18.0 (202)	22.5 (192)	18.5 (188)	26.0 (41)	20.0 (44)
Secondary	23.0 (143)	19.0 (134)	24.5 (82)	19.5 (98)	25.5 (48)	21.0 (43)
GCE O'Level	25.0 (58)	20.0 (77)	25.0 (37)	20.5 (50)	28.5 (88)	23.5 (121)
Higher	27.0 (16)	23.0 (22)	26.5 (14)	22.5 (10)	28.0 (18)	25.0 (42)
All	23.0 (462)	19.0 (490)	23.5 (342)	19.5 (372)	28.0 (198)	22.5 (252)

Source: Complete Enumeration Households, 1992

women consistently increases along with their level of education. The difference in median age between the most educated and those who have no education was in the range of 4-5 years for women and 3-6 years for men in all three sample locations.

However, the difference in median age at marriage between educated groups in the control area was not as wide as it was in settlement villages. The second generation members who had actually delayed their marriages were found to be the more educated members in all sample areas. Second generation members with no education or few years of schooling continued to marry early. The mean age at marriage reported by women in the most educated group was more or less similar to the national estimate of singulate mean age at marriage, revealing that even the most educated members in the settlement schemes had married early. The national estimate available for males corresponds to the second generation males who had an education over G.C.E O'Level in the control area. The remaining groups irrespective of their educational attainments, consistently had a lower mean age at

marriage. Those who had few years of schooling were found to have begun family life early as the employment prospects outside agriculture were limited for them. Parents also have encouraged their less educated female offspring to marry early in order to free themselves from family responsibilities. Overall the more educated second generation members have adopted postponement of marriage as a demographic strategy across all survey locations. The lowest fertility was also recorded by the more educated members in the settlement schemes. Therefore the education of second generation members was found to be one of the most significant components in the postponement of marriage as a demographic strategy adopted by the second generation settlers.

The age at marriage by ownership of paddy land is given in Table 9.22. Second generation households were classified into three groups which correspond to their economic standing in individual villages. Our informal interviews revealed some specific characteristics of the second generation based upon their current land ownership pattern. The landless group consisted of rural labourers who were entirely dependent upon income from wage labour in agriculture for their sustenance. The landless were also engaged in various types of unskilled work. Their employment usually had a seasonal dimension, therefore the actual period of employment was spread over a period of only three to four months annually. As shown in Table 9.22, they usually married much earlier than the other groups. Females in this category were less educated and had less chance of getting married to a man with regular employment in the public sector or with a large amount of land or wealth. Dowries were customarily not expected by the men or given in the marriages of women. As soon as they reached adulthood, if they had no obligation to parents or siblings, they usually got married early. The partners of this group often had the same background. As the aspirations among these members were

**Table 9.22 Mean and Median Age at Marriage of Second Generation Members by Sex and Paddy Land Ownership**

	Rajangana		Siyambalangamuwa		Dedigama	
	M	F	M	F	M	F
<b>Landless</b>						
Mean	22.9	18.7	23.6	19.4	27.3	22.8
Sd	4.1	3.6	4.1	3.3	4.4	4.5
Median	22.0	18.0	23.0	18.0	27.0	22.0
N	104	106	59	63	78	83
<b>0.01-0.50 ha.</b>						
Mean	23.2	19.3	24.1	20.0	29.3	24.2
Sd	3.6	2.1	3.7	3.4	4.4	5.8
Median	23.0	19.0	24.0	19.0	28.0	24.0
N	52	52	79	84	12	15
<b>over 0.50 ha.</b>						
Mean	25.0	20.1	25.3	21.3	33.2	26.8
Sd	3.7	3.3	4.7	4.2	5.5	3.5
Median	25.0	20.0	25.0	21.0	33.0	25.0
N	61	65	29	31	5	5
<b>All</b>						
Mean	24.1	19.7	24.2	20.0	27.9	23.2
Sd	3.9	3.2	4.1	3.6	4.6	4.7
Median	24.0	19.0	24.0	19.0	28.0	23.0
N	217	223	167	178	95	103

Source: Complete Enumeration of Households, 1992

low they had hardly any reason to postpone their marriages.

The second group consists of those who have some access to land but small plots sufficient only for their own subsistence. They also often cultivated land belonging to others on sharecrop or other forms of temporary tenure and tended to have supplemented their income by selling their labour in both agricultural and non-agricultural activities. They married slightly later than the first group although the difference in age at marriage was not large. This group roughly corresponded to the group owning 0.01-0.5 ha of land shown in Table 9.22.

The third group was small in all locations and controlled relatively larger land holdings. Their land was sufficient to provide not only for the subsistence requirements of the family but also to generate marketable surpluses. Some

households in this category also operated large land holdings on temporary tenure and had access to non-agricultural income avenues. They were more education-oriented than other groups and were likely to possess better educational qualifications. This group was also more selective in choosing partners compatible with their socio-economic standing, resulting in delays in their marriages. The second generation households who owned more than 0.5 ha of land given in Table 9.22, corresponds to the households with these similar characteristics. Accessibility to land among second generation settlers was therefore found to have a positive association with the age at marriage. The postponement of marriage therefore was a strategy followed by the second generation settlers with greater access to land, rather than the landless or land-poor in the sample areas. This shows that those who have already had some access to land are more concerned with the increasing pressure on land resources and have adopted the postponement of marriage as a demographic strategy. The level of education also had a combined effect on delaying marriage as they were the most educated in the community.

#### **9.4 Use of Contraception as a Population Control Strategy**

The practice of contraception was another option for second generation members to control their fertility. Therefore, this section examines the extent to which contraceptives were used by second generation couples as a strategy of spacing and limiting their family size.

Family planning services are provided through a wide network of medical institutions and health centres and through public health personnel engaged in field activities with island-wide coverage. A large number of non-governmental organizations<sup>3</sup> also provide modern family planning services through their own

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3 Non-governmental organisations providing family planning services are Family Planning Association of Sri Lanka, Sri Lanka Association for Voluntary Surgical Contraception and Family Health, Population Services Lanka, Community Development Services.

community-based distribution programmes and through retail outlets. Contraceptives and family planning services are widely available in every province of the country. Nevertheless, the degree of accessibility to them varies between rural to urban districts (MPPI 1992).

Family planning information is also disseminated through the mass media (TV, radio and newspapers) which is controlled by both the state and private sector, as well as through inter-personal communication. The major source of family planning information in the village is the Midwife/Field worker who visits the homes of pregnant women at least fortnightly and provides information on prenatal care as well as the planning and spacing of children and modern methods of contraception. She also provides the Pill and condoms for village women at a subsidised price and guidance and assistance for the general well being of the village children. As a result, the Midwife/Field worker is considered by village women to be part of their community and she is the only health official available on their own door step for advice and support with no financial obligation.

Family planning efforts in the country over the last two decades have brought about impressive results. The 1993 Demographic and Health Survey (DHS) found that prevalence of contraceptive use in the country had risen to 66 percent (DCS 1994a) from the level of 32 and 62 percent respectively reported by two earlier surveys in 1975 (The World Fertility Survey) and 1987 (Demographic and Health Survey) (DCS 1978; DCS 1988a). The DHS of 1993 also showed a substantial increase (from 19 percent to 44 percent) in the use of modern contraceptive methods during the same period. Traditional methods were also used by 22 percent of the women of reproductive age in 1993 (DCS 1994). The low estimates on the use of traditional methods given in earlier surveys has been attributed to under-reporting (Gajanayake and Caldwell 1990 : 97-102). Evidence of the widespread adoption of

traditional methods has also been found in micro level demographic studies (Caldwell et al : 1987).

#### 9.4.1 Knowledge of Contraceptive Methods among Second Generation Members

Knowledge of specific methods of contraceptives is of course a pre-condition for use. Hence, an attempt was made in the survey to ascertain the extent of knowledge of contraceptives among second generation women of reproductive age (15-49). At the first stage, respondent women were asked to name all the contraceptive methods they had ever heard of and at the second stage, the investigator named all the specific methods, explaining them in detail in order to make sure whether the respondents had actually heard of the method concerned. The overall knowledge of specific methods is presented in Table 9.23, indicating that the methods best known to women across all locations as female sterilisation followed by the Pill and injection. A higher proportion of women in the control area identified modern contraceptive methods unprompted than their counterparts

**Table 9.23 Percentage of Second Generation Women Knowing Contraceptives by Specific Methods**

Method	Rajangana		Siyambalangamuwa		Dedigama	
	Prompted	Unprompted	Prompted	Unprompted	Prompted	Unprompted
Pill	97.1	82.9	93.2	77.3	98.3	89.7
Condom	91.4	60.0	88.6	50.0	91.4	37.9
Injectable	87.1	64.3	90.9	56.8	96.6	91.4
IUD	77.1	28.6	50.0	40.9	55.2	46.6
Tubectomy	94.3	88.6	97.7	90.9	94.8	96.6
Vasectomy	78.6	45.7	52.3	25.0	82.8	19.0
Rhythm	82.9	11.4	88.6	9.1	87.9	6.9
Withdrawal	81.4	2.9	81.8	2.3	86.2	3.4
N	70	70	44	44	58	58

Source: Sample Survey of Households, 1992

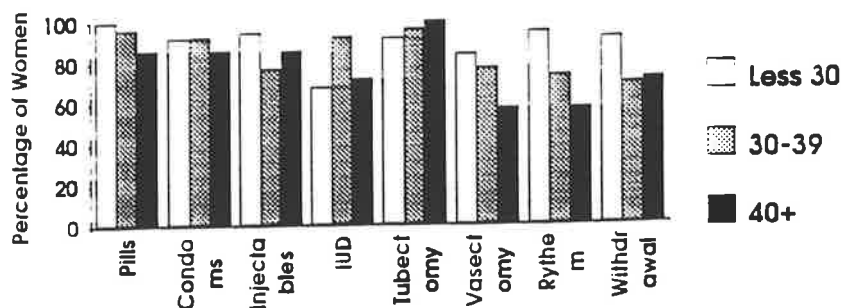
in the settlement schemes. Traditional methods were not mentioned by the majority of the women in the unprompted questions. This could be due to the fact that many

women in Sri Lanka do not identify traditional methods as contraceptives (Gajanayake and Caldwell 1990). Vasectomy, IUD and condom were mentioned by less than 60 percent of women across sample locations. This may reflect a declining trend in the use of IUD. Women respondents declined to mention contraceptives used by men such as condoms and vasectomy in the unprompted questions. However, the question was asked if women actually know about specific contraceptives at the prompted level and knowledge was found to be near universal except for a few specific methods. Female sterilisation and the Pill were known by over 90 percent of the women. Injectables and condoms were known by between 87 and 97 percent of the women across the sample locations. More women knew about traditional methods when prompted.

Contraceptive knowledge measured in terms of knowing at least one method of contraception classified by age in Sri Lanka as a whole shows substantial differentials by age (DCS 1994a). Women over age 25 years were found to have known both modern and traditional methods more than those younger than age 25. However in the sample areas, when knowledge levels were examined by age of women, consistently higher knowledge of modern temporary methods were shown by younger women (Figures 9.1, 9.2 and 9.3). These women especially showed a greater knowledge of the Pill, injections and condoms. The older women on the other hand, showed more knowledge of sterilisation perhaps due to their current use of this method. The younger women also showed a limited knowledge of IUD compared to older women. The most likely explanation for this trend is the popularity of this method in the 1970s. Further, the young women showed more knowledge of traditional methods than the oldest group in the settlement schemes.

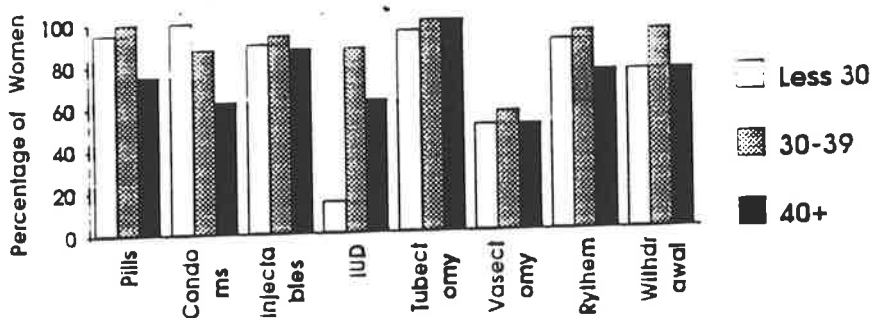
As the level of educational attainment increases, so does the knowledge of family planning techniques and positive attitudes towards family planning (Conception

**Figure 9.1 Contraceptive Knowledge of Second Generation Women by Specific Methods and Age in Rajangana**



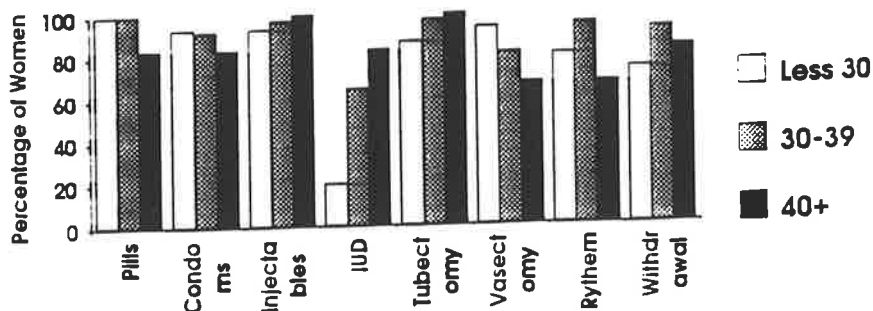
Source: Sample Survey of Households, 1992.

**Figure 9.2 Contraceptive Knowledge of Second Generation Women by Specific Methods and Age in Siyambalangamuwa**



Source: Sample Survey of Households, 1992.

**Figure 9.3 Contraceptive Knowledge of Second Generation Women by Specific Methods and Age in Dedigama**



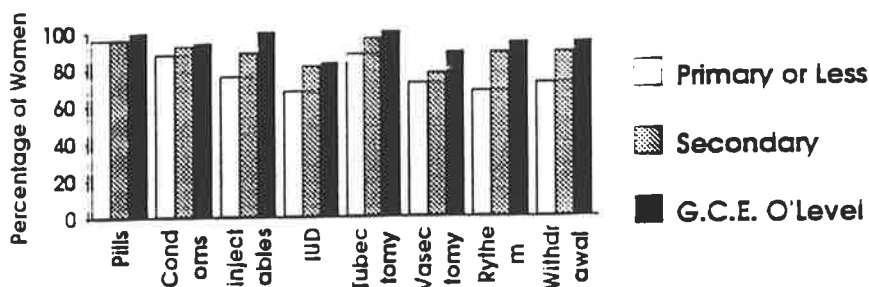
Source: Sample Survey of Households, 1992.

and Wiehelm 1968 : 714-731; Peng and Abdurahaman 1981 : 10-11; Shah 1986a : 330). However, the 1987 DHS do not show any significant differentials in knowledge by education of women. The sample data show significant differentials in knowledge by level of education. As shown in Figures 9.4, 9.5 and 9.6 knowledge of modern contraceptives was found to be universal among more educated women across all sample locations as compared to less educated women. The Pill, injectables and female sterilisation were known by almost all women who had educational qualifications up to G.C.E O'Level or beyond. They also showed a consistently higher level of knowledge of traditional methods. Relatively less contraceptive knowledge was shown by women who had primary education only or no education at all.

#### **9.4.2 Previous Use of Contraception**

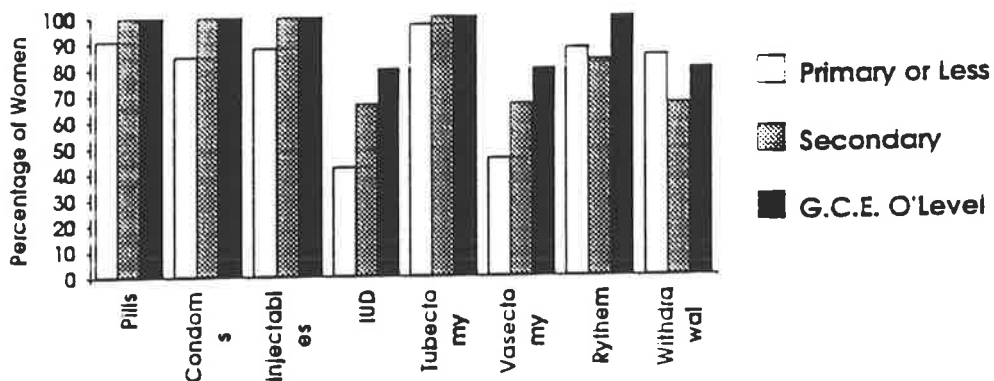
Responses given to the question on whether second generation women have ever used contraceptives showed the existence of a close association between knowledge and level of contraceptive practice. As shown in Table 9.24, over 90 percent of previously married women had used at least one method of contraception at some point in their married life, with the highest level of contraception among women in the Siyambalangamuwa scheme. Contraceptives were used for birth spacing and controlling of family size. In fact, 50 percent of the couples in the Rajangana scheme had used terminal methods for complete control of their families. Terminal methods were also used by a quarter of the women in the Siyambalangamuwa scheme, followed by only 17 percent of women in the control area. The number of women who had used modern temporary methods across the sample areas ranged from between 41 to 72 percent. What is striking here is that more couples used traditional methods more often than any other single method at any time in their married life in all locations. Previous use of specific contraceptive

**Figure 9.4 Contraceptive Knowledge of Second Generation Women by Specific Methods and Educational Attainment: in Rajangana**



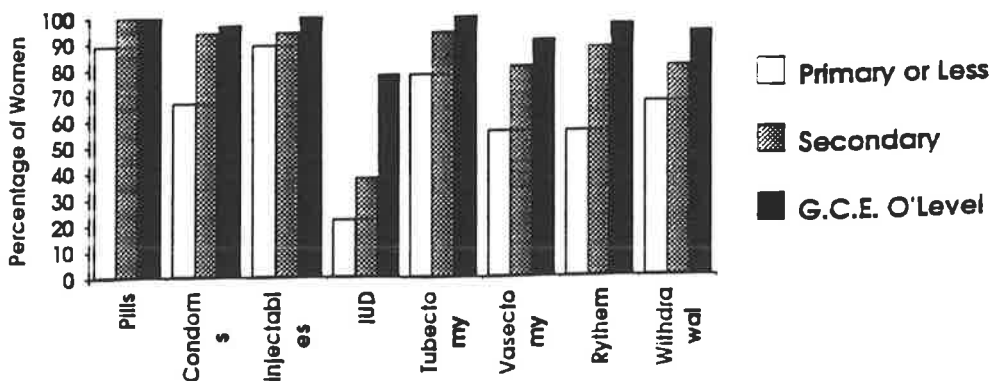
Source: Sample Survey of Households, 1992.

**Figure 9.5 Contraceptive Knowledge of Second Generation Women by Specific Methods and Educational Attainment: in Siyambalangamuwa**



Source: Sample Survey of Households, 1992.

**Figure 9.6 Contraceptive Knowledge of Second Generation Women by Specific Methods and Educational Attainment: in Dedigama**



Source: Sample Survey of Households, 1992.

**Table 9.24 Percentage of Second Generation Couples Who Have Previously Used Contraceptives by Specific Methods**

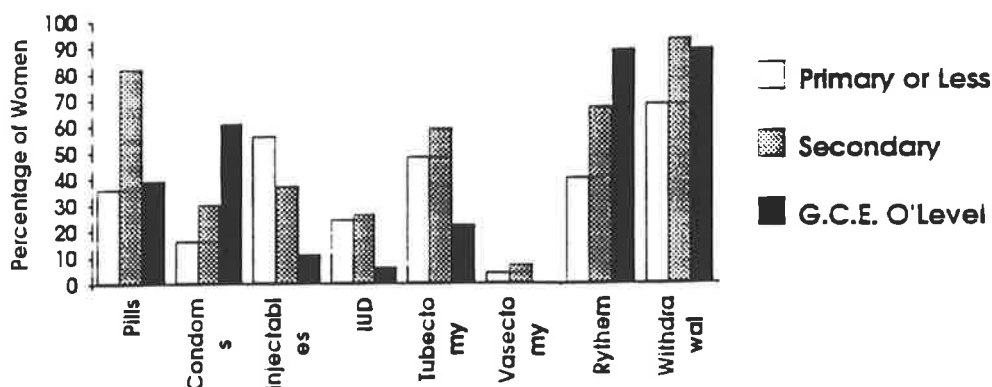
Method	Rajangana	Siyambalangamuwa	Dedigama
Pill	54.3	65.9	63.8
Condom	32.9	40.9	41.4
Injectables	37.1	50.0	39.7
IUD	20.0	29.5	19.0
Tubectomy	46.0	20.5	13.8
Vasectomy	4.0	4.5	3.4
Rhythm	62.9	77.3	84.5
Withdrawal	82.9	88.6	87.9
Any method	91.4	95.5	93.1
Any modern method	78.6	84.1	72.4
Terminal method	50.0	25.0	17.2
Temporary modern	41.0	68.0	72.0
N	70	44	58

Source: Sample Survey of Households, 1992.

methods by age categories given in Figures 9.10, 9.11 and 9.12 indicates that more women belonging to the younger age groups have used the Pill at some time as compared to women in the older age groups. The incidence of using IUD on the other hand, was more common among the older women and nil among the women in the less than 30 year age group. Injectables were found to be more popular among women in the less than 30 and 30-39 age groups. As expected, sterilisation increased with age with a large proportion of women in the oldest age group resorting to this method.

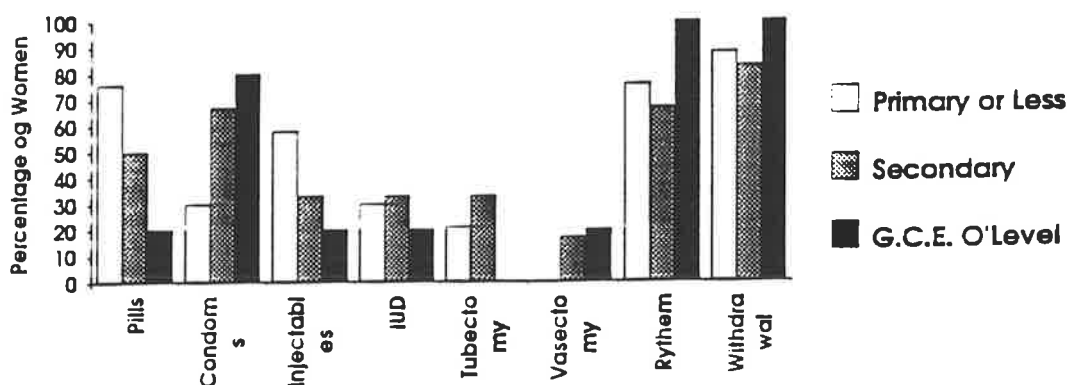
The differentials in previous use of contraceptives by educational attainment showed that terminal methods were more popular among women who had an education level less than secondary (Figures 9.7, 9.8 and 9.9). Since education and age are highly correlated, the acceptance of terminal methods was common among older women who were less educated. Of the modern temporary methods, condoms were found to be more popular among those with higher educational attainment. The more educated couples also reported using traditional methods more often than less educated women, confirming the previous finding that adoptors of traditional methods in Sri Lanka tend to be among the most educated (Caldwell et al 1987 : 4).

**Figure 9.7 Contraceptive Previously Practised by Second Generation Women by Specific Methods and Educational Attainment in Rajangana**



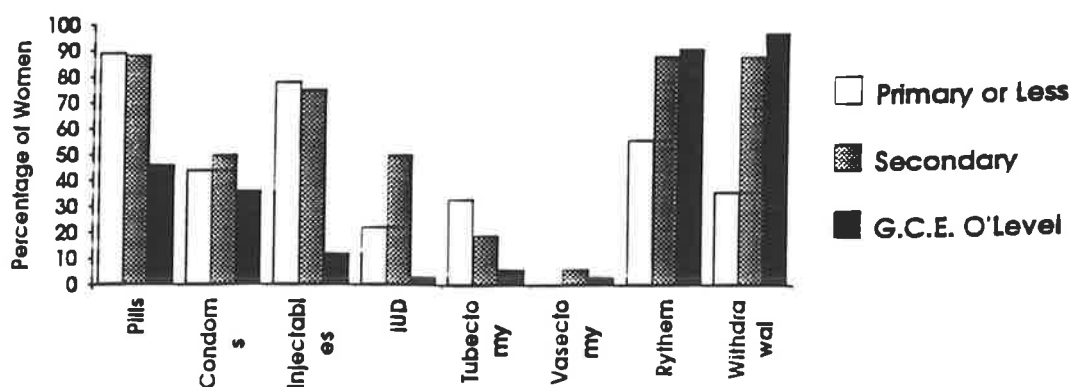
Source: Sample Survey of Households, 1992.

**Figure 9.8 Contraceptive Previously Practised by Second Generation Women by Specific Methods and Educational Attainment in Siyambalangamuwa**



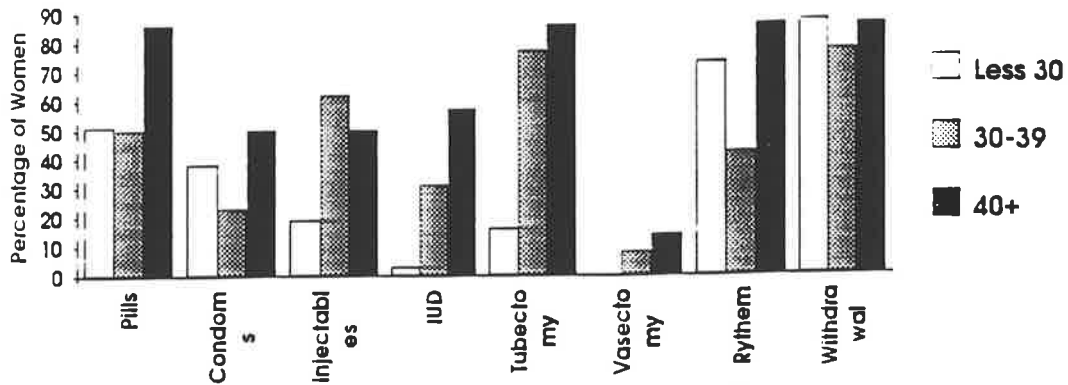
Source: Sample Survey of Households, 1992.

**Figure 9.9 Contraceptive Previously Practised by Second Generation Women by Specific Methods and Educational Attainment in Dedigama**



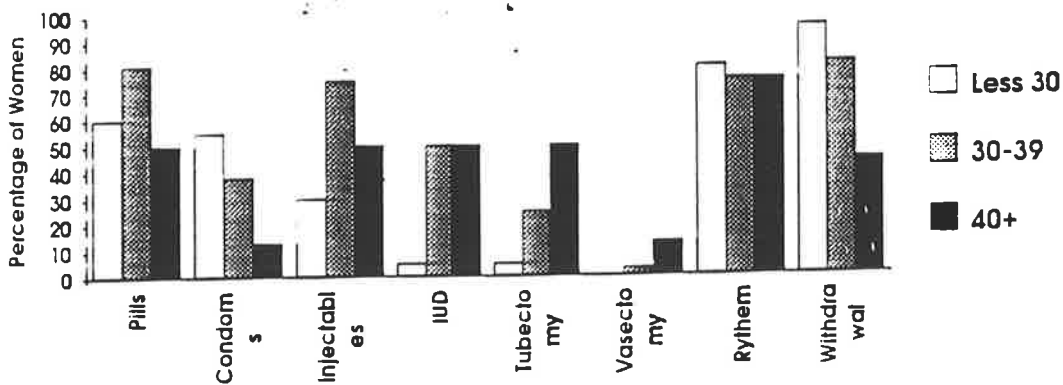
Source: Sample Survey of Households, 1992.

**Figure 9.10 Contraceptive Previously Practised by Second Generation Women by Specific Methods and Age in Rajangana**



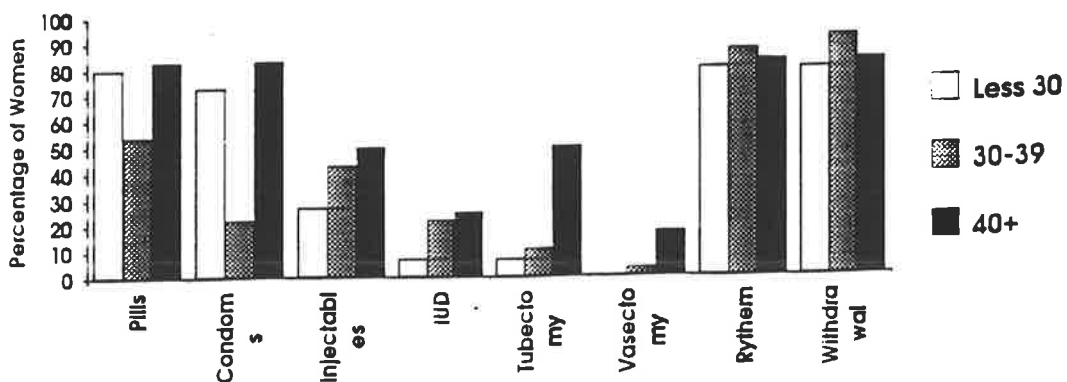
Source: Sample Survey of Households, 1992.

**Figure 9.11 Contraceptive Previously Practised by Second Generation Women by Specific Methods and Age in Siyambalangamuwa**



Source: Sample Survey of Households, 1992.

**Figure 9.12 Contraceptive Previously Practised by Second Generation Women by Specific Methods and Age in Dedigama**



Source: Sample Survey of Households, 1992.

### 9.4.3 The Current Use of Contraception

The current use of contraception by second generation women is shown in Table 9.25. The highest contraceptive prevalence rate was found to be among second

**Table 9.25 Percentage of Second Generation Couples Who Are Currently Practising Contraception by Specific Methods**

Method	Rajangana	Siyambalangamuwa	Dedigama	Sri Lanka
Pills	7.1	15.9	6.9	5.5
Condom	2.9	2.3	3.4	3.3
Injectables	4.3	27.3	10.3	4.6
IUD	1.4	2.3	0	3.0
Tubectomy	45.7	20.5	13.8	23.5
Vasectomy	4.3	4.5	3.4	3.7
Rhythm	4.3	6.8	12.1	15.2
Withdrawal	2.9	4.5	8.6	5.0
None	27.1	15.9	41.4	33.9
Permanent	50.0	25.0	17.2	27.2
Modern Temporary	15.7	47.7	20.6	16.4
Traditional	7.2	11.3	20.7	20.2
All Methods	72.9	84.1	58.5	66.1
N	70	44	58	-

Source: Sample Survey of Households, 1992, Demographic and Health Survey, 1993.

generation couples in Siyambalangamuwa, followed by Rajangana and Dedigama. The majority of second generation couples in Siyambalangamuwa resorted to contraceptive practices due to their having the most difficult living conditions prevailing in the scheme. Those who indicated that they want to have few children dominantly cited economic reasons for their choice (Table 9.26). During the focus group interviews second generation participants in this scheme constantly expressed the view that they did not want the future generation to experience the same suffering they have had to put up with, due to the difficult conditions prevailing in the scheme. The second highest contraceptive prevalence rate was found in the Rajangana scheme and is attributed to the performance of one female health worker in the area. She has been able to gain a good rapport with women and has persuaded most of those with more than 3 children to undergo a tubectomy operation. In actual fact, 46 percent of the second generation sample women were

**Table 9.26 Reasons for the Preference of Less Number of Children**

Reason	Rajangana	Siyambalangamuwa	Dedigama
Economic problems	85	81	76
Lack of land	43	57	35
For health reasons	6	3	6
Easily manageable	37	24	37
Less social problems	20	16	12
N	54	37	51

Source: Sample Survey of Households, 1992

Note: Total add up to more than hundred due to multiple answers.

found to have been sterilised at the time of our survey. The health worker also supplied the Pill and condoms for the women and had organised mobile clinics for women to get their regular injections.

The focus group interview sessions with second generation members gave us an opportunity to discuss a number of issues with regard to family planning in an informal atmosphere. The second generation participants were requested to express their own views on family planning and their perception on the possible impact that family planning could have in solving some socio-economic problems encountered by them. The views expressed by them could be summed up as follows: They all believe that the average number of children per family in their community is much higher than in the urban areas in the country, as a result of poor health, less education, lack of resources and less access to facilities in their own villages in comparison to the facilities that could be accessed by the urban residents. All the participants disagreed with the view that a large family is needed for agricultural purposes. They all believed that family planning is an effective way of limiting their family size but they still had some reservations about accepting certain specific contraceptive methods. They were conceived that the Pill could make women sick and in the long run even sterile. Injectables and tubectomy were well received as very effective methods of spacing and permanent control with a minimum risk involved. The poor acceptance level of male sterilisation was

rationalised by stating that vasectomy operations prevent men pursuing the heavy work needed in day-to-day agricultural activities. The participants in focus group interviews agreed that family planning was essential as an effective long-term solution to the problems of landlessness, land fragmentation and unemployment in their villages. The survey data showed that significant proportions of them were adopting contraceptives for both controlling and spacing their fertility as a long term solution to the population pressure.

#### 9.4.4 Differentials in Contraceptive Use

Differentials by age showed that the use of contraceptives was consistently higher among women in the middle age groups as compared to the younger or older groups (Table 9.27). In other words, contraceptive use among women in the early

**Table 9.27 Percentage of Second Generation Couples Who Currently Practise Contraception by Specific Method and Age**

Age	N	Permanent modern	Temporary	Traditional	None	All methods
<b>Rajangana</b>						
Less 29 yrs	37	32.4	21.6	8.1	37.8	62
30-39 yrs	26	76.9	7.7	3.8	11.5	89
40+ yrs	7	42.9	14.3	14.3	28.6	71
All	70	50.0	15.7	7.2	27.1	73
<b>Siyambalangamuwa</b>						
Less 29 yrs	20	10.0	60.0	10.0	20.0	80
30-39 yrs	16	25.0	56.3	18.8	-	100
40+ yrs	8	62.5	12.5	-	25.0	75
All	44	25.0	47.8	11.3	15.9	84
<b>Dedigama</b>						
Less 29 yrs	15	6.7	13.3	33.3	46.7	53
30-39	37	24.3	24.3	16.2	35.1	65
40+ yrs	6	-	16.7	16.7	66.7	33
All	58	17.2	20.7	20.7	41.4	59

Source: Sample Survey of Households, 1992

part of their reproductive life was generally low, it increased in middle age and had fallen again at the later stages of reproductive life. Analysing WFS data, Sathar and

Chidambaram (1984 : 15, 27) have shown that in Asia and Africa women often delay the adoption of contraception in the early years of their reproductive life. Contraception begins thereafter for spacing and once they have achieved the desired family, there is resumption of even control. Hence a high incidence of contraceptive use among women in the 30-39 age group is to be anticipated. More women in this age category were found to have achieved their desired family size and have gone for permanent control of fertility. Some 76.9 percent and 62.5 percent of women from Rajangana and Siyambalangamuwa respectively in the 30-39 age group used terminal methods of contraception. On the other hand, more women in the younger age groups had adopted modern temporary methods to space their births. Traditional methods were found to have been used by women across all age groups with a relatively high proportion in the control area adopting this practice when they were young .

Parity is also an important determinant of contraceptive use (McDonald et al 1980 : 123). A number of studies contain supportive evidence on the positive relationship between parity and the use of contraceptives (Presser and Bumpass 1970; Concepcion 1980 : 234; Palmore 1980 : 537; Palmore and Concepcion 1981 : 40). By analysing WFS data from 28 developing countries, Sathar and Chidambaram (1984 : 27) conclude that the incidence of contraception is higher among women with high parity in Asian and African countries in contrast to the high incidence of contraception among women with low parity in Latin American and Caribbean countries. Our survey data were consistent with the widely observed pattern of a positive relationship between contraceptive use and parity in Asia. Table 9.28 shows that contraceptive use increases with parity, with the highest proportion of women using contraceptives being those with parity four or more. The use of contraception increases after two children and reaches universality among women with four children or more in the two settlement schemes. The trend was similar in

**Table 9.28 Percentage of Second Generation Women Who Currently Use Contraceptives by Specific Method and Parity**

Living children	N	Permanent	Modern temporary	Traditional	None	All methods
<b>Rajangana</b>						
0-1	13	-	23.1	7.7	69.2	31
2	20	20.0	30.0	15.0	35.0	65
3	20	80.0	5.0	5.0	10.0	90
4+	17	88.2	5.9	-	5.9	94
N	70	50.0	15.7	7.2	27.1	73
<b>Siyambalangamuwa</b>						
0-1	7	-	14.3	28.6	57.1	43
2	16	6.3	68.7	6.3	18.7	81
3	9	33.3	55.6	11.1	-	100
4+	12	58.3	33.3	8.3	-	100
N	44	25.0	47.7	11.3	15.9	84
<b>Dedigama</b>						
0-1	19	-	26.3	21.1	52.6	47
2	21	4.8	19.0	28.6	47.6	52
3	13	46.2	15.4	15.4	23.1	77
4+	5	60.0	20.0	-	20.0	80
N	58	17.2	20.7	20.7	41.4	59

Source: Sample Survey of Households, 1992

the control area, except that there was a low rate of contraception among women in this location. The use of specific contraceptive methods also showed a consistent trend across all locations with women in high parities using more permanent methods in contrast to the dominant use of temporary modern methods by women in the low parities. The incidence of traditional contraceptive practices was also found to be common among women in the low parities who may have used this method for spacing.

Table 9.29 shows that differentials in the current use of contraception by education of women were quite similar to the trend observed among women who had at some time used contraception. The higher the educational attainment, the higher the prevalence of contraceptive use. The use of specific methods revealed the popularity of permanent methods among women with lower educational attainments. Modern temporary methods and traditional methods on the other

hand, were widely used by more educated women. The extensive use of traditional methods by more educated women in Sri Lanka has been a frequent finding in previous research (Sathar and Chidambaram 1984; Caldwell et al 1987).

**Table 9.29 Percentage of Second Generation Couples Who Practise Contraception by Specific Method and Educational Level**

Education	N	Permanent	Modern temporary	Traditional	None	All method
<b>Rajangana</b>						
Primary or Less	25	64.0	4.0	-	32.0	68
Secondary	27	44.4	22.2	7.5	25.9	74
G.C.E.O'Level	18	38.9	22.2	16.7	22.2	78
All	70	50.0	15.7	7.2	27.1	73
<b>Siyambalangamuwa</b>						
Primary or Less	33	30.3	39.4	12.1	18.2	82
Secondary	6	16.7	66.7	-	16.7	83
G.C.E.O'Level	5	-	80.0	20.0	-	100
All	44	25.0	47.7	11.3	15.9	84
<b>Dedigama</b>						
Primary or Less	9	22.2	11.1	11.1	55.6	44
Secondary	16	25.0	12.5	12.5	50.0	50
G.C.E.O'Level	33	12.1	27.3	27.3	33.3	67
All	58	17.2	20.7	20.7	41.4	59

Source: Sample Survey of Households, 1992

Table 9.30 shows that women of higher socio-economic status reported a higher rate of contraceptive use. The wealth index constructed on the basis of possession of household items showed that the highest contraceptive use rates were among those who had the highest scores, except in the case of Siyambalangamuwa. However, the land ownership variable did not show an equally strong positive relationship. The contraceptive prevalence rate marginally varied by the land size categories. As regards demographic variables, marriage duration had a strong positive relationship with contraceptive prevalence rate in all sample areas. The lowest rate of contraception was reported by women whose marriage duration was less than five years, whereas the highest level of contraception was found among women who had marriages of over 10 years duration.

**Table 9.30 Percentage of Second Generation Couples Who Currently Practise Contraception According to Various Characteristics.**

Characteristics	N	Percentage Using Contraception				
		Rajangana	N	Siyambalangamuwa	N	Dedigama
<b>Women Education</b>						
Primary or Less	25	68	33	82	9	44
Secondary	27	74	6	83	16	50
G.C.E.O'Level	18	78	5	100	33	67
<b>Household Possessions (Wealth Index)</b>						
Low	37	65	27	85	35	46
Medium	19	79	8	75	15	73
High	14	86	9	89	8	88
<b>Demographic</b>						
Age						
less 30	37	62	20	80	15	53
30-39	26	89	16	100	37	65
40+	7	71	8	75	6	33
<b>Living Children</b>						
0-1	13	31	7	43	19	47
2	20	65	16	81	21	52
3	20	90	9	100	13	77
4+	17	94	12	100	5	80
<b>Marriage Duration</b>						
0-5	17	35	9	44	18	39
6-9	14	71	10	80	11	64
10+	39	90	25	100	29	69
All	70	73	44	84	58	59

Source: Sample Survey of Households, 1992

#### 9.4.5 Reproductive Preferences of Second Generation Women

A number of longitudinal studies have provided evidence that individual preference often has a great effect on subsequent fertility (Rogers 1976; Nair and Chow 1980 : 255-263; Van de Gissen 1988; Vlassoff 1990 :216-225). By analysing data from the 1982 Sri Lanka Contraceptive Prevalence Survey and the follow-up survey of 1985, De Silva (1991: 198) shows that the reproductive preferences of Sri Lankan women were at least moderately predictive of their future fertility. According to his estimates, 65 percent of the women who wanted to cease child bearing in 1982

were successful in avoiding an unwanted birth in the follow-up-period. The fertility preferences stated by survey respondents are given in Table 10.32 and the mean number of children preferred by women was roughly three children in all locations. The preferred fertility varies marginally across locations by current fertility of women. Those who already had either two or less children did not want to have more than three on average in their life time. Those who already had three children on average preferred to have slightly more than what they already had in all locations except in Dedigama. Those who already had four or more children however, preferred to have fewer than what they had already achieved, revealing an unmet need for fertility control among women in the higher parities. However, it was not clear whether women already in high parities tended to quote high parities as their preference parity in order to justify their current fertility, and thus not reveal their actual preference.

The data presented in Table 9.31 shows a positive relationship between current parity and the preferred parity of women with the exception of those in the lowest parity in Dedigama. Even in the case of Dedigama, the difference was found to be

**Table 9.31 Preferred Fertility (Mean Number of Children) by Second Generation Women by Current Fertility.**

Parity	Rajangana			Siyambalangamuwa			Dedigama		
	N	Mean	Sd	N	Mean	Sd	N	Mean	Sd
0-1	13	2.38	0.49	19	2.47	0.54	7	2.71	0.47
2	20	2.55	0.89	16	2.56	0.76	21	2.48	0.58
3	20	3.50	1.10	9	3.11	0.87	13	2.62	0.89
4+	17	3.82	0.97	12	3.17	1.14	5	3.20	0.94
All	70	3.10	1.54	44	2.86	1.47	58	2.57	1.21

Source: Sample Survey of Households, 1992.

very marginal. Second generation women who were still of reproductive age were more likely to end up with a smaller number of children than their parents' generation as the future fertility preferred by the former was remarkably low.

The desired fertility and current fertility classified by a number of socio-demographic variables are given in Table 9.32 and there are not any substantial

**Table 9.32 Preferred Fertility and Current Fertility (Mean Number of Children) According to Various Characteristics**

Variable	Rajangana			Siyambalangamuwa			Dedigama		
	N	Current	Preferred	N	Current	Preferred	N	Current	Preferred
<b>Education</b>									
Primary or less	25	3.2	3.2	33	3.4	2.9	9	1.8	2.6
Secondary	27	2.5	3.0	6	2.3	2.8	16	2.4	2.4
G.C.E. O'Level and higher	18	2.3	3.1	5	1.2	3.0	33	1.9	2.6
<b>Wealth Index</b>									
Low	37	2.5	3.0	27	3.0	2.9	35	1.9	2.5
Medium	19	3.0	3.2	8	2.0	2.5	15	2.3	2.5
High	14	2.7	3.3	9	4.0	3.0	8	1.6	3.0
<b>Age</b>									
30 less	37	2.0	2.7	20	1.8	2.7	15	1.3	2.6
30-39	26	3.2	3.4	16	3.2	3.0	37	2.2	2.6
40+	7	4.7	3.1	8	5.8	3.0	6	2.8	2.5
<b>Age at marriage</b>									
20 less	42	3.0	3.2	30	3.4	2.8	14	2.1	2.7
20-24	24	2.3	3.0	12	2.3	2.9	21	2.0	2.5
25+	4	2.0	2.0	2	2.0	3.0	23	2.0	2.6
<b>Marriage duration</b>									
0-5	17	1.2	2.4	9	1.3	2.7	18	1.1	2.5
6-9	14	2.4	2.9	10	2.0	2.8	11	2.0	2.8
10+	39	3.5	3.5	25	4.0	3.0	29	2.6	2.5
All	70	2.7	3.1	44	3.0	2.9	58	2.0	2.6

Source: Sample Survey of Households, 1992

variations. Women in the oldest age group preferred a lower fertility than their actual fertility, showing that the small family norm was common even among the women in the older age groups. Preferred fertility and the current fertility by level of education showed that a remarkably stable number of children were preferred by women across all educational groups. The women who had the highest educational attainment in all locations preferred to have more children than they currently had.

On the contrary, in both settlement schemes women who had less than primary education desired to have a smaller number of children than they actually had. Current and preferred fertility by age at marriage showed that women who had postponed their marriage beyond 25 years of age, particularly in the Rajangana scheme, preferred to have a smaller number of children than those who had married early. The number of children preferred by women was found to be more or less similar across all three categories of age at marriage groups in Siyambalangamuwa and Dedigama. Fertility preferences of women by duration of marriage do not show any significant differences except among women who had a marriage lasting over 10 years in the Rajangana scheme. These women preferred to have an average number of over 3 children. Their preference in actual fact, corresponded to their current fertility rate. In the other two locations, women who had the longest marriages preferred to have fewer children than their actual fertility rate. The overall trend in fertility preference among second generation women therefore tends to be more toward smaller families, despite moderate variations by socio-demographic stratification.

### **9.5 Conclusion**

The objective of this chapter was to show what measures the second generation settlers had taken to control their fertility in the face of increasing population pressure in their villages. The fertility of the second generation households was found to be significantly lower in comparison to their parents' generation which can be regarded as an outcome of their reaction to the growing population pressure on resources. The low fertility among second generation women was achieved by both delaying marriage and the use of modern methods of contraception. However, the delay in marriage among second generation members differed between areas, socio-economic and demographic groups. Although the majority of second generation members had delayed their marriage and had used contraception, their levels of

current fertility were found to be still higher than the national average. The second generation members who had a different socio-economic background in the control area have only shown some comparable fertility with the national estimates.

The settlement environment in the initial years has contributed to the higher fertility among the first generation settlers. Similarly the growing pressure on resources at present has motivated second generation to control their fertility. The practice of contraception was found to be an important demographic strategy adopted by second generation settlers in the two settlement schemes with some significant differentials by socio-economic and demographic groups. The settler's fertility preference is an important indicator of the direction of future fertility. The future fertility preference shown by the second generation women was remarkably low and suggests that the rate of population growth in the two settlement schemes will slow down dramatically as a result of reduced fertility in the future. In addition to controlling fertility, second generation settlers can also adopt migration as a major demographic strategy to overcome growing population pressure in their villages. The next chapter attempts to understand the role of migration as a coping strategy among the second generation for growing population pressure.

## CHAPTER TEN

### MIGRATION: A COPING STRATEGY FOR POPULATION PRESSURE

#### 10.1 Introduction

The objective of this chapter is to highlight the extent to which the second generation have adopted migration as a coping strategy in the face of population pressure in the study villages. Migration is an important demographic strategy to deal with increasing population pressure (Connell et al 1976; Oberai and Singh 1983, Nam et al 1990). Findley (1982 : 280) has shown that migration is likely to occur in communities with low opportunities for sustenance relative to the pressure of population. Migration has long been adopted as a strategy to overcome population pressure. For example, Grigg (1976 : 143) has shown that migration to urban areas, uncolonised land and overseas has been a common response to over-population in rural areas of Western Europe since the sixteenth century. Boserup (1965) however, placed less emphasis on outmigration as a response to population pressure as she postulated that population pressure hastens the adoption of more intensive methods of farming as an in situ response. It is arguable on the basis of her proposition that population pressure could have a dampening impact on migration in the long term.

This chapter is divided into two major parts. The first part provides an overview of the significance of migration in the country emphasising changes that have occurred in recent years. This provides the necessary background for the analysis of the nature and significance of current migration patterns among second generation settlers in the sample villages. The second part of the chapter attempts

to analyse the extent to which migration was adopted by the second generation respondents in the sample areas as a strategy to cope with population pressure.

## 10.2 An Overview of Migration in Sri Lanka

Migration in Sri Lanka is intimately connected to government policies with respect to the economic, social, political and administrative development of the country (ESCAP 1980 : 75-90). Successive governments since Independence have followed a consistent policy of increasing agricultural production and improving the quality of life in rural areas, which has reduced the propensity for outmigration from rural areas. Consequently, in contrast to many other Asian countries, internal migration in Sri Lanka has not been dominated by large movements of people from rural areas into cities. Table 10.1 shows that the proportion of the population living in urban areas in Sri Lanka has remained lower in comparison to other low income

**Table 10.1 Urbanisation in Sri Lanka and Average Annual Growth of Urban Population in Comparison to Other Asian Countries 1970-1992**

Country	Urban Population			
	As percentage of total population		Average annual growth rate (percent)	
	1970	1992	1970-80	1980-92
Bangladesh	8	18	6.8	6.2
India	20	26	3.9	3.1
Indonesia	17	32	5.1	5.1
Malaysia	27	45	5.0	4.8
Nepal	4	12	8.0	7.9
Pakistan	25	33	4.4	4.5
Philippines	33	44	3.8	3.8
Sri Lanka	22	22	1.5	1.5
Thailand	13	23	5.3	4.5
Low income economies	18	27	3.7	4.1

Source: World Bank, 1994.

economies in the Asian region. It is particularly striking that the average annual growth rate of the urban population was the lowest in Sri Lanka among all of the countries listed in the table.

The establishment of land settlement schemes in the Dry Zone was itself a strategy of redirecting increasing population in the Wet Zone districts into rural destinations (Farmer 1957; ESCAP 1980: 77; Indraratna et al 1983: 95). The development of rural infrastructure, eradication of malaria, provision of free education, free health services and generous food subsidies have contributed to reducing regional disparities (Indraratna et al 1983 : 93-114). A large scale exodus of the rural population to urban areas has been thwarted primarily through intra-district and inter-district migration to new agricultural settlements in the Dry Zone. Since the 1940s the major flows of migrants were from the south western Wet Zone areas to the north central, north eastern and eastern Dry Zone due to the development of settlement schemes (Kearny and Miller 1987 : 5). The process was enhanced by the acceleration of the Mahaweli development project in 1977. According to the latest available census of 1981, the percentage of district residents who were born in other districts ranges from three to 48 percent across the nation's 25 districts. Except for Colombo, where rural-urban migration has been of significance, the districts with the largest population of residents born elsewhere were in the Dry Zone settlement scheme areas (DCS 1986).

Large scale rural-urban migration has also been discouraged by the prevailing agrarian structure in the rural sector. It has been argued that the land tenure in rural Sri Lanka is more favourable to tenants in comparison to the oppressive landlordism prevailing in many other parts of Asia (Perera 1992 : 8). Tenancy reforms introduced by the government have also helped to change attitudes towards tenants and break down the traditional patron-client relationship between tenants and landlords, providing a greater sense of freedom to tenants and not allowing

them to be thrown completely off the land by landlords (Weerawardena 1991 : 64). This probably has nullified the urban drift caused by insecurity of tenure in rural areas.

The small size of the country, the existence of a good network of roads and subsidised transportation facilities facilitated commuting as a substitute for permanent migration (Indraratna et al 1983 : 114). The transportation system enables people to come to major cities for day-to-day work and return to rural based homes in the evening. Perera (1992 : 11) shows that 26 percent of the students attending Colombo schools travel from outside the city. Liberalised trade policies introduced in 1977 have boosted the expansion of private sector participation in the transport business which was formerly totally controlled by the state. Private transport has increased faster than public transport in the country in recent years. The total number of private coaches has more than doubled during the period 1982-90 (10,593 to 25542). Similar increases have been recorded in private and hired cars, motor cycles, vans, three wheelers, lorries etc. during the same period (CBS 1993). This has facilitated the increased mobility of the rural population in more recent years allowing them to seek work and educational opportunities outside their home villages.

Although permanent migration to cities has been contained, the growing unemployment situation which was 13.7 percent in 1993 in the rural sector (DCS 1994) and the inability of the social welfare system to match the expectations of the emerging educated segment of the population has encouraged a new spate of temporary migration into the capital city and its environs, as well as to overseas destinations in recent years (Abeyewardene 1992; Bandarage 1988). This flow of temporary migration was triggered by the open economic policies followed by the state in the post 1977 period, as well as by the opening up of employment opportunities for migrant workers in the Gulf states since the oil boom of 1973

(Bandarage 1988). The open economic policies particularly have resulted in a more Colombo-oriented growth pattern and the Colombo metropolitan region and the western province in general have shown the fastest growth of economic activities during the post 1977 period (Abeyewardene 1992 : 3). The economic activities in metropolitan Colombo and adjacent areas have been accelerated by growing foreign investment in production activities and associated services as foreign investors were given more favourable treatment<sup>1</sup> by the government which came to power in 1977 (MFP 1983 : 101-112).

Under the change of government policies, the Katunayake Investment Promotion Zone (KIPZ) was established in 1978 primarily for the attraction of foreign investors. The Biyagama Investment Promotion Zone (BIPZ) and Koggala Investment Promotion Zone (KIPZ) were developed later (Figure 10.1). The Board of Investments of Sri Lanka (BOI) functions as the coordinating body in charge of investment promotion zones. The employment created by BOI enterprises which is primarily urban based, amounted to 122,165 persons by 1993. Of these 69,952 (53 percent) were engaged in the manufacturing of textiles, wearing apparel and leather products (CBS 1993 : 60-61).

The most remarkable feature of the employment created in the above enterprises was the disproportionate representation of women. One study found that 85 percent of all workers in FTZS were women, of whom 72 percent were below twenty five years of age, 88 percent were single and 70 percent had completed secondary school education (VOW 1983 : 2, 8, 16). These workers also have come mainly

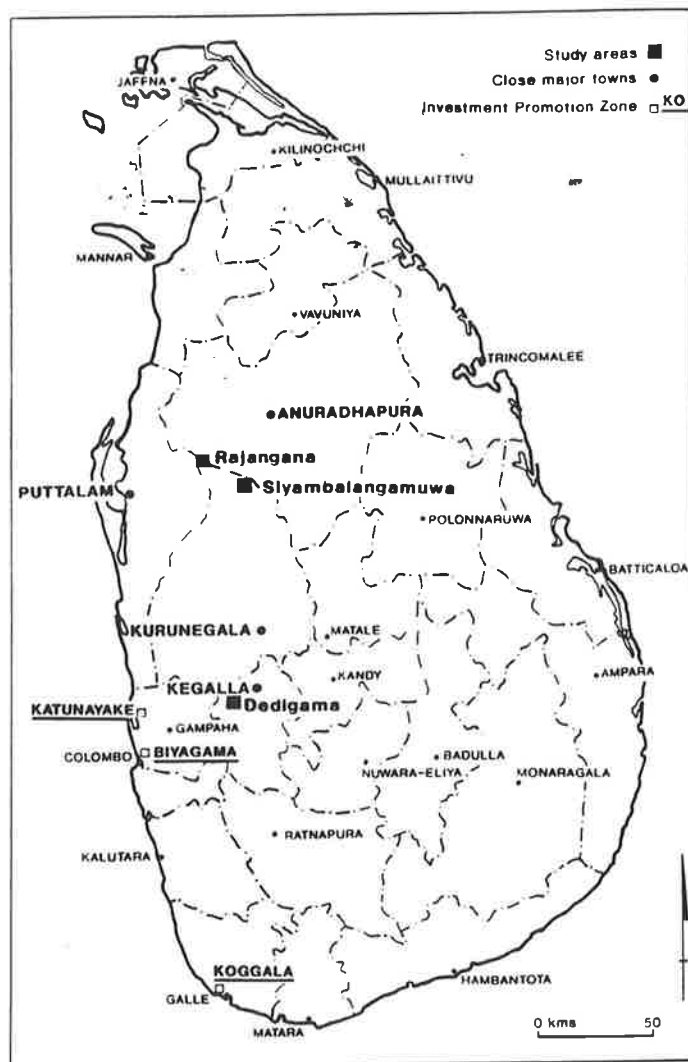
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<sup>1</sup> Incentives offered to foreign investors include constitutional guarantee of their investment, complete tax holidays up to ten years and a concessional tax period up to fifteen years, relief from double taxation with major countries in the world, access to telecommunication, buildings, other infrastructure facilities and discouragement of labour unions (Bastian 1984, pp. 6-12).

from rural areas and have either taken up temporary residence close to their work places or commute from adjacent suburbs.

Another study of 364 female respondents in five clusters in the Colombo Municipal Council area, suburbia and areas adjacent to the city proper have shown that Matara

Figure 10.1 Investment Promotion Zones.  
Study Areas and Principal Towns.



and Galle are by far the most important districts of origin among migrant women in the Colombo, Ratmalana and Moratuwa areas (Figure 10.1). Kurunegala where one of our sample settlement schemes is located, was an important district of origin among migrants in the Katunayake area. Kegalle where the control area of this study is located, Nuwaraeliya, Ratnapura, Hambantota and Kandy are other important districts of origin for the migrant women. All these districts have experienced overcrowding and rising unemployment. The study also found that 69 percent of migrants have arrived in Colombo within the last three years, mainly from rural districts. They are mainly children of farmers (40 percent), craftsmen and labourers (15 percent). The migration is predominantly employment related, yet other factors such as education, marriage, family networks, friendship links and more recently political problems and civil disturbances have also played a part (Abeywardene 1992 : 5-15).

Temporary migration to overseas destinations has been more significant than city bound female migration in the post 1977 period. As early as 1979 the number of Sri Lankan workers who left for Middle Eastern countries amounted to only 25,875 individuals (Ruhunuge 1980 : 10). This number dramatically increased during the 1980s with the removal of prevailing exchange regulations for overseas travellers. The number of temporary migrant workers peaked during 1984 reaching a cumulative total slightly over 600,000. The cumulative total of migrants in 1990 remained around 450,000 which amounts to 2.6 percent of the total population in the country (Mahawewa 1993 : 4).

Although the overseas migrants from Sri Lanka are spread across many skilled categories of work, almost all female migrants from the country are housemaids (Bandarage 1988 : 70). Females as a percentage of the total migrant population from Sri Lanka to Middle Eastern countries remain in the range of 60-75 percent and the percentage of housemaids is roughly the same (Mahawewa 1993 : 6-7).

A survey carried out by the Ministry of Plan Implementation in 1985 showed that the migrant women were mainly in the 18-45 age category. Although they originated from the Colombo district in the early years, more recent migrant women are coming from even the most remote villages in the country. In a recent survey of 162 female migrant workers, it was found that they had come from almost all parts of the country except for a few districts affected by civil disturbances (Mahawewa 1993 : 59-60).

### **10.3 Permanent Migration from the Survey Areas**

This section explains the extent to which the changing pattern of migration of working adults at the national level has influenced that of the second generation in the sample areas. The migration status with regard to each member of the second generation was ascertained from the sampled household heads during the complete enumeration of households, irrespective of whether they were living in the village or elsewhere at the time of survey. First generation households were requested to reveal the current migration status of their married and unmarried offspring. The survey revealed that the second generation permanent migrants from the original households of the first generation were all married and can be divided into the following groups according to their present place of residence.

A) Those who live within the original households, often with the surviving first generation members as part of the extended family (non migrants).

B) Those who set up independent household in the same homestead or in paddy land allotted to original settlers (non migrants).

C) Those who live within the settlement village either on encroached land or on land acquired by other means (purchase or rented). In this case mobility occurs only within the village (non migrants).

D) Those who live in the settlement scheme but away from the original village. The occupied land could be encroached land or LDO land gained through marriage to a second generation member living in another village. Mobility is largely short distance and within the scheme (within scheme migrants).

E) Those who live out of the scheme but remain within the district. The migration may have occurred into a nearby area within the outskirts of the scheme or to a distant place as the district is quite large (within-district migrants).

F) Those who live out of the district. The distances vary depending on whether they migrate to an adjoining district or to a district located some distance away (out-district migrants).

The percentage of married second generation members belonging to each of the above categories is given in Table 10.2. As can be seen, the highest proportion of outmigrants (44 percent) was reported from the Siyambalangamuwa scheme and

**Table 10.2 Second Generation Members by Migrant Status and Current Place of Residence (in percentages)**

	Rajangana			Siyambalangamuwa			Dedigama		
	M	F	T	M	F	T	M	F	T
<b>Non-migrants</b>									
Non-migrants A	6.3	6.5	6.4	3.3	5.2	4.3	17.9	15.5	16.4
Non-migrants B,C	57.0	50.3	53.4	55.6	49.0	52.0	55.8	38.9	45.7
Total Non-migrants	63.3	56.8	59.8	58.9	54.2	56.3	73.7	54.4	62.1
<b>Migrants</b>									
Within-schemesD	6.8	8.1	7.5	14.8	14.0	14.3	-	-	-
Within-district E	23.1	22.7	22.9	21.4	24.1	22.9	7.3	22.6	16.4
Out-district F	6.8	12.4	9.8	4.9	7.7	6.5	19.0	23.0	21.5
Total migrants	36.7	43.2	40.2	41.1	45.8	43.7	26.3	45.6	37.9
All	100	100	100	100	100	100	100	100	100
N	381	445	826	304	365	669	179	265	444

Source: Complete Enumeration of Households, 1992.

the lowest proportion (38 percent) was in the control area. In all locations, more female members were found to have migrated out than male members. This is

quite contrary to the domination of men in the net rural-urban migration observed in the South Asian countries in general (Hugo 1993 : 50). The property ownership pattern observed in the settler community can be mainly attributed to this tendency as male members usually inherit the land from their parents and opt to remain in their original villages. As shown in Chapter Seven most first generation household heads nominate male offspring as successors to their land. Consequently, except for those who married locally or inherited parental property or entered into "binna" marriages, the likelihood of female members migrating out of the original village was much greater. The married female members who lived within households of the first generation members were daughters-in-law of original settlers, female members who entered into "binna" marriages, as well as those whose marriages had broken up. As shown in Chapter Five, more second generation members live as members of the extended family in the control area due to the limited availability of land for independent living in the area. Those who have limited opportunities for securing independent living elsewhere, naturally remained in the village as members of the extended family, even after marriage. In all survey locations the majority (53 percent) of married second generation lived independently within the villages.

Of the migrant groups, within-district migrants constituted the major group in both settlement schemes amounting to 23 percent of the total second generation married members, which is consistent with the predominance of short distance movers observed in migration studies elsewhere (Hugo 1981 : 5). Although, there was no significant difference in outmigration by gender in the control area, within-district migrants were disproportionately females.

A number of factors were associated with the high incidence of within-district migrants from settlement schemes. They include greater potential of finding agricultural related employment, the possibility of encroachment on to state land in

undeveloped areas within the district, familiarity with the conditions in the district and the kinship relations and need to be living closer to the home village. Within-district migration has also occurred as a result of migration of some offspring back to the origin villages of the first generation. Since all the first generation members in the Siyambalangamuwa scheme and some 46 percent of those in the Rajangana scheme were recruited from within the district as settlers, the migration back to the original village may have been influenced by the degree of proximity to their original village and persistence of network linkages with it. For instance, the settlers who came from Purana villages in the vicinity of both settlement schemes reported that they still keep close contact with their relatives in the original village.

Migration out of the home district was found to be the least common among second generation members in both settlement schemes due to their preference to remain within the district. By contrast, migrants to other districts were much greater in the control area where 22 percent of total married members were living outside their home district possibly due to the greater urban influence and the diversity of economic activities followed by the residents. The districts of destination given in Table 10.3 show that second generation members tended to choose adjoining districts for permanent migration (Figure 10.1). Forty one percent of second generation migrants from the Rajangana scheme have moved into the adjoining district of Kurunegala. Similarly, 60 percent of the second generation members from the Siyambalangamuwa scheme have settled in the adjoining district of Anuradhapura. Outmigration into other districts from the control area has also shown a similar trend with 24 percent of the second generation having moved into the adjoining district of Kurunegala and another 18 percent into the Gampaha district. The Gampaha district was the second most important district of attraction for second generation migrants from all sample areas due to its proximity to the Colombo Metropolitan region (Figure 10.1). Gampaha seems to be a preferred

**Table 10.3 Percentage of Second Generation Members Who Lived Outside Their Home Village by District**

District of Residence	Origin Area		
	Rajangana	Siyambalangamuwa	Dedigama
Ampara	2.6	-	4.2
Anuradhapura	-	60.4	10.5
Badulla	1.2	2.3	3.2
Colombo	8.6	4.7	16.8
Galle	1.2	7.0	-
Gampaha	12.3	11.6	17.9
Kalutara	2.6	2.3	2.1
Kandy	4.9	-	5.3
Kegalle	-	2.3	-
Kurunegala	40.7	-	24.1
Matale	7.4	-	1.1
Matara	1.2	-	-
Nuwaraeliya	-	-	1.1
Polonnaruwa	9.9	4.7	10.5
Puttalam	7.4	4.7	-
Ratnapura	-	-	3.2
All	100	100	100
N	81	43	95

Source: Complete Enumeration of Households, 1992.

choice for urban migrants due to the affordability of housing, less congestion and the possibilities of daily commuting to nearby Metropolitan Colombo. Second generation members from the control area have also settled in districts of the Dry Zone. Anuradhapura, Polonnaruwa and Ampara (three major settlement districts) together have attracted one quarter of the total out-district migrants from Dedigama. They have moved into Dry Zone districts primarily for occupation of land and employment. Migration into southern districts such as Kalutara, Galle and Matara was less common among outmigrants from all sample villages due to three reasons, namely (1) sample respondents were found to have less kinship ties with the population living in that area, (2) the high unemployment level prevailing in these districts (Korale 1988) may have discouraged migrants, and (3) none of the settlers in our sample villages originated from these districts.

The reasons for permanent outmigration by migrant category and gender are given in Tables 10.4, 10.5, and 10.6. Female outmigration has been primarily motivated

**Table 10.4 Reasons for Migration by Migrant Type and Sex in the Rajangana Scheme (in percentages)**

Reason	Within Scheme Migrants		Within-District Migrants		Out-District Migrants		All Migrants	
	M	F	M	F	M	F	M	F
Occupation of land	42.2	-	64.8	3.0	11.5	-	50.7	1.6
Employment	19.2	-	15.9	1.0	53.8	14.5	23.6	4.7
Marriage	23.1	100.0	9.1	96.0	19.2	85.5	13.6	93.7
Other	15.4	-	10.2	-	15.5	-	12.1	-
All	100	100	100	100	100	100	100	100
N	26	36	88	101	26	55	140	192

Source: Complete Enumeration of Households, 1992

**Table 10.5 Reasons for Migration by Migrant Type and Sex in the Siyambalangamuwa Scheme (in percentages)**

Reason	Within Scheme Migrants		Within-District Migrants		Out-District Migrants		All Migrants	
	M	F	M	F	M	F	M	F
Occupation of land	42.2	-	44.6	1.1	26.6	-	41.6	0.6
Employment	13.3	2.0	4.6	1.1	40.0	7.2	12.0	2.4
Marriage	26.7	98.0	36.9	97.8	20.0	92.8	31.2	97.0
Other	17.8	-	13.9	-	13.4	-	15.2	-
All	100	100	100	100	100	100	100	100
N	45	51	65	88	15	23	125	167

Source: Complete Enumeration of Households, 1992.

by marriage which is similar to many other parts of the South Asian region (Shah 1986; Premi 1979). This has particularly occurred in the case of "deega" marriages which are most popular among young members of the community. Almost all female migrants either within schemes or within-districts have outmigrated for marriage reasons but a significant proportion of out-district migrants gave

employment as a reason for out migration. Among males, those who had outmigrated due to marriage was low and the major reasons vary depending on the type of migration. Occupation of land was the dominant factor reported by 42 percent of within scheme movers and 65 percent of within-district migrants in Rajangana, and 45 percent of within scheme and 42 percent of within-district migrants in Siyambalangamuwa. Purchase of land was also reported by 28 percent of total migrants in the control area as main reason for migration. Second generation members have also moved into other areas of the scheme where land is available for encroachment. The receipt of land in other land schemes such as Mahaweli "H" has led to within-district migration. Under the category "other" in the tables, the reasons cited included migration to join relatives, finding better school facilities, and various other personal reasons. However the single most

**Table 10.6 Reason for Migration by Migrant Type and Sex in Dedigama (in percentages)**

Reason	Within-District Migrants		Out-District Migrants		All Migrants	
	M	F	M	F	M	F
Purchase of land	30.8	1.7	26.5	1.6	27.7	1.7
Employment	38.4	-	35.2	6.5	36.2	3.3
Marriage	15.4	98.3	26.5	91.9	23.3	95.0
Other	15.4	-	11.8	-	12.8	-
All	100	100	100	100	100	100
N	13	60	34	61	47	121

Source: Complete Enumeration of Households, 1992.

important factor for outmigration into other districts was employment, suggesting that such migration was a major coping strategy to overcome problems of employment in the home villages. Outmigration among them has been influenced by the desire to enhance family welfare and as a survival strategy. More than half of the outmigrant males from Rajangana moved into the other districts to take up

employment. However, migration for employment within the settlement scheme as well as within the district, was less significant.

Many empirical studies have shown that distance is an important factor shaping migration patterns (Cleason 1968; Khan 1986) as it can affect the volume of migration due to the increasing cost of the migration with increasing distance. There may be more opportunities for employment available in distant areas, which may encourage the migration of people over longer distances. The distance also determines the extent to which migrants can have contact with their original community. Ravenstein's law of migration considers distance as an important variable in migration streams, as it considers that migratory movements tend to fall with increasing distance. However, the association between distance and migration has been considered as being more complex in the geographical interpretation of the mobility of people (White and Woods 1980 : 34).

As shown in Tables 10.7, 10.8, and 10.9, almost all within-scheme migrants are living in close proximity to the original settlement village. Only three percent of them were found to be living more than 15 km away from their original village. Of the within-district migrants, over 50 percent were found to be living less than 15 km from the original village in Rajangana, revealing that the settlers have moved predominantly into surrounding areas. This pattern is somewhat similar in Siyambalangamuwa where all within scheme migrants were found to be living within a 15 km radius from the original village. The majority of the within-district migrants have moved into areas less than 15 km from the original village. Of the migrants who were living in other districts, approximately one-third were found to be living in areas less than 60 km away from their home village. Those who were living over 120 km away accounted for only one-fifth of migrants from the two settlement schemes, suggesting that long distance migration was not popular among

**Table 10.7 Distance to the Place of Migration by Migrant Type and Sex (Percentage Reporting in the Rajangana Scheme)**

Distance	Within Scheme Migrants		Within-District Migrants		Out-District Migrants		All Migrants	
	M	F	M	F	M	F	M	F
Less 15 km	100	97.2	55.7	62.3	-	-	54.3	51.0
15-60 km	-	2.8	40.9	32.7	34.6	30.9	31.4	26.6
61-120 km	-	-	3.4	4.0	42.3	43.7	10.0	14.6
120 km+	-	-	-	1.0	23.1	25.4	4.3	7.8
All	100	100	100	100	100	100	100	100
N	26	36	88	101	26	55	140	192

Source: Complete Enumeration of Households, 1992.

**Table 10.8 Distance to Place of Migration by Migrant Type and Sex (Percentage Reporting in the Siyambalangamuwa Scheme)**

Distance	Within Scheme Migrants		Within-District Migrants		Out-District Migrants		All Migrants	
	M	F	M	F	M	F	M	F
Less 15 km	100	100	75.4	43.2	20.0	25.0	77.6	57.5
15-60 km	-	-	20.0	38.6	46.7	39.2	16.0	26.9
61-120 km	-	-	4.6	18.2	13.3	17.9	2.4	3.0
120 km+	-	-	-	-	20.0	17.9	2.4	3.0
All	100	100	100	100	100	100	100	100
N	45	51	65	88	15	28	125	167

Source: Complete Enumeration of Households, 1992.

**Table 10.9 Distance to Place of Migration by Migrant Types and Sex (Percentage Reporting in Dedigama)**

Distance	Within-District Migrants		Out-District Migrants		All Migrants	
	M	F	M	F	M	F
Less 15 km	69.3	68.3	2.9	3.3	21.3	35.5
15-60 km	30.7	31.7	26.5	26.2	27.6	28.9
61-120 km	-	-	38.2	34.4	27.7	17.4
120 km	-	-	32.4	36.1	23.4	18.2
All	100	100	100	100	100	100
N	13	60	34	61	47	12

Source: Complete Enumeration of Households, 1992.

second generation members. Thus, the permanent outmigration has largely occurred into nearby areas. Analysis of the distance covered by migrants by gender revealed that out of all migrants, males have moved mainly over short distances, whereas females migrated over long distances in the sampled settlement schemes but not in the control locations. This is contrary to the tendency of women travelling short distances which has been ascribed as an outcome of "marriage migration" in other countries in the region (Premi 1979).

The year of migration by type of migrants is given in Tables 10.10, 10.11 and 10.12 and it is evident that the highest incidence of migration has occurred in the post 1970 period by which time most second generation members had reached adulthood and had started forming their own families. The outmigration into other

**Table 10.10 Year of Migration by Migrant Type and Sex in the Rajangana Scheme (in percentages)**

Year	Within Scheme Migrants		Within-District Migrants		Out-District Migrants		All Migrants	
	M	F	M	F	M	F	M	F
Before 1970	7.7	5.6	22.7	13.9	15.4	10.9	18.6	11.5
1971-80	42.3	34.4	38.6	45.5	38.5	40.0	39.3	43.8
1981-90	50.0	60.0	38.7	40.6	46.1	59.1	42.1	44.7
All	100	100	100	100	100	100	100	100
N	26	36	88	101	26	55	140	192

Source: Complete Enumeration of Household, 1992.

districts has increased in all areas during the 1981-90 period, possibly due to the economic growth gained through the introduction of free trade policies and the free flow of foreign exchange into the economy by way of remittances made by migrant workers who found employment in Middle Eastern countries. Outmigration prior to the 1977 policy reforms was generally low due to the stagnant economy. The total number of registered marriages has been low nationally during the troubled

period of the 1971 insurgency and during the post 1973 oil price hike (Caldwell et al 1989, De Silva 1991) and this is reflected in periods of low outmigration in the

**Table 10.11 Year of Migration by Migrant Type and Sex in the Siyambalangamuwa Scheme (in percentages)**

Year	Within Scheme Migrants		Within-District Migrants		Out-District Migrants		All Migrants	
	M	F	M	F	M	F	M	F
Before 1970	13.2	9.8	18.5	15.9	13.3	7.1	16.0	12.6
1971-80	40.0	43.1	46.2	33.0	13.3	35.7	40.0	36.5
1981-90	46.8	47.1	35.3	51.1	73.4	57.2	44.0	50.9
All	100	100	100	100	100	100	100	100
N	45	51	65	88	15	28	125	167

Source: Complete Enumeration of Households, 1992.

**Table 10.12 Year of Migration by Migrant Type and Sex in Dedigama (in percentages)**

Year	Within-District Migrants		Out-District Migrants		All Migrants	
	M	F	M	F	M	F
Before 1970	7.7	15.0	11.8	24.6	10.6	19.8
1971-80	69.3	30.0	41.2	31.2	48.9	30.6
1981-90	23.0	55.0	47.0	44.2	40.5	49.6
All	100	100	100	100	100	100
N	13	60	34	61	47	121

Source: Complete Enumeration of Households, 1992.

survey areas. However, there was an upward trend in marriage after 1981 leading to an increase in outmigration among married second generation members. Outmigration has increased among all migrant categories except some within-district migrants after 1981. Of those who have moved out of the district during this period, the highest incidence was in Siyambalangamuwa. The deteriorating irrigation infrastructure and the constant crop failures encouraged outmigration among second generation members in this scheme. The increased mobility among

second generation members in more recent years indicates that they have taken advantage of opportunities created outside their home villages due to the change of government policies.

Second generation migrants who maintained contact with their community of origin (settlement scheme in the case of children of settlers) is another important aspect of migration which requires some discussion. The level of contact maintained by migrants could be measured in terms of the frequency of visits made by them to their home village. There are a number of factors associated with the home visits by second generation migrants. These include the duration of absence from home, distance between their present location and place of origin, property or other asset ownership in the home village, the origin of the marriage partners and whether their parents are still alive. The frequency of visits to the home village are shown in Tables 10.13, 10.14 and 10.15. Most frequent contact with the home village

**Table 10.13 Frequency of Visiting Place of Origin by Migrant Type and Sex in the Rajangana Scheme (in percentages)**

Frequency of visits	Within Scheme Migrants		Within-District Migrants		Out-District Migrants		All Migrants	
	M	F	M	F	M	F	M	F
Never	7.7	2.8	4.5	2.0	11.5	5.5	6.4	3.1
Frequently	46.2	47.2	20.5	16.8	11.5	1.8	23.6	18.3
Rarely	46.2	50.0	75.0	81.2	77.0	92.7	70.0	78.6
All	100	100	100	100	100	100	100	100
N	26	36	88	101	26	55	140	192

Source: Complete Enumeration of Households, 1992.

(over 50 percent of the migrants) has been maintained by migrants from Siyambalangamuwa and least (21 percent) by the migrants from Rajangana. As expected, within-scheme migrants maintain the most regular contact with the home village, whereas least contact is maintained by migrants who settled in other districts. Less than four percent of migrants were found to have never visited their

home community and they are mainly migrants who lived in distant district. The number of migrants who never visited their home village was lower in the control area as compared to those in the two settlement schemes. According to our informal interviews, the reasons for not visiting were associated with family conflicts, disagreements over marriages, sharing of land and rivalries among

**Table 10.14 Frequency of Visiting Place of Origin by Migrant Type and Sex in the Siyambalangamuwa Scheme (in percentages)**

Frequency of visits	Within Scheme Migrants		Within-District Migrants		Out-District Migrants		All Migrants	
	M	F	M	F	M	F	M	F
Never	4.4	2.0	3.1	3.4	6.7	3.6	4.0	3.0
Frequently	95.6	88.2	67.7	38.6	20.0	25.0	72.0	51.5
Rarely	-	9.8	29.2	58.0	73.3	71.4	24.0	45.5
All	100	100	100	100	100	100	100	100
N	45	51	65	85	15	28	125	167

Source: Complete Enumeration of Households, 1992.

**Table 10.15 Frequency of Visiting Place of Origin by Migrant Type and Sex in Dedigama (in percentages)**

Frequency of visits	Within-District Migrants		Out-District Migrants		All Migrants	
	M	F	M	F	M	F
Never	-	3.3	-	-	-	1.7
Frequently	53.8	58.3	32.4	32.8	38.3	45.5
Rarely	46.2	38.4	67.6	67.2	61.7	52.8
All	100	100	100	100	100	100
N	13	60	34	61	47	121

Source: Complete Enumeration of Households, 1992.

siblings. Those who visited their home community only during festival seasons (mainly Sinhalese New Year) or on special occasions such as marriages, illness or funerals of close relatives were classified as rare visitors. Females were found to have less contact with the home community than males in the settlement schemes,

whereas females had more contact with their home community than males in the control area. The frequency of contact with the home community by gender varies between different types of migrant categories. Male migrants categorised as within-scheme and within-district from Siyambalangamuwa were found to have maintained more regular contact with their home village in comparison to those who lived outside the home district. This pattern was not clear in the case of migrants from Rajangana. All female outmigrants were found to have maintained frequent contact with the home village when compared to their male counterparts from the control area. Except for migrants from Siyambalangamuwa, the second generation migrants were found to have maintained less contact with their original community.

The level of education of migrants is one of the most important factors which shapes the propensity to migrate from the place of origin (Skeldon 1990 : 185). The relationship between migration and education has been widely discussed in the literature, as education not only raises the aspirations of individuals but also stimulates the process of outmigration (Hamilton 1958; Martin 1975; Lipton 1980). Educated residents unable to find employment compatible with their skills and training within rural areas are more likely to outmigrate than those who are uneducated. However, migration occurs among the educated and the uneducated, although there are significant differences in the underlying factors associated with their movement. The outmigration of educated second generation youth in FELDA schemes in Malaysia has been considered as a serious threat to the future of the schemes (Chan and Ritcher 1982; Chan and Lean 1981; Ogawa and Chan 1985). The educational achievement of outmigrants in the sample schemes therefore, needs closer scrutiny in order to see if there is any deviation from the pattern observed elsewhere. The educational attainment by migrant type and non-migrants are given in Tables 10.16, 10.17 and 10.18. Migrants from the settlement schemes

**Table 10.16 Level of Education of Second Generation by Migrant Type, Non-Migrant and Sex in Rajangana (in percentages)**

Level of education	Within Scheme Migrants		Within-District Migrants		Out-District Migrants		All Migrants		Non Migrants	
	M	F	M	F	M	F	M	F	M	F
No schooling	8	14	8	18	4	14	7	15	6	6
Primary	62	42	54	44	31	38	51	42	43	39
Secondary	23	22	27	25	31	20	27	23	33	32
G.C.E.(O/L)	7	11	9	9	15	22	10	14	16	20
Higher	-	11	2	4	19	6	5	6	2	3
All	100	100	100	100	100	100	100	100	100	100
N	26	36	88	101	26	55	140	192	234	248

Source: Complete Enumeration of Households, 1992.

Note: Educational attainments of married non-migrants only were compared here for consistency

**Table 10.17 Level of Education of Second Generation by Migrant, Non-Migrant and Sex in Siyambalangamuwa (in percentages)**

Level of Education	Within Scheme Migrants		Within-District Migrants		Out-District Migrants		All Migrants		Non Migrants	
	M	F	M	F	M	F	M	F	M	F
No schooling	-	4	1	9	7	-	2	6	6	10
Primary	62	61	60	47	46	47	59	50	55	48
Secondary	27	24	20	27	27	25	23	26	27	26
G.C.E.O'Level	9	9	17	15	-	18	12	14	10	15
Higher	2	2	2	2	20	11	4	4	2	1
All	100	100	100	100	100	100	100	100	100	100
N	45	51	65	88	15	28	125	167	177	195

Source: Complete Enumeration of Households, 1992.

Note: Educational attainments of married non-migrants only were compared here for consistency

have less educational qualifications in contrast to migrants with better educational qualifications in the control area. Although migrants with primary and secondary level educational qualifications have been the dominant group among within-scheme and within-district migrants in the settlement schemes, comparatively more educated members with G.C.E O'Level or higher educational qualifications were found to have moved into other districts in all sample locations. The relationship between educational qualifications and types of migrants therefore reveals the tendency for more educated members to leave for outer districts, and less educated

members to migrate more often into nearby areas in the periphery of the scheme or areas within the district. Therefore the mobility pattern of second generation members by their level of education suggests that the opportunities created in urban districts in more recent years have been particularly attractive to the more educated second generation members rather than the uneducated. Migration studies elsewhere have observed that migrants are generally better educated than non-migrants (Hugo et al 1987 : 218; Shaw 1975). The present study however, does

**Table 10.18 Level of Education of Second Generation by Migrant, Non-Migrant Type and Sex in Dedigama (in percentages)**

Level of education	Within-District Migrants		Out-District Migrants		All Migrants		Non Migrants	
	M	F	M	F	M	F	M	F
No schooling	-	2	3	-	2	1	2	-
Primary	23	27	9	16	13	22	24	12
Secondary	39	7	27	13	30	10	20	24
G.C.E.(O/L)	31	55	38	44	36	50	44	46
Higher	8	10	24	26	19	18	10	18
All	100	100	100	100	100	100	100	100
N	13	60	34	61	47	121	123	139

Source: Complete Enumeration of Households, 1992

Note: Educational attainments of married non-migrants only were compared here for consistency

not show any remarkable differences in education between migrant and non-migrant groups. As can be seen in Tables 10.16, 10.17 and 10.18, non-migrants are better educated than migrants in several educational categories. However, the differentials in education are evident when the non-migrants are only compared with the out-district migrant group, who were more educated and have pursued employment in non-agricultural areas. As discussed earlier, the primary cause of their permanent migration into other districts has been employment (section 10.3).

The main features of migration among second generation members can be illustrated by taking a case study of a settler family. Punchirala (pseudonym) who came to the Rajangana scheme from the Kurunegala district is regarded as a

successful settler, as he was able to educate some of his children (mostly the younger children) to obtain permanent employment in the public sector. He has 9 children, 6 males and 3 females. All of them are currently married and have their own children. After marriage most lived in different parts of the country with a few still remaining in the scheme. The details with regard to each child by gender, current residence, education, origin of marriage partner and tenure of land holding currently occupied are given in Table 10.19. The children are listed according to their age in descending order.

The information given in this table indicates the mobility pattern of each child. The eldest son "A" who is married to a second generation woman from the same scheme currently lives in the home village of Punchirala. He has migrated there to occupy a small piece of land received by Punchirala after his father's death. According to Punchirala, unless he sent one of his sons there he may not have had any link to his native village. Migration of "A's" spouse from the settlement scheme is "associational" as she has followed her husband. The case also illustrates inter-village and intra-village marriages among second generation members. For example, "A" is married to a woman from another village in the same scheme, whereas "E" and "I" married second generation men from within the village. The spouses of "B" and "G" have come from the home village and the home district of Punchirala respectively. Although the spouse of "B" has migrated into the settlement scheme after her marriage, "G" has gone to settle in the village of his spouse. "F" and "H" found their spouses after they migrated into the districts of Kandy and Gampaha for employment, and now they are permanently settled in those two districts. "D" on the other hand, married a woman within the district and opted to remain in the district. "C" found his spouse in the adjoining district of Puttalam. However, she is not a complete stranger to the Rajangana scheme as before her marriage to "C" she used to visit the settlement village regularly during

**Table 10.19 Background Information on Members of Punchirala's Family**

Gender	Current Residence	Education	Occupation	Tenure of Land	Background of Partner/Origin
A) Male	Kurunegala (Home Village of Punchirala)	Primary	Farmer	Freehold	Second generation (Different Village in Rajangana)
B) Male	Rajangana (Different Village in Rajangana)	Primary	Farmer	LDO Land Purchased	Cross Cousin Kurunegala (Home Village of Punchirala's Wife)
C) Male	Rajangana (Homestead of LDO Allotment, Same Village)	Primary	Petty Trader/ Farmer	LDO Land	Puttlam
D) Male	Kalawewa (Mahaweli Land)	Primary	Farmer	LDO Land	Anuradhapura
E) Female	Rajangana (Same Village)	G.C.E.O'Level	Teacher	Encroached	Second Generation (Same Village)
F) Female	Kandy	G.C.E.O'Level	Clerk	Freehold	Kandy
G) Male	Kegalle	G.C.E.O'Level	Retail Trader	Freehold	Kandy
H) Male	Gampaha	Degree	Field Officer	Freehold	Gampaha
I) Female	Rajangana (Same Village)	G.C.E.A'Level	Nurse	LDO Land	Second Generation (Same Village)

Source: Sample Survey of Households, 1992.

peak agricultural activity periods to help some of her relatives who are also settlers in the same village. Therefore the process of migration involved in this marriage is somewhat different to the other cases. The spouses of "B" and "C" are inmigrants to the settlement scheme due to their marriages to second generation residents in the village.

The non migrant children of Punchirala are "C", "E" and "I". All of them are living in the settlement village and "C" is the nominated successor of the land allotted to Punchirala. His family currently lives with Punchirala as members of his extended family. The case of "B" provides an example of a within-scheme migrant. He has been able to purchase a block of LDO land and has settled with his spouse in a different village in the same settlement scheme. "D" is a within-district migrant. His migration out of the settlement scheme occurred due to the receipt of Mahaweli land in the Kalaoya area. The migrants to outside districts are "A", "F", "G" and "H". However, "A" has migrated back to the native village of Punchirala which is within the district. The other three migrated out of the settlement district due to their employment and are more educated and enterprising. For instance "G" is running a successful business in the native place of his spouse. Although "E" and "I" are equally educated and hold permanent employment in the state, they have remained in the village without migrating out as their spouses are second generation members living within the village and have gained access to land and property. They also find life in the village much easier as they gain regular income from public sector jobs as well as from crop cultivation. They are respected by the village community as members who have climbed up the social ladder gaining prestige from their public sector job and wealth from the diversification of their income sources.

This case illustrates a variety of factors associated with the migration and non-migration of second generation members. The link with the home villages of initial

settlers was one important factor that has determined the outmigration of some offspring and immigration of relatives into settlement village. For instance "A" has migrated to Punchirala's ancestral village to occupy some land and some marriage partners of the second generation were relatives of Punchirala of his home village. The educational attainment of second generation members tends to have been the most important variable affecting outmigration into distant areas. The most educated members have not only secured jobs in the non-farm sector, but also have migrated out of the district. The uneducated members on the other hand, either have migrated locally or have remained in the village and have taken up agricultural employment. The educated members who hold public sector jobs and did not move out of the village were found to have had special reasons which were largely personal, to remain in the village.

#### 10.4 Temporary Migration From the Sample Villages

The pattern of temporary migration of second generation members who were considered as residents of the sample villages was ascertained during the first round of the household survey. The information was collected with respect to those who were absent from the survey villages over the previous month. The total number of temporary migrants from each survey location is given in Table 10.20. More males have migrated temporarily from each sample location except for the Siyambalangamuwa scheme where more female members have moved. The

**Table 10.20 Second Generation Members Temporary Migrating Out as a Percentage of Total Members Living in the Village by Sex**

	Rajangana	Siyambalangamuwa	Dedigama
Male	9.0	6.0	16.9
Female	7.3	10.7	10.3
All	8.2	8.2	13.0
N	61	48	86

Source: Complete Enumeration of Households, 1992.

proportion of second generation members who migrated out temporarily ranges between eight to 13 percent across all sample locations. Temporary outmigrants among the second generation members are predominantly unmarried members (89 - 95 percent) and are still living with their parents in the original household. They are mainly young adults with a concentration especially in the 20-24 age group (Table 10.21). A similar pattern could be observed with respect to females in

**Table 10.21 Percentage of Temporary Migrants by Age and Sex**

Age category	Rajangana		Siyambalangamuwa		Dedigama	
	M	F	M	F	M	F
10-14	8.6	3.8	-	-	-	3.2
15-19	17.2	23.1	-	16.7	7.3	9.7
20-24	37.1	23.1	50.0	56.7	34.5	32.3
25-29	11.4	23.1	22.2	20.0	30.9	29.0
30-34	11.4	23.1	22.2	3.3	10.9	19.4
35-39	8.6	3.8	5.6	3.3	1.8	3.2
40-44	-	-	-	-	5.5	3.2
45-49	5.7	-	-	-	9.1	-
All	100	100	100	100	100	100
N	35	26	18	30	55	31

Source: Complete Enumeration of Households, 1992.

Dedigama and Siyambalangamuwa. However, in the Rajangana scheme females aged between 15-34 were found to be equally mobile. Elsewhere in the Asian region females were most mobile in the age groups 15-24 (Smith, Khoo and Go 1984). The most mobile members among both males and females in the control area were in the 20-29 age category.

Apart from age, mobility also tended to be related to the educational level of temporary migrants. A number of studies also support the proposition that migration varies directly with the educational attainments of the individuals. The educated are more likely to be aware of the conditions in other areas and tend to move into places with opportunities (Shaw 1975 : 22-24; Lipton 1980 : 5). The educated also tend to be more achievement motivated, more self reliant, take

initiatives in handling problems and are more adaptive to changing circumstances than the less educated (Simmons 1982 : 24-25). The data given in Table 10.22

**Table 10.22 Educational Achievements of Temporary Migrants**

Level of education	Rajangana		Siyambalangamuwa		Dedigama	
	M	F	M	F	M	F
Primary	11.4	3.8	-	3.3	9.1	3.2
Secondary	20.0	30.8	11.1	26.7	16.4	22.6
G.C.E.O'Level	40.0	46.2	50.0	60.0	49.0	48.4
Higher	28.6	19.2	38.9	10.0	25.5	25.8
All	100	100	100	100	100	100
N	35	26	18	30	55	31

Source: Complete Enumeration Households, 1992.

indicate that educational selectivity in mobility among second generation members is quite significant. Those in the control area with educational attainment less than secondary level are less mobile than those who have higher educational qualifications. Given the lower educational attainment among the second generation members in the two settlement schemes, migrants with secondary level educational qualifications were dominant in these schemes. The reasons for temporary migration given in Table 10.23 revealed that the dominant factor is

**Table 10.23 Reasons of Outmigration Reported by Second Generation Members by Sex (in percentages)**

Reason	Rajangana		Siyambalangamuwa		Dedigama	
	M	F	M	F	M	F
Employment	74.2	73.1	77.7	93.3	85.4	80.6
Education	22.9	15.3	5.6	6.7	12.8	12.9
Joining relatives	2.9	11.6	16.7	-	1.8	6.5
All	100	100	100	100	100	100
N	35	26	18	30	55	31

Source: Complete Enumeration of Households, 1992.

related to employment. Opportunities for further education (both in colleges and universities) and joining relatives living elsewhere are the other two main factors responsible for outmigration.

The temporary migrants by their occupation are given in Table 10.24. The major employment taken up by the second generation temporary migrants were recently

**Table 10.24 Occupations Taken Up by the Second Generation Temporary Migrants by Sex.**

Occupation	Rajangana		Siyambalangamuwa		Dedigama	
	M	F	M	F	M	F
Labourer	2	1	-	-	1	-
Police constable	2	-	3	-	1	-
Teacher	4	1	-	-	3	-
Driver	-	-	2	-	3	-
Army private	7	-	6	-	12	-
Security guard	2	-	-	-	1	-
Mason	1	-	-	-	1	-
Clerk	-	-	1	-	4	4
Carpenter	1	-	-	-	1	-
Mechanic	1	-	-	-	1	-
Petty trade	-	-	-	-	1	-
Shop/Hotel Assistant	1	1	-	-	13	-
Bus conductor	-	-	1	-	1	-
Garment factory worker	1	8	1	27	1	12
Housemaid/Labourer (overseas)	-	7	-	1	1	5
Planning officer	-	-	-	-	1	-
Nurse	-	-	-	-	-	3
Field assistant	2	1	-	-	1	-
Research assistant	-	-	-	-	-	1
Farmer	2	-	-	-	-	-
<b>Total</b>	<b>26</b>	<b>19</b>	<b>14</b>	<b>28</b>	<b>47</b>	<b>25</b>

Source: Complete Enumeration of Households, 1992.

created as an outcome of the change of government policies. For instance, as described earlier, employment in garment factories, the construction industry and in many services had been created during the post 1977 period leading to greater outmigration from rural villages. In keeping with the general pattern of female

temporary outmigration for employment, the female members of the second generation have moved into garment factories in the Colombo suburban areas and domestic work in overseas destinations. Although the absolute number of females who migrated to take up this hitherto non-existent employment is still small, many females in rural villages were attracted to it over the last few years, suggesting that the people in the areas with extreme pressure on resources have responded to the employment opportunities created elsewhere. At the time of our survey, seven women and one man had migrated for overseas employment from Rajangana and another nine members had migrated from the same location to work in garment factories. In Siyambalangamuwa, 27 females and one male were employed in garment factories. Male migrants who accepted overseas employment were mainly reported from the control area, where seven males had taken a variety of skilled and unskilled employment. The number of females from control area who migrated to overseas destinations for domestic work was only five. Another 12 females and one male from this location had temporarily migrated out for work in garment factories. An examination of the timing of temporary migration revealed that between 80 and 95 percent of temporary migrants in all locations left their home during the post 1985 period, which corresponds to the period after the opening of city-based employment and overseas opportunities. Most of them were also young and would not have been in the workforce before 1985. The major districts of destination reported by temporary migrants were Colombo, Gampaha and Anuradhapura.

### **10.5 Non-Migrants and Their Attitudes to Migration**

The second generation members who were included in the indepth study were exclusively non-migrants, due to the fact that outmigrants were not able to be contacted. An initial question on their present condition of living revealed that 61 - 84 percent of non-migrants across all locations, have experienced difficulties in

earning sufficient income for their survival. Yet, they still want to remain in their villages. The survey therefore specifically sought to understand their attitudes towards migration and the factors that have persuaded them to remain in their villages despite the pressure of limited job opportunities.

The second generation members living in the settlement schemes constitutes two groups classified by their place of birth. Namely, those who were born elsewhere and had accompanied their parents into the scheme and those who were born within the scheme. During our indepth interviews many indicated that except for temporary visits to other areas for short durations, none of them have experienced spatial mobility for a long duration, either since their birth or coming into the settlement scheme.

All the second generation heads of households were asked the question, "have you ever considered moving out of the scheme?". As reported in Table 10.25, the highest proportion of second generation members who had previously considered

**Table 10.25 Consideration of Second Generation Members of Previously Moving Away (in percentages)**

	Rajangana	Siyambalangamuwa	Dedigama
Considered Moving	10	66	31
Not Considered Moving	90	34	69
All	100	100	100
N	70	44	58

Source: Sample Survey of Households, 1992.

moving out amounted to 66 percent in the Siyambalangamuwa scheme, compared to the relatively lower percentages in other two areas. The positive response to this question was followed by a question on the "reasons for considering moving out". It is immediately apparent from Table 10.26, that economic factors have dominated

the decision to migrate. Non-economic factors commonly cited by respondents were conflicts over the sharing of property with parents and siblings. Some stated that settlers are jealous towards each others' progress, thefts, gambings, illegal brewing of liquor and other anti-social behaviour of fellow villagers have made them consider moving out of the scheme. Another respondent stated similar views on the stratification of the settlement society. According to him, society has gradually stratified into many sub-groups on the basis of their background such as place of origin, kinship relations, caste, political alliances, and even wealth and power. The respondents who had considered moving out previously were asked "whether they are still considering moving out of the scheme?". The question

**Table 10.26 Reasons for Considering Moving Away (in percentages)**

Reason	Rajangana	Siyambalangamuwa	Dedigama
Poor income	85.7	82.8	83.3
Lack of employment	42.9	31.0	33.3
Insufficient land	57.1	89.7	77.8
Family problems	14.3	6.9	11.1
Social problems	14.3	6.9	5.6
N	7	29	18

Source: Sample Survey of Households, 1992.

Note: Total adds up to more than 100 due to multiple answers.

received positive responses from all the respondents who had previously considered moving away. The follow-up question on specific places which they have considered moving to received both specific and non-specific responses (Table 10.27). The highest number of respondents from Dedigama (67 percent) and Siyambalangamuwa (55 percent) stated that they are prepared to move into any other rural area where the living conditions are better than in the settlement scheme. One third of the respondents from the Rajangana scheme commented that they are hoping to go back to their place of origin (native village of parents), as the conditions there are much better than in the settlement village. Respondents from all locations, including those in the control area, stated that they wished to move

into a land scheme like Mahaweli where they could have land and water for crop cultivation. The motives of farming, earning a better income or joining relatives in the place of origin were the factors which decided the choice of destinations. Some also stated that through migration they could gain better access to facilities, such as schooling for their children. Since the destinations chosen by all respondents were rural, an attempt was made to find out why these people did not want to migrate to

**Table 10.27 Places Second Generation Members Considered Moving to (in percentages).**

Place	Rajangana	Siyambalangamuwa	Dedigama
Other rural area	25.0	55.2	72.3
Mahaweli settlement	37.5	41.4	27.7
Place of origin	37.5	3.4	-
All	100	100	100
N	8	29	18

Source: Sample Survey of Households, 1992.

the towns or urban centres. This question yielded a variety of answers as shown in Table 10.28. When this question was raised at the focus group interview, one respondent stated raised this question stated that he had never lived in a town in his

**Table 10.28 Reasons for Not Selecting an Urban Area (in percentages)**

Reason	Rajangana	Siyambalangamuwa	Dedigama
Lack of friends or relatives	38.0	6.9	11.1
Difficult to find jobs	13.0	20.7	27.8
Dislike urban life	38.0	58.6	72.2
Urban life is expensive	50.0	37.9	55.6
Difficult to find housing	25	6.9	-
N	8	29	18

Source: Sample Survey of Households, 1992.

life, and even hates visiting cities as he becomes sick by smelling the filth in the city streets and hearing the noise of the bustling crowd. One respondent said that he had no job prospects in urban areas due to his lack of education and training and expressed his strong desire to obtain land in a rural destination. The survey

responses in Table 10.28 are quite similar to the views expressed by participants in the focus group interviews. Lack of friends and relatives in urban areas, difficulties in getting jobs and housing and a dislike of city life were cited as key reasons preventing them considering urban destinations for their future movements. Some respondents simply mentioned that urban living is costly so that they could not afford to move to the city. The respondents in general expressed a strong preference for rural living because they have a strong affinity to the land.

Respondents who stated that they have never considered moving out of their villages were asked, "what factors have contributed to them remaining in their villages?". The responses given in Table 10.29 reveal that a variety of socio-economic factors have influenced settlers to remain in the villages. The accessibility to land and ownership of housing were cited by respondents as a significant determinant for them staying in the village. However, less than one-fifth

**Table 10.29 Reasons Given by Second Generation Members for Remaining in the Village (in percentages)**

	Rajangana	Siyambalangamuwa	Dedigama
Ownership of land	42	33	73
Ownership of housing	40	80	60
Sources of income	16	20	20
Family and kinship relations	66	73	65
Social relations	23	20	10
N	62	15	40

Source: Sample Survey of Households, 1992.

Note: Total adds up to more than 100 due to multiple answers.

of respondents in each location responded that the source of income was an important factor for their staying in the village. A significant proportion of respondents (in the range of 65-73 percent in all three locations) mentioned that family and kinship relationships with the community were much stronger and so they preferred to remain in the village. Social relationships within the community

were also cited by some survey respondents as an important factor contributing to them remaining in the village.

Overall, a significant proportion of second generation members, who currently live within villages are dissatisfied with the conditions in their villages and considered outmigration as a possible response to advancing their present condition of living. Those who are staying appear to have considered economic and social factors equally in their decision not to outmigrate from the village.

### **10.6 Conclusion**

This chapter has attempted to show the relative importance of migration among the second generation members in the respective sample areas as a coping strategy in the face of population pressure. Migration was found to be an important strategy, followed by a significant proportion of second generation members. In fact, about 40 percent of the second generation men and women had permanently outmigrated from their respective home villages.

Permanent migrants are all married second generation members and migration has primarily occurred into other rural destinations. However, there are specific differentials among migrants, particularly with respect to their education and employment. Consistent with the finding of the outmigration of the more educated, second generation members in other land schemes such as the Malaysian FELDA, the most educated children of the initial settlers in the two settlement schemes studied have migrated to various other parts of the country, including major towns, to a greater extent than the uneducated members. The outer-district migrants were least common among the uneducated as available job prospects were limited for them in these areas. On the other hand, temporary migration has been mainly employment related and directed to urban destinations as an outcome of the generation of city-based employment in the recent past. Such migrants were largely young, unmarried and educated. This type of outmigration could increase

even further, due to the fact that a significant proportion of the second generation members who currently live in sample villages are dissatisfied with the conditions in their villages are hoping to migrate out in the future. The factors that have led them to consider outmigration from the villages are more economic than social, suggesting that some second generation members are in the process of responding to pressure on local resources. In keeping with the general pattern of internal migration in the country, they also desire to choose rural areas as their destinations of future migration.

## CHAPTER ELEVEN

### CONCLUSION

#### 11.1 Introduction

This study has focussed upon the problems of second generation settlers in land settlement schemes and the adaptation measures pursued by them in overcoming those problems. It is the first comprehensive study to investigate socio-economic and demographic responses to the problems experienced by children of initial settlers in land settlement schemes in Sri Lanka. The study is especially relevant in the context of Sri Lanka where the government's emphasis is gradually moving away from the construction of new land settlements toward the improvement of the efficiency in existing irrigation and settlement schemes. Consequently, an attempt to understand the current problems encountered by members of the second generation is timely as this group are expected to take over the management of settlement land from their parents' generation over the next few decades. The results of this study therefore can contribute to the formulation of viable policies for the social and economic development of the communities living in these schemes.

This chapter attempts to make an assessment of the extent to which the study objectives presented in Chapter One have been achieved by summarising the major findings of the study. The chapter also comments upon the utility of the theoretical framework outlined in Chapter One in addressing second generation problems and their responses to those problems. The chapter draws out a number of implications for policy makers and planners from the findings of the study. Finally some methodological lessons from the study are discussed and some suggestions for further research in this area are put forward.

## 11.2 Major Findings of the Study

### 11.2.1 Problems of Second Generation Settlers

The first major objective of this thesis was to identify and analyse the current problems encountered by second generation settlers. Chapter Six was particularly devoted towards achieving this objective. It was found that the major difficulties encountered by the second generation were associated with accessibility to land and employment opportunities. Second generation settlers have experienced a number of problems in relation to land which include landlessness, inadequacy of land, problems with regard to tenure and succession of land. The magnitude of these problems varies depending on the characteristics of individual second generation members. Absolute landlessness with respect to highland was very limited in the two land settlement schemes although many second generation members do not have access to paddy land.

Subdivision and fragmentation of the land originally allotted to initial settlers was another phenomenon which has created uneconomic sized land holdings and helped make the available land insufficient for the survival of the second generation. The subdivision and fragmentation of settlement land has occurred due mainly to increasing population density, high land values and lack of alternative employment opportunities locally. This study has shown that the average extent of land available to an agricultural operator has sharply declined with increasing population in both settlement schemes. The total land area available for cultivation has marginally increased due to encroachment. Although the subdivision of land allocated to settlers is prohibited under land laws, substantial *de facto* land subdivision has occurred in order to accommodate the increasing population on settlement land. The main outcomes of the land subdivision were micro sized land holdings with limited sufficiency and output and complicated ownership patterns of

land. The constant subdivision also has resulted in the average farm size becoming too small to support a family.

This study also found that a majority of the second generation are either unemployed or underemployed due to the seasonality of the limited available economic opportunities. The lack of alternative non-agricultural employment opportunities within settlement schemes is a major problem encountered by the second generation settlers. Lack of agricultural employment was reported as a problem by only a small percentage of second generation settlers in the control area due to the fact that the majority aspired to follow employment in the non-farm sector. Second generation members who were either landless or only owned a small land holding were the ones who tended to cite agricultural employment as a major problem. By contrast, the majority of second generation households in all areas reported the lack of non-farm employment as a major problem. Of them, the highest proportion of respondents were landless, young household heads and those with smaller-sized households. Second generation respondents perceive that over the last ten years, employment opportunities have more or less remained unchanged in their villages despite the fact that there has been a substantial increase in the number of potential workers or second generation members who have joined the labour force. Additional employment opportunities have mainly been created, not in the settlement schemes, but outside the area. Lack of locally available employment opportunities is therefore seen by many of the second generation as the major factor responsible for their low income and low standard of living. In the absence of employment outside agriculture, the second generation now in the young working ages have been compelled somewhat reluctantly to be dependent upon the land.

### **11.2.2 Factors Responsible for the Problems of Second Generation Settlers**

The second major objective of this thesis was to understand the underlying conditions and factors responsible for the problems of second generation settlers and these are discussed in Chapter Six. The lack of attention paid to the future needs of the second generation in the planning of settlement schemes has contributed to the contemporary problems. Planners were almost totally preoccupied with the immediate problems of the first generation, rather than making any provision for future generations of settlers. The planners did not have any clear cut policy on providing additional land or otherwise absorbing the labour of future generations into alternative employment as they had paid little or no attention to the development cycle of the family. The unit of land allocated was also too small to accommodate the large families brought into the scheme in the long term and the tenurial restrictions placed upon settlement land impinged negatively on the second generation. The result of this was that all family members of the second generation except one were rendered landless in settlement schemes. The land settlement schemes which were designed to alleviate landlessness among the first generation, therefore actually replicated the problems of the origin areas for most members of the second generation. There was little or no planning emphasis given to the creation of non-farm employment in old settlement schemes. Settlement planners were totally concerned with setting up the agricultural based settlements rather than the generation of opportunities outside agriculture.

Chapter Six has shown that the demographic characteristics of settlers brought into settlement schemes has particularly had repercussions for future generations. The selection only of families at a particular stage of the life cycle was crucial in causing the extent of the second generation problems currently being experienced in the land settlement schemes. There were marked similarities in settler families selected not only in their age structure, but also in other characteristics due to the use of particular criteria in the settler selection process.

### **11.2.3 Strategies of Overcoming the Problems of Second Generation**

The third specific objective of this study was to classify and understand the adaptation strategies pursued to overcome second generation problems. An attempt was made to analyse the strategies adopted by both first and second generation settlers.

First generation settlers, who have legal control over most of the economic resources in the land settlement schemes, have adopted a number of measures to relieve the problems being encountered by their children. Chapter Seven discussed these strategies. The first generation have often given some of their highland allocation to their offspring to set up a homestead. In addition, state land encroached upon by first generation settlers in the early years of land settlement schemes was passed on to children once they established their own families. Many first generation settlers have shared a paddy land with their children following a range of land allocation methods involving the allocation of unequal or equal size shares between children or the allocation of an entire land holding to a single person. The equal size land share allocation principle was followed in order to maintain mutual cooperation and intra family harmony among offspring. Other first generation settlers took more practical reasons into account in the allocation of unequal shares among offspring. These include age, sex, family size, current occupation, accessibility to other land and the current income of individual offspring. The quality of land was also given consideration in the allocation of unequally sized land parcels.

The bulk of land shares allocated to offspring were given free of charge. Whenever they wanted to give land to others, first generation settlers preferred their own offspring to operate their land before considering others. Further, the division of shares between land-owners and tenants was not strictly followed according to the prevailing tenancy regulation when the tenant was an offspring of the original

settler. A variety of arrangements on tenure, however, were found to have been followed to accommodate the increasing population on the land while maintaining productivity.

Second generation settlers adopted a range of economic and demographic strategies to overcome problems created by the growing population pressure on agricultural resources in their villages. Economic strategies involving both agricultural and non-agricultural strategies are analysed in Chapter Eight. Encroachment was a popular land augmenting strategy among second generation households as it was the easiest way to acquire land in a situation where the second generation members couldn't afford to acquire land by other means such as lease, mortgage or outright purchase. Encroachment also allowed them to be self reliant and remain in their village with their immediate kinsmen. Temporary acquisition of land was the other option available for increasing cultivated land area. However, land was not able to be acquired easily on temporary tenure due to the lack of capital of the majority of second generation settlers. The acquisition of land under rent and mortgage arrangements was also difficult for second generation households who were still living at subsistence level.

The acquisition of land from government-sponsored land schemes, elsewhere in the country, is another solution to the problems of land off the settlement schemes. However, the number of second generation settlers who benefited through this is extremely low in comparison to the extent of land hunger prevailing across the sample areas.

According to Boserup's (1965) theory on agricultural change, population pressure encourages more frequent cropping of existing land. The cropping intensity index calculated for each settlement scheme showed that fallowing of land was minimal in the Rajangana scheme as compared to the Siyambalangamuwa scheme where crop cultivation has been limited to only one crop season (Yala). Farmers had not

even attempted to grow highland crops on paddy land in the Siyambalangamuwa scheme due to constraints imposed by lack of capital.

The adoption of modern technology for crop cultivation is another option available to second generation farmers for increasing crop output. New High Yielding Varieties (NHYVS) were found to have been universally adopted by second generation households in both sample settlement schemes, whereas both Traditional Varieties (TV) and Old High Yielding Varieties (OHYVS) were still grown in the Wet Zone control area. The rapid pace of adoption of NHYVS in settlement schemes was an outcome of the comprehensive extension coverage available to settlers.

As far as other crop management practices are concerned, transplanting was widely practiced in the Wet Zone control area but only on a limited scale in both sample settlement schemes. This is due to the small size of land holdings, a better supply of water and the greater availability of labour in the Wet Zone control villages. The increasing cost of labour was cited as one of the major constraints upon the adoption of transplanting in the two settlement schemes. Although an overall surplus of labour is evident in two settlement schemes, labour shortages occur during peak labour requirement period of planting and harvesting when the costs of hired labour are very high. The scheduling of irrigation water issues according to a cultivation calendar for major agricultural operations has resulted in a concentration of labour activities in a limited time period making it more difficult for family labour alone to cope up with such labour intensive practices as transplanting. The availability of better weed control methods and the promotion of short maturing paddy varieties in an effort to save irrigation water have also made direct seeding a more cost effective alternative to transplanting.

Manual weeding was minimal among sample households in settlement schemes due to the availability of chemical alternatives like weedicides and herbicides. Moreover manual weeding is practically impossible in certain paddy fields due to the intense weed growth resulting from frequent shortages of water. Manual weeding however, was popular in the control areas because of the smaller sized holdings, availability of labour and environmental factors favourable to reduce weed growth.

The most important feature of farm mechanisation in the two sample settlement schemes was the almost universal use of two wheel tractors for land preparation, and four wheel tractors for threshing operations. No farmers were found to be using manual labour either for land preparation or threshing operations irrespective of the size of the land holding showing that farm mechanization was extremely high in the area. On the contrary, the sample respondents in the control area were found to have extensively used buffaloes for land preparation and mechanical threshers.

The application of chemical fertilizer is an important yield augmenting cultivation practice used by all first and second generation households across the sample areas at the time of our survey. However, there is a considerable gap between the recommended quantity of fertilizer and the actual quantity applied by farmers. Seventy five percent of the second generation farmers in the Rajangana scheme do not use the recommended quantity of fertilizer. This percentage was even bigger (85 percent) in the Siyambalangamuwa scheme. None of the second generation farmers in the control area had applied recommended quantities of fertilizer.

The overall adoption of modern farm technology among second generation households in the settlement schemes was more modern in every aspect than for their counterparts in the Wet Zone villages and this is reflected in the paddy output gained by individual farmers. A positive association between modern cultivation

practices and higher yield was clear across all locations. An overall assessment of the performance of paddy cultivation by second generation households is that the majority of them have failed to gain the maximum possible paddy output due to the inadequacy of resources at their disposal.

The cultivation of cash crops or Subsidiary Food Crops (SFC) was consistently followed by first and second generation households in the sample settlement schemes. The availability of lift irrigation facilities has enabled second generation settlers who occupy parts of LDO highlands, to cultivate a variety of highland crops. Much of the legally allotted highlands, with lift irrigation facilities and highland encroachments with access to irrigation water, have been brought under a variety of cash crops. Chilli was the major crop grown in the Rajangana scheme followed by aubergines and vegetables. Chilli also was the main cash crop grown Siyambalangamuwa. The employment generated by chilli cultivation is substantial. Unlike the paddy sector where there has been considerable farm mechanisation, manual operations were common in all activities associated with the cultivation of SFC highlighting the greater employment potential in the cultivation of this crop. Cash crop cultivation was one of their main sources of income in Rajangana and although the dependency upon cash crop cultivation among second generation settlers was not so strong in the Siyambalangamuwa scheme, the settlers still derive some income from cash crops.

Non-farm employment was less common in the settlement schemes than in the control area. The general employment structure of the working population in the sample schemes did not deviate much from the general pattern observed in other major settlement schemes elsewhere in the country where the hiring out of labour to other farmers was the principal means of off-farm activity available to settlers. Employment in agro-processing industries, craft or home-based industries was absent in the sample areas. However, new employment opportunities had been

created in recent years as a result of changes in the national economy. Non-farm employment was restricted to second generation members who had moved out from original first generation households. However, a large number of second generation members wished to change their current occupation and seek employment in the non-farm sector in the future.

Second generation members also adopted demographic strategies to overcome the growing pressure of population growth upon resources in the settlement areas. Chapter Nine deals with strategies followed by second generation to control fertility. The fertility of second generation households was significantly lower than their parents. The low fertility among second generation women was achieved by both delaying marriage and using modern methods of contraception. The postponement of marriage was a strategy followed by the second generation settlers with greater access to land rather than landless or land-poor. Knowledge of contraceptives was almost universal among the second generation members were used for both spacing and controlling of family size by the second generation.

Migration is the other important demographic strategy followed by the second generation settlers to deal with increasing population pressure. This was addressed in Chapter Ten. Permanent migrants from the original first generation households were all married and more female members had migrated out than males. Migration within the settlement schemes predominated. The single most important reason given for outmigration from the scheme was employment. Outmigration into other districts has increased in more recent years.

Temporary outmigrants are mainly unmarried members of the second generation who still live with their parents and was selective of those with higher levels of educational attainment. Temporary migration was generally employment related.

### 11.3 Theoretical Implications

This study attempted to understand the problems in settlement schemes on the basis of a series of stages and verified empirically the underlying factors and conditions responsible for the problems of second generation which are likely to surface when the settlement schemes reach their maturity. It particularly attempted to explain the demographic dimensions which were not considered in both previous models and theoretical justifications put forward to explain the settlement process. The present study established the age selectivity associated with the population pressure in settlement resources in a sequence of stages. It showed that the age structure of the population in the initial stage of settlement had a greater concentration of the adult population in the young adult working ages, a lack of older people and a very large number of children in the dependent child age categories. A sudden influx of second generation men and women into the labour force occurred within 10 to 20 years after the initial settlement. The demographic characteristics of these initial settlers have contributed to the symptoms of population pressure which were particularly manifested in the problems related to the land and employment. As a general issue, the study proved that there was an inter-generational impact in a context when an area is settled by a group highly selected by age. This phenomenon is relevant in a number of situations, not only in rural settlements but also in urban areas where age selectivity is greater among the migrants. This is a significant general issue which research in migration and settlement has neglected badly.

The study made empirical verification of the framework suggested by Grigg for the analysis of various responses originating from population pressure. This framework took into account the theory of multiphasic response put forward by Davis in explaining demographic responses to population pressure, as well as Boserup's theory on agricultural change which takes into account agricultural responses to population pressure. Therefore, the present study can be considered as

a major attempt to test empirically, responses for population pressure which have both demographic and economic dimensions. The validity of multiphasic response theory in the context of this study was tested and found strong support for its applicability. Second generation were delaying their marriage, controlling birth within marriage and migrating outward and this was consistent with the demographic responses explained in the multiphasic response theory. There were also considerable differentials in the demographic responses by age, education, land ownership and overall living conditions of second generation members.

The study also found a range of agricultural responses originating from second generation settlers which were consistent with the Boserupian theory. Agricultural responses were dominant among the second generation members. The second generation have increased their crop area by encroachment on to settlement land and the operation of temporarily acquired land. Both crop intensification and diversification were found in the area but have not reached their potential levels. The increasing frequency of cropping as explained in the Boserupian theory is not valid in the case of settlement schemes due to the regulations of water issues for double cropping. However, the Boserup theory explained responses to population pressure on the basis of historical facts and assuming unregulated conditions. The present study has shown the variability in responses with the introduction of controls and interventions. The policies of government and settlement authorities are found to have had powerful effects on the choice of agricultural strategies available to second generation. For example, promotion of labour saving technologies have undermined the effect of intensification as a response to the population pressure. Therefore, the present study found that the need to consider the effects of external interventions in theoretical explanations of possible responses to population pressure.

#### **11.4 Policy Implications**

A number of issues emerge from the findings of this study which have relevance for the formulation of policies for existing settlement schemes, as well as for the planning of settlement programmes in the future. The type of settlers initially selected for the settlement schemes to some extent shape the extent and nature of problems faced by second generation settlers. Therefore, it is necessary to review the whole issue of the settler selection procedure. Although the planners of Mahaweli settlement schemes have introduced a number of changes with regard to the selection of settlers, it could still be criticised from a number of perspectives. In addition to political interference in the selection of new settlers, the settlement of evacuees and dislocated people from development sites create problems due to their heterogeneity in economic and social background. The point system adopted in the selection of settlers for Mahaweli settlement should be strengthened in order to select the most eligible settlers in terms of their agricultural training and experience. Points were assigned in the Malaysian FELDA schemes under the headings of health, education, skills, background and number of children of the prospective settlers (Scudder 1981 : 250) and this may bear investigating in the Sri Lankan context. It is difficult to generalise specific criteria and appropriate weights for the recruitment of settlers for future settlement schemes in Sri Lanka due to the changing priorities of settlement policy. Nevertheless, on the basis of current experience, if the agricultural productivity in the settlement scheme is to be a priority, welfare and political considerations have to be given least weight in the selection process and education and agricultural knowledge should be given priority as opposed to landlessness and family size. The landless, tenants, labourers and small land owners therefore should be only considered if they have the necessary agricultural knowledge to be successful settlers. The selection of settlers as families rather than as individual is another aspect which should receive more attention. Scudder (1980 : 6-8) has stressed the need to interview both the

prospective settler and his wife as members of a joint production unit. According to him, a lack of pioneering spirit to become settlers among wife and children is likely to cause serious economic and social problems in the subsequent period. The life cycle stage of settler families is one area which so far has been neglected in the selection of settlers in Sri Lanka. This study has shown that selection criteria have favoured young married couples with a large number of young children most of whom were unable to contribute substantially to farm activities in the initial years of the settlement scheme. These families not only went through serious shortages of labour in the initial years but also deprived their older children of schooling as they needed their help on the family farm. However, when the children grew up and married and had children of their own, there has tended to be a supply of labour exceeding the requirements of the family holding, resulting in a serious problem of unemployment and underemployment among the now large young working age population. The problem has been made particularly severe because settlement economies are not sufficiently diversified to absorb the growing labour force. If the settlers are selected so that there is greater heterogeneity with respect to the age of family members and family size, the problem would have been mitigated. Settlers to be drawn into new settlement schemes have to be carefully selected giving adequate attention to the opportunities that are available in the long as well as short term. The settlers should also be recruited from people with both farm and non-farm skills in order to have the necessary skills for future occupational diversification within the community. The mix of settlers by age groups and a variety of skills are therefore recommended in the recruitment of new settlers and in the planning of the settlement schemes.

The children of settlers living in existing Dry Zone settlement schemes should be given special consideration in the selection of settlers for future settlement schemes considering the relevance of their current agricultural experience especially in crop

diversification and intensification. As present study has demonstrated the majority of second generation settlers are experienced cultivators either working on their parents' holdings or cultivating encroached land. They also have the necessary education standards to become good farmers. The majority of the encroachers are second generation children and are risk taking pioneers who have contributed to the production of cash crops in the Dry Zone (Scudder 1980 :9 ; Gunawardena 1981 : 31), and should not be disregarded in future endeavours to increase overall crop production. With the provision of necessary land and irrigation facilities, their skills and training could be put to more productive use.

The most appropriate size of land allotment is another issue which has received attention from land settlement planners over the years. The land holding size has been reduced from eight acres (3.2 ha) in the early settlement schemes to 2.5 acres (one ha.) in more recent schemes. There are arguments, both for and against, the reduction of land holding size. The allocation of a smaller holdings was justified by land shortages but the land allotment allocated to settlers should be sufficient to maintain their families, and satisfy the future aspirations of their children. Therefore, the size of the land holding should take into account the development cycle of each family, fertility trends of the population as well as changing aspirations and expectations of settlers. Use of a fixed allotment size has been correctly criticised as it does not pay attention to variations in soil characteristics, agro-ecological conditions, family size, rising living standards and expectations, differential abilities among families, and the second generation of settlers (Scudder 1979 : 21). Therefore, a more flexible system involving an accurate evaluation of the optimum size of land holdings in relation to different settler characteristics and environmental conditions is needed in future settlement strategies.

Tenurial restrictions on subdivision and fragmentation of land are a more complex issue. Traditional inheritance principles should not be entirely disregarded in

settlements. Demand for land has occurred mainly due to a lack of occupational diversification in the settlement areas. An integrated area or regional development planning could effectively utilise land, labour and other resources in settlement schemes reducing the demand for land among the children of settlers.

Although settlers have undertaken some crop diversification on their farm allotments in recent years, emphasis on monocropping is still very strong in certain areas of the sample schemes where irrigation water supplies are more assured. Crop diversification make sense in Dry Zone land due to greater variability in the soil characteristics and water requirement by crops. Systematic cultivation of cash crops on settlement land which could generate more agricultural employment for the growing population and the full potential of these crops has not yet been tapped due to a range of factors inhibiting progress. These include weak government support compared with paddy production, limited relevant research and extension services, ineffective price support schemes, poor marketing and storage facilities. In addition, other government policies like import liberalisation have adversely affected the development of the cash crop cultivation on settlement schemes. Regional specialisation of the production of certain crops like chillies and green grams is possible by incorporating them into the production programmes in Dry Zone settlement schemes which have hitherto only recognised paddy cultivation. The present cropping systems in the major irrigation schemes should be re-examined with a view to adopting scientific farming systems which include other crop mixes. The cultivation of cash crops during the Yala season in paddy lands could also be promoted to increase employment and farm incomes among the children of the initial settlers.

Although government intervention has produced in remarkable growth in settlement based paddy production, there is considerable scope for increasing both yield and production of paddy from existing resources and at the same time

generating more employment for the growing population. Despite a significant increase in per hectare paddy output over the years, yields continue to remain below their potential level. The main problems are institutional factors such as the timely availability of water, farm power, capital and other production inputs. Inefficient use of irrigation water has also contributed. Efficient water management and proper farming practices should be adopted because of their potential to increase cropping intensities, reduce the incidence of crop failure and bring about greater employment opportunities and enhanced paddy output.

Labour absorption in the paddy sector also needs some attention, as this has declined, since the 1970s, due to the adoption of labour-saving technologies. Farm mechanisation was promoted in land settlement schemes in the initial years, recognising the difficulties faced by settlers in securing adequate labour in completing critical farm operations in a reasonably short period of time (Farrington and Abeyratne 1982 : 25). Farm mechanisation in settlement schemes was expected to relieve labour bottlenecks and allow synchronised cultivation to save scarce irrigation water for double cropping. Farm mechanisation is still being promoted by the authorities despite evidence of an overall labour surplus. The adoption of short-aged paddy varieties has also discouraged labour-absorbing strategies in recent years (Senaka Arachchi 1990). The conflict between mechanisation of paddy sector and the need to increase employment can only be resolved by choosing only the most appropriate technological changes. Therefore, some shift from labour-saving to labour-using technologies is essential in order to increase the rate of labour absorption on the settlement schemes. Transplanting, manual weeding, increased use of non-external inputs with greater reliance on animal draught power should be promoted from the viewpoint of increasing employment and lowering production costs.

Only a small number of settlers reported keeping poultry, goats and pigs despite the considerable potential for increasing livestock production in the area. There was also a serious shortage of draught animals for land preparation activities, due to the lack of grazing areas and wallowing facilities. Adequate provision for common grazing should be made available in future planning of settlement villages. The settlement community and farmer organisations should be made responsible for the proper use and maintenance of this land for the benefit of the community, due to the previous experience of encroachment onto land reserves set aside for community purposes. Fisheries have also received little attention in settlement planning despite the potential for fish farming in irrigation reservoirs. Breeding of aquarium and ornamental fish for the export market has potential for providing self employment for settlers. The capital and space required for such enterprises is small and there is already an established market. The crop-livestock integration is another possibility which has not received due attention in current planning.

There is little occupational diversification in the two settlement schemes. A majority of the settlers were employed in agriculture either as a small scale owner-operator, share-cropper or agricultural labourer. Unlike in Wet Zone villages, caste based production or service oriented occupations were absent in the settlement schemes. The settlement authorities have given virtually no attention to drawing private sector capital and investment into settlement schemes by way of providing infrastructure facilities for non-farm activities in the same way as they provide infrastructure for farm activities. Lack of non-farm employment opportunities is a serious drawback in providing a livelihood for the second generation who are currently unemployed or underemployed. There is an urgent need to attract private sector capital by providing incentives to set up industries using local raw materials. The potential for the setting up of agro-based industries such as rice and fruit processing is substantial. On the other hand, there is potential for the promotion of

micro-level industries which are complementary with farming. Such employment could include petty trading, maintenance and repair work on agricultural machinery and equipment as well as electronic equipment which is extensively used by settlers. Settlers' children should be given vocational training to undertake other employment opportunities which have greater demand in local and overseas labour markets such as masonry, carpentry and driving. They should be given greater access to employment in the formal sector by way of skills development and vocational training directed to current and emerging needs in the labour market. Lack of access to institutional credit was one of the problems identified by the second generation in adopting modern farming techniques. Access to institutional finance and credit are also vital for the development of micro-level enterprises among second generation children as are marketing and technological support.

### **11.5 Methodological Implications**

A number of methodological issues arose in the present study which have relevance in the planning of future research in similar communities. The appropriate timing of the commencement of the study was found to be crucially important. This study demonstrated that although the slack period in agricultural activities was the most appropriate time period for social investigation in order to achieve the highest response rate. It was found that seasonal migrants were difficult to trace because they tend to leave their villages during the slack season as they look for possible employment elsewhere. In fact our study was able to interview temporary migrants because they are daily commuters to nearby areas. The timing of the survey, therefore, needs to be carefully decided on the basis of availability of the most important group of respondents in the village.

Our study could not interview second generation members who had migrated permanently out of the settlement villages due to a lack of time and financial

resources to interview them in their places of destination. The results of this study later showed that the majority of these outmigrants make home visits during the festival season of the Sinhalese New Year. Although it is difficult to conduct formal interviews during the festival time, this would have been an ideal time to collect relevant information based on informal interviews and participatory observation. Future research should definitely include this group in the sample by tracing them at their destinations or interviewing them when they make home visits. The use of "tracer" survey techniques would seem appropriate for this task.

The collection of field data by combining questionnaire survey methods and focus group interview techniques was found to be most appropriate strategy in an investigation of this nature. The conducting of focus group interviews just before the completion of the questionnaire survey was found to be most appropriate time as it allowed resolution of questions regarding conflicting responses given in the survey and elaboration of pattern and trends which emerged during the survey. The focus group interviews allowed us to understand issues with a clarity which could not be achieved if only the questionnaire surveys were undertaken.

Comparable time series data for settlement schemes are not available in censuses and periodic national surveys conducted by the Department of Census and Statistics as they have used administrative divisions in their enumerations which cut across land settlement boundaries. This study was hence not able to use population data from previous censuses with respect to the sample villages as census data with regard to settlement areas cannot be separated out from district figures. There is a pressing need to harmonise boundaries of land settlement areas and census blocks in future censuses for easy separation of data relevant to settlement and non-settlement areas. The collection of agricultural statistics by settlement schemes in addition to district estimates by the Department of Census and Statistics, would facilitate more meaningful interpretation of regional agricultural data.

### **11.6 Future Research Directions**

This study was based on sample surveys carried out in three purposively selected study locations. It was not possible to take into account the socio-economic and geographical variations in every district where settlement schemes are currently located in Sri Lanka. Settlers from other ethnic background such as the Tamils and Moors from the Northern and Eastern provinces were not included in this study due to the ongoing civil war in those areas. Future studies therefore need to take into account socio-economic and regional diversities in the examination and interpretation of second generation issues and their adaptation strategies.

As previously mentioned, this study was not able to include in its sample, second generation members who had left schemes permanently. The factors surrounding their migration were ascertained from secondary sources. Their exclusion from the sample resulted in a loss of valuable first hand information which could have been used to gain a better insight into their perceptions of the problems of the second generation. In future study, inclusion of this group would not only facilitate the study of their perceptions but also clarify the impact of their outmigration from their places of origin.

The size of land holding allocated to settlers was found to have strongly influenced the capacity of absorbing their children and other dependents into agriculture. The optimum size of land holding required for settlers and their children is an issue which has been debated over the years. Research is needed on existing settlement schemes, and elsewhere where crop diversification is currently underway, in order to measure the land use and net output of farmers with varying land sizes and cropping patterns under different agro-ecological conditions. The results of such studies could be used to define more accurately the optimum size of land required in different contexts for a family depending on its demographic characteristics. Future research could also focus on the potential role of the settlement authority in

alleviating the problems encountered by the second generation. This was not addressed adequately in this study due to the reason that the major focus of this investigation was on the adaptation strategies of settlers.

Research needs to be carried out in settlement schemes which had initially contained population belonging to a more mixed range of age groups, in order to establish the social, economic and demographic implications of this situation in comparison to the settlement schemes settled by only young working adults with a large number of small children. For example evacuees and displaced people drawn from the development sites settled under the Mahaweli development programme would meet these criteria. Such people could be longitudinally studied along with the settlers selected according to the conventional eligibility criteria.

Research also needs to be carried out in existing settlement schemes to assess the potential for initiating micro-level enterprises, self-employment and other profitable investment opportunities. This investigation should explore the availability of infrastructure and other facilities necessary to undertake these investment as well as factors that are likely to enhance opportunities or inhibit the potential development. Requirements of finance and capital, manpower, and the availability of technological know-how and the training requirements and produce marketing should also be assessed in this research.

Little investigation has been carried out on the implications of individual versus communal tenure for land in Sri Lankan settlement schemes. The relative merits of a wide range of land tenure systems which provide adequate security and enhance productivity of land need to be investigated in order to identify appropriate system of land tenure for settlement schemes.

### **11.7 Conclusion**

This study has been successful in achieving its major objectives and has contributed to the understanding of the range of problems confronted by the children of initial settlers and various adaptation measures followed by them in order to overcome these problems. The study further highlighted the underlying factors and conditions responsible for the problems. The analysis has contributed to the existing knowledge on the settlement development process and the responses originating from the population pressure. The study also produced findings that are useful for policy makers in Sri Lanka as well as the settlement planners in other developing countries.

## Appendix 2.1 Questionnaire Schedules 1 and 2

(Questionnaire for complete enumeration of households)

(Identification information)

Village/Unit/Colony:

Household number/Block number:

Main household 1

Subsidiary household 2

Location of the household

Highland 1

Paddy land 2

Relationship to the original allottee (if applicable)---

Main source of income: Agriculture 1 Non agriculture 2

### SECTION I

1 Demographic characteristics

(Please indicate for present household members only)

Name	Relationship	Sex	Age	Education	Marital status	Age at marriage	Activity	Occupation
1	2	3	4	5	6	7	8	9

Year of migration	Place of migration	Distance	District	Origin	Reason
10	11	12	13	14	15

Members who live elsewhere

Name	Relationship	Sex	Age	Education	Marital status	Age at marriage	Activity	Occupation
1	2	3	4	5	6	7	8	9

Members who live elsewhere

Year of migration	Place of migration	Distance	District	Origin	Reason
10	11	12	13	14	15

## Codes for question 1

Code 2  
(Relationship to  
Head of household)

Head of household	1
Wife/Husband	2
Son/Daughter	3
Parent	4
Other relative	5
Domestic servant	6
Boarder	7
Grandparent	8
Other (specify)	9

Code 3  
(Sex)

Male 1  
Female 2

Code 5  
(Level of education)

Studying in year 1	0
Passed year 1	1
do	2
do	3
do	4
do	5
do	6
do	7
do	8
do	9
do	10
do	11
do	12
do	13
Passed G.A.Q/G.S.Q	14
Passed degree	15
Passed post degree	16
No schooling	17
Vocational training	18

Code 6  
(Marital status)

Never married	1
Currently married	2
Widowed	3
Divorced	4
Separated	5

Code 8  
(Activity)

Employed at work	1
Employed not at work	2
Unemployed (seeking work)	3
Unemployed(not seeking work)	4
Household work	5
Retired/Unable to work	6
Student	7
Other (specify)	8

Code 9  
(Employment status)

Government employee	1
Semi-government employee	2
Private sector employee	3
Employer	4
Own account worker	5
Unpaid family worker	6
Other (specify)	7

Code 15  
(Reason for moving & coming)

Own house	1
Parent's house	2
Moved with parents	3
For employment	4
Marriage	5
Schooling	6
For higher studies	7
Live in a land scheme	8
Other (specify)	9

## 1.1 Ask wife of the head of household

	M	F	T
1 Total number of births	--	--	--
2 Number of children at the time of arrival into the scheme	--	--	--
3 Number born after arrival	--	--	--
4 Number currently living	--	--	--

## 1.2 Demographic characteristics of the children who are no longer members of the household

Name	Age	Sex	Place of birth	Level of education	Marital status	Age at marriage	Number of children	Occupation
1	2	3	4	5	6	7	8	9

Place of residence	Distance (Km)	Ownership of the land	Year of immigration	Visits to the original household
10	11	12	13	14

SECTION II

## 2.1 Ownership of land

Type of land	Extent (acres)	Tenure	Distance	Source of water	Extent cultivated		Permanent crops
					1991	1991/92	
1	2	3	4	5	6	7	8

Highland

Paddy land

Code 3		Code 4		Code 5	
Singly owned	1	0-1/8 Km	1	Major irrigation	1
Jointly owned	2	1/8-1/4	2	River/Stream	2
LDO land	3	1/4-1/2	3	Rainfed	3
Encroached	4	1/2-1	4	Lift irrigation	4
<i>Tattumaruru</i>	5	1-3	5	Other (specify)	5
<i>Kattimaru</i>	6	3-5	6		
Other	7	5-10	7		
		10<	8		

Extent given out		Given tenure		Type of operators		Extent fallowed		Reasons for fallowing	
1991	1991/92	1991	1991/92	1991	1991/92	1991	1991/92	1991	1991/92
9	10	11	12	13	14	15	16	17	18

Codes 11 & 12		Codes 13 & 14		Codes 17 & 18	
<i>Ande</i>	1	Offspring	1	Lack of water	1
Rented	2	Other relatives	2	Lack of funds	2
Mortgaged	3	Government employee	3	Unsuitable for	
		Businessman	4	crops	3
		Other (specify)	5	Other	4

## 2.2 Operated land other than owned land

Type of land	Extent (acres)		Tenure		Source of water		Crops cultivated		Distance from home	
	1991	1991/92	1991	1991/92	1991	1991/92	1991	1991/92	1991	1991/92
1	2	3	4	5	6	7	8	9	10	11

Highland

Paddy land

Codes 4 & 5		Codes 6 & 7		Codes 10 & 11	
<i>Ande</i>	1	Major irrigation	1	0-1/8	1
Rented in	2	River/stream	2	1/8 - 1/4	2
Mortgaged in	3	Rainfed	3	1/4 - 1/2	3
Other	4	Other	4	1/2 - 1	4
				1 - 3	5
				3 - 5	6
				5 - 10	7
				> 10	8

## 3.1 Housing condition

Temporary 1  
Permanent 2

## Schedule II

## Household Questionnaire

(Core Questionnaire consists of sections I, II, III, V and VI. Core questionnaire was administered among all first and second generation households. Sections IVa, IVb and IVc were administered respectively among household heads of first generation, second generation and those who are over 45 years of age in the control village.)

## Identification Information

Village/Unit/Colony:

Household Number/Block Number:

1 st Generation settler 1

2nd Generation settler/ Age less than 45 yrs 2

Settlers more than 45 yrs of age 3

SECTION I

## 1 Demographic Characteristics

(Please indicate for present household members only)

Name	Rel	Sex	Age	Education	Marital Status	AAM	Activity	Occupation
1	2	3	4	5	6	7	8	9

Year of Migration	Place of Migration	Distance	District	Origin	Reason
10	11	12	13	14	15

Members Live Elsewhere								
Name	Rel	Sex	Age	Education	Marital Status	AAM	Activity	Occupation
1	2	3	4	5	6	7	8	9

Members live Elsewhere						
Year of Migration	Place of Migration	Distance	District	Origin	Reason	
10	11	12	13	14	15	

## Codes for Question 1

## Code 2

Relationship to Head of Household/  
Original Settler  
Head of household/Original settler  
Wife/Husband  
Son/Daughter  
Parent  
Other Relative  
Domestic Servant  
Boarder  
Grand parent  
Other (specify)

1  
2  
3  
4  
5  
6  
7  
8  
9

## Code 3 Sex

Male 1  
Female 2

Code 6  
Marital Status

Never Married 1  
Currently Married 2  
Widowed 3  
Divorced 4  
Separated 5

Code 8  
Activity

## Code 5

## Level of Education

Studying in Year 1 0  
Passed Year 1 1 1  
do 2 2  
do 3 3  
do 4 4  
do 5 5  
do 6 6  
do 7 7  
do 8 8  
do 9 9  
do 10 10  
do 11 11  
do 12 12  
do 13 13  
Passed G.A.Q/G.S.Q 14  
Passed Degree 15  
Passed Post Degree 16  
No Schooling 17  
Vocational Training 18

Employed at Work 1  
Employed not at Work 2  
Unemployed (seeking employment) 3  
Unemployed(not seeking  
employment) 4  
Household Work 5  
Retired/Unable to Work 6  
Student 7  
Other (specify) 8

Code 15  
Reason for Moving & Coming

Own house 1  
Parent house 2  
Moved with parent 3  
For employment 4  
Marriage 5  
Schooling 6  
For higher studies 7  
Live in a land scheme 8  
Other (specify) 9

## Code 9

## Employment Status

Government Employee 1  
Semi-government Employee 2  
Private Sector Employee 3  
Employer 4  
Own Account Worker 5  
Unpaid Family Worker 6  
Other (specify) 7



Codes 6 Codes 8			
On foot	1	Not worked at all	1
Bus	2	< 60 days	2
Train	3	60 - 119 days	3
Bicycle	4	120 - 179 days	4
Motor Cycle	5	180 - 239 days	5
Other (specify)	6	240 - 299 days	6
		300 days or more	7

Number of hours Worked Last Week	Reasons for working less Last Week	Reasons for working less Last Year	Are you looking for more work	Secondary Occupation
9	10	11	12	13

Codes 10 & 11		Code 12
Illness or injury	1	yes 1
Holiday leave of absence	2	no 2
Strike	3	
Not available for full time work	4	
Mechanical/Electrical break down	5	
Shortage of raw materials	6	
Bad weather	7	
Other (specify)	8	

## SECTION II

### 2.1 Ownership of land

Type of Land	Extent (acres)	Tenure	Distance	Source of water	Extent Cultivated 91	Permanent Crops 91/92	
1	2	3	4	5	6	7	8

Highland

Paddy Land

Code 3		Code 4		Code 5	
Singly owned	1	0-1/8miles	1	Major irrigation	1
Jointly owned	2	1/8-1/4	2	River/Stream	2
LDO land	3	1/4-1/2	3	Rainfed	3
Encroached	4	1/2-1	4	Lift irrigation	4
<i>Tattamaru</i>	5	1-3	5	Other (specify)	5
<i>Kattimaru</i>	6	3-5	6		
Other	7	5-10	7		
		10<	8		

Extent Given out		Given Tenure		Type of Operators		Extent Fallowed		Reasons for Fallowing	
91	91/92	91	91/92	91	91/92	91	91/92	91	91/92
9	10	11	12	13	14	15	16	17	18

Codes 11 & 12		Codes 13 & 14		Codes 17 & 18	
<i>Ande</i>	1	Offspring	1	Lack of water	1
Rented	2	Other Relatives	2	Lack of funds	2
Mortgaged	3	Government employee	3	Unsuitable for crops	3
		Businessman	4	Other	4
		Other (specify)	5		

## 2.2 Operated land other than owned land

Type of land	Extent (acres)		Tenure		Source of water		Crops Cultivated		Distance from home	
	91	91/92	91	91/92	91	91/92	91	91/92	91	91/92
1	2	3	4	5	6	7	8	9	10	11

Highland

Paddy land

Codes 4 & 5		Codes 6 & 7		Codes 10 & 11	
<i>Ande</i>	1	Major irrigation	1	0-1/8	1
Rented in	2	River/stream	2	1/8 - 1/4	2
Mortgaged in	3	Rainfed	3	1/4 - 1/2	3
Other	4	Other	4	1/2 - 1	4
				1 - 3	5
				3 - 5	6
				5 - 10	7
				> 10	8

## 2.3 What is your assessment of the quality of land alienated to you?

		Own land	Other operated land
Highland	1	-----	-----
	2	-----	-----
Lowlands	1	-----	-----
	2	-----	-----

## Codes

Very fertile	1
Fertile	2
Infertile	3
Very fertile	4
Don't know	5

## 2.4 Have you added any area into your farmland since you received land?

yes	1
no	2

## 2.5 If "yes" how much land have you added into your farmland and how was this done?

	Extent (acres)	How this was done
Highland	----	-----
Paddy Land	----	-----
chena	----	-----

## Codes

By purchase	1
By inheritance	2
By encroaching	3

**SECTION III**

## 3 Housing and Access to Basic Amenities

## 3.1. Housing Characteristics

## 3.1.1 Tenure of Accommodation

Owner occupied	1
Rented	2
Rent free	3
Other (specify)	4

## 3.1.2. Number of rooms

## 3.1.3 Year of construction of the building

## 3.1.4 State whether this was given by the government?

yes	1
no	2

## 3.1.5 If "yes" have you modified this house?

yes	1
no	2

### 3.1.6. Principal Materials Used in Construction

(1) Walls		(2) Floor		(3) Roof	
Cement blocks/	1	Cement	1	Tiles	1
Stone		Tiles	2	Asbestos sheet	2
Brick/Cabook	2	Wood	3		
Mud	3	Mud	4	Metallic sheet	3
Wood	4	Cowdung	5	Cadjan/Palmyrah	4
Cadjan/Palmyrah	5	Other	6	Straw	5
Other (specify)	6	(specify)		Other (Specify)	5

### 3.1.7 Assessment of the overall housing condition ?

Very satisfactory	1
Satisfactory	2
Unsatisfactory	3
Very unsatisfactory	4

### 3.1.8 Type of construction

Temporary	1
Permanent	2
Improvised	3

## 3.2 Amenities Household Equipment, Ownership of Agricultural Equipment and Livestock

### 3.2.1 Source of Water

	Drinking	Distance (Km)	Washing/Bathing	Distance (Km)
Pipe borne water	1	-	1	-
Well	2	-	2	-
Tube well	3	-	3	-
River/Stream	4	-	4	-
Tank	5	-	5	-
Irrigation Channel	6	-	6	-
Other (specify)	7	-	7	-

#### 3.2.1.1 Whether water is adequate for

Drinking	Bathing
yes	1
no	2

### 3.2.2 Toilet Facilities

	Solely by Households	If Shared Number. of Households
Flush Toilet	1	-
Water seal	2	-
Cesspit	3	-
Public latrine	4	-
None	5	-

### 3.2.3 Main Source of Energy

	Lighting	Cooking
Electricity	1	1
L.P Gas	2	2
Kerosene	3	3
Firewood	x	4
Other (specify)	5	5

## 3.2.4 Ownership of Transport Equipment

	Code	Number Owned
Bicycle	1	-
Car	2	-
Bus/Lorry/Van	3	-
Scooter/Motor Cycle	4	-
Tractor 4 wheel	5	-
Tractor 2 wheel	6	-
Cart	7	-
Other (specify)	8	-

## 3.2.5 Household Equipment

	Code	Number Owned
Radio receiver	1	-
Radio with Cassette	2	-
Television	3	-
Sewing Machine	4	-
Cooker (gas)	5	-
Cooker (kerosene)	6	-
Refrigerator	7	-
Electric Iron	8	-
Electric Fan	9	-

## 3.2.6 Ownership of Agricultural Equipment

	Code	Number Owned
Plough (iron)	1	-
Plough (wooden)	2	-
Mammoty	3	-
Sprayer	4	-
Thresher	5	-
Water pump	6	-
Other (specify)	7	-

## 3.2.7 Ownership of Livestock

	Code	Number Owned
Buffalo	1	-
Neat Cattle	2	-
Pig	3	-
Poultry	4	-
Goat	5	-
Other (specify)	6	-

SECTION IV A

4. (To be asked only of original settlers)

4.1. What was your occupation before moving to this settlement scheme?

4.2 Have you owned any land before moving into this settlement?

yes 1  
no 2

4.2.1 If "yes" How much land did you own before moving to this settlement scheme?

(Acres)

Highland ----  
Lowlands ----

4.3 If you were landless did you operate any agricultural land?

yes 1  
no 2

4.4 If "yes" what was the tenurial condition of your operated land?

Ande (share cropping) 1  
Rented 2  
Other (specify) 3

4.5. What were the main reasons which motivated for you to be a settler in this scheme?

Code

Unemployment 1  
Desire to be a settler 2  
To own land 3  
Improve standard of living 4  
Have relatives here 5  
Landlessness 6  
Insecure tenure 7  
Other (specify) 8

4.6 Did you bring any capital at the time of arrival?

yes 1  
no 2

if yes, amount in cash and kind

Cash	Rs
in kind	(Value in Rs)
	-

4.7 What was your economic situation at time of migration to settlement scheme?

In debt 1  
Just enough to live 2  
Enough to live and save 3

4.8 Did you have any particular reason to choose this settlement scheme?

yes 1  
no 2

4.9 If "yes" what was the reason?

4.10 Are you presently happy with the following in the settlement scheme?

	Extremely happy	Happy	Unhappy unhappy	Extremely
1 Amount of land received	1	2	3	4
2 Fertility of the land	1	2	3	4
3 Water supply	1	2	3	4
4 Off-farm employment	1	2	3	4
5 Educational facilities	1	2	3	4
6 Health facilities	1	2	3	4
7 Transport facilities	1	2	3	4
8 Marketing facilities	1	2	3	4
9 Unity in the community	1	2	3	4
10 Opportunities for the future of children	1	2	3	4
11 Present condition of living	1	2	3	4
12 Legal provision for the inheritance of land	1	2	3	4

4.11 What are you most unhappy about in this settlement scheme?

4.12 How do you compare the following facilities in the settlement scheme with your place of origin?

	Better	Good	Same	Worse	Don't know
1 Land ownership	1	2	3	4	5
2.Housing condition	1	2	3	4	5
3 Level of income	1	2	3	4	5
4 Employment opportunities	1	2	3	4	5
5 Educational facilities	1	2	3	4	5
6 Fertility of land	1	2	3	4	5
7 Transport facilities	1	2	3	4	5
8 Health facilities	1	2	3	4	5
9.Living standard	1	2	3	4	5
10 Social relation	1	2	3	4	5
11 Opportunities for the future of children	1	2	3	4	5

4.13 How do you compare the present status in your settlement with the conditions in the following two different time periods.

	10 years ago Codes	At the time of your arrival Codes
1 Condition of housing	-	-
2 Availability of food	-	-
3 Level of income	-	-
4 Encroachment of land	-	-
5 Land fragmentation	-	-
6 Land consolidation	-	-
7 Felling of forest	-	-
8 Use of agrochemicals	-	-
9 Environmental pollution	-	-
10 Diseases	-	-
11 Hygienic practices	-	-
12 Modern farming	-	-
13 Livestock keeping	-	-
14 Cultivation of SFC	-	-
15 Yield level	-	-
16 Marketing facilities	-	-
17 Out migration	-	-
18 In migration	-	-
19 Non farm employment opportunities	-	-
20 Unemployment	-	-
21 Regular schooling of children	-	-
22 Robberies	-	-
23 Unity in the community	-	-
24 Participation in community activity	-	-
25 poverty	-	-

#### Codes

Has increased	1
No change	2
Has decreased	3

4.14 What kind of occupations would you like to have for your children?

	Sons	Daughters
1 Government Employment	-	-
2 Private sector job	-	-
3 Farming	-	-
4 Other (specify)	-	-

4.15 Do you receive remittances from the household members who are working outside at present?

yes	1
no	2

4.16 If "yes"

How many members send remittances

4.17 Frequency of sending remittances per year

4.18 Where do your married children currently reside

	Sons	Daughter
In this settlement scheme	1	1
In other settlement schemes (within the district)	2	2
In rural areas (within the district)	3	3
In small towns (within the district)	4	4
In big towns (outside district)	5	5
In small towns (outside district)	6	6
Other (specify)	7	7

4.17 What is your expected residence for grown up sons and daughters?

	Sons	Daughters
In this house	1	1
In this settlement area	2	2
In other settlement scheme	3	3
In rural areas	4	4
In small towns	5	5
In big towns	6	6
as they wish	7	7
not sure	8	8

4.20a Have you done anything for the future of your children?

yes	1
no	2

4.20b If "yes" describe them?

For all	yes	1
	no	2
For some members	yes	1
	no	2

4.21 Do you think that the amount of land allotted to you is sufficient in generating annual income for the household?

yes	1
no	2

4.22 Do you agree with regard to rules on sale and inheritance of LDO land?

yes	1
no	2

4.23 If "yes" why?

4.24 If "no" why ?

4.25 Have you already nominated the successor of your land rights?

yes	1
no	2

4.25a If "yes" who is the successor? -----

4.26 Whom would you name as recipient to your land holding after you?

Spouse	1
All offspring	2
All sons	3
All daughters	4
Youngest son	5
Youngest daughter	6
Eldest son	7
Eldest daughter	8
Undecided	9
No response	0

4.27 Since your coming here have you ever called relations/friends living in other areas to settle in land here?

Relations	Friends
yes 1	yes 1
no 2	no 2

4.28 If "yes" what types of land have they occupy at present?

Encroached land	1
LDO land (purchased)	3
LDO land	4
Other (specify)	5

4.29 Do you still have contact with your place of origin?

yes	1
no	2

4.30 If "yes" How often do you visit your place of origin?

4.31 Do your household members keep contact with your place of origin?

yes	1
no	2

4.32 If "yes" How often do they visit to your place of origin?

4.33 Have you ever considered moving away from the settlement scheme?

yes	1
no	2

4.34 If "yes" what factors influenced you to consider moving?

Insufficient income	1
Insufficient land	2
Social problems	3
Family problems	4
Other (specify)	5

4.35 Are you still considering moving away from this settlement scheme?

yes	1
no	2

4.36 If "yes" What places have you considered moving into?

4.37 Reasons for choice of this place?

4.38 Is any of your household members is planning to move out from this settlement scheme?

yes	1
no	2

4.39 If "yes" provide following details

Relationship	Permanent/ temporary	Place of migration	Reason for migration
--	--	--	--
--	--	--	--

Attitudes towards Family Planning

*(Ask if the number of children are over 4)*

4.42 Do you have any particular reasons to have this number of children?

Requirement of labour for family farm	1
Children were not a economic burden	2
Infant mortality due to diseases	3
Non availability of family planning methods	4
Need more of them at the old age	5
Other (specify)	6

4.43 According to your assessment what should be the ideal size of a family ?

4.44 Of that number how many boys and how many girls you would like to have?

Boys    Girls

SECTION IV B

4 (To be asked only of second generation settlers and household heads less than 45 years of age in control areas)

4.1 What is your current residence?

Original colony cottage/parental home	1
Separate house in original land allotment	2
Own house in an encroached land	3
Own house in a own land	4
Rented house	5
Other (specify)	6

4.2 What is your current occupation?

4.3 Are you planning to change this occupation in future?

yes	1
no	2

4.4 If "yes" what kind of occupation do you expect?

4.5 If "no" state reasons?

4.6 How satisfy are you with the following facilities in your village/settlement scheme

	Extremely happy	Happy	Unhappy	Extremely unhappy
	1	2	3	4
1 Extent of land owned	-	-	-	-
2 Fertility of land	-	-	-	-
3 Rules and regulations of land inheritance	-	-	-	-
4 Water availability (cultivation)	-	-	-	-
5 Water availability (drinking)	-	-	-	-
6 Employment opportunities (agriculture)	-	-	-	-
7 Employment opportunities (non agriculture)	-	-	-	-
8 Educational facilities for children	-	-	-	-
9 Health facilities	-	-	-	-
10 Transport facilities	-	-	-	-
11 Marketing facilities	-	-	-	-
12 Unity in the village	-	-	-	-
13 Relationship between brothers and sisters	-	-	-	-
14 Present condition of living	-	-	-	-
15 Facilities available for recreation	-	-	-	-
16 Opportunities of future for children	-	-	-	-

4.7 What are you most unhappy about in this settlement scheme?

4.8 How do you compare the following factors at present with the condition in 10 years back?



		Sons	Daughter
Government employment	1	--	----
Private sector job	2	--	----
Agricultural	3	--	----
Other (specify)	4	--	----
Not decided	5	--	----

## 4.11 What is your expected residence for your children?

	Sons	Daughter
In this village/ settlement scheme	1	1
In another settlement scheme	2	2
In other village	3	3
In small towns	4	4
In big towns	5	5
As they wish	6	6
Not sure	7	7

## 4.12 Do you think that the amount of land owned by you is sufficient in generating annual income for your household?

yes	1
no	2

## 4.13 If "no" what is the main source of your household income? Other agricultural activities

non agricultural activities	1
	2

## 4.14 Do you receive remittances from the household members who are working outside at present?

yes	1
no	2
not applicable	3

## 4.15 If "yes" how many members send remittances?

## 4.16 What is the frequency of sending remittances?

## 4.17 Are you happy with the arrangement made by your father on the succession of land?

yes	1
no	2

## 4.18 If "yes" why?

## 4.19 If "no" why?

## 4.20 Are you the successor of the land owned by your father/mother?

yes	1
no	2

## 4.21 Have you ever considered to moving out from the settlement scheme/village?

yes 1  
No 2

4.22 If "yes" what factors influenced you to consider moving out?

Insufficient income	1
Lack of employment	2
Insufficient land/ Landlessness	3
Family problems	4
Social problems	5
Other (specify)	6

4.23 Are you still considering moving away from this settlement scheme?

yes 1  
no 2

4.24 If "yes" what places have you considered moving into?

4.25 What are the reasons for the choice of this place?

4.26 If the choice of place is a non urban area what are the reasons for non migration to urban area?

Non friends/relatives in those areas	1
Dislike city life	2
Urban jobs not suitable	3
Like rural life	4
Difficult to find housing in cities	5
Urban life is expensive	6
Difficult to jobs in the cities	7
Other (specify)	8

4.27 By any chance if you migrate out what factors would be important in your decision making?

Factor	Important 1	Not important 2	Neutral 3
1 Extent of land getting	-	-	-
2 Place	-	-	-
3 Employment opportunities	-	-	-
4 Educational facilities for children	-	-	-
5 Health facilities	-	-	-
6 Climate	-	-	-
7 Political stability in the area	-	-	-
8 Water availability	-	-	-
9 Housing facilities	-	-	-
10 Community	-	-	-
11 Other (specify)	-	-	-

4.28 If you have no intention of migrating out what factors influencing you to stay in the settlement scheme?

Land ownership	1
House ownership	2
Employment opportunities	3
Income sources	4
Family and kinship relations	5
Social relations	6
Other (specify)	7

#### 4.29 What is your assessment of the current economic position of you?

In debt	1
Just enough to live	2
Enough to live and save	3
Life is extremely difficult	4

#### Family Planning

##### 4.30 Have you ever heard of family planning methods?

yes	1
no	2

##### 4.31 If "yes" what are they?

A Method	B If "Yes"	C If "no" have you heard of any	D Have you or your spouse ever used any	E What do you currently use
	1	2	3	4
1 Pill	yes 1 no 2	yes 1 no 2	yes 1 no 2	yes 1
2 Condom	yes 1 no 2	yes 1 no 2	yes 1 no 2	yes 1
3 IUD	yes 1 no 2	yes 1 no 2	yes 1 no 2	yes 1
4 Tubectomy	yes 1 no 2	yes 1 no 2	yes 1 no 2	yes 1
5 Vasectomy	yes 1 no 2	yes 1 no 2	yes 1 no 2	yes 1
6 Injection	yes 1 no 2	yes 1 no 2	yes 1 no 2	yes 1
7 Jelly Diapram	yes 1 no 2	yes 1 no 2	yes 1 no 2	yes 1
8 Norplant	yes 1 no 2	yes 1 no 2	yes 1 no 2	yes 1
9 Rhythm	yes 1	yes 1	yes 1	yes 1

	no 2	no 2	no 2	
10 Withdrawal	yes 1 no 2	yes 1 no 2	yes 1 no 2	yes 1
11 Douching	yes 1 no 2	yes 1 no 2	yes 1 no 2	yes 1
12 Abstinence	yes 1 no 2	yes 1 no 2	yes 1 no 2	yes 1
13 Other	yes 1 no 2	yes 1 no 2	yes 1 no 2	yes 1

4.32 How did you get to know the methods currently are being used by you?

Method	Source of information
1 .....	----
2 .....	----
3 .....	----
Codes	
Friends	1
Media	2
F/P	
field workers	3
Mid wives	4
Other (specify)	5

4.33 If the respondent is not currently using a method ask What is the reason for not using a F/P method?

Desire more children	1
Not needed	2
Health condition	3
Desire for son	4
Desire for daughter	5
Family Planning services or methods not available	6
Religious reasons	7
Economic costs	8
Other (specify)	9

4.34 Have you or your spouse thought of using any family planning method in the future?

yes	1
no	2

4.35 If "yes" what type of method have you considered for use?

4.36 Would you like to have any more children?

yes	1
no	2

4.37 If "yes" How many more children do you want to have?

4.38 Of that many children, how many sons and how many daughters?

Daughter

Sons

4.39 If "no" would you say that your desire not to have any more children is

Very strong	1
Strong	2
Not so strong	3

4.40 If you could choose exactly the number of children to have in your whole life, how many that would be?

4.41 Of that number how many boys and how many girls would you like to have?

Boys

Girls

4.42 Indicate reasons for your preference?

4.43 What may be the reasons for more/fewer children?

4.44 How many children did your parents have?

4.45 How many of them are currently alive?

SECTION IV C

4 (To be asked only of householders over age 45yrs in control areas)

4.1 Are you presently happy with the following in your village?

	Happy	Extremely Happy	Unhappy	Extremely Unhappy
1 Extent of land you have	1	2	3	4
2 Condition of housing	1	2	3	4
3 Fertility of land	1	2	3	4
4 Supply of land (crop cultivation)	1	2	3	4
5 Employment opportunities (agricultural)	1	2	3	4
6 Employment opportunities (non agricultural)	1	2	3	4
7 Educational facilities for children	1	2	3	4
8 Health facilities	1	2	3	4
9 Transport facilities	1	2	3	4
10 Marketing facilities	1	2	3	4
11 Unity in the village	1	2	3	4
12 Present condition of living	1	2	3	4
13 Opportunities for future of children	1	2	3	4

4.2 What are you most unhappy about in your village?

4.2.1 How do you compare the status of following with the condition in 10yrs back

	10yrs back (code)
1 Housing condition	-
2 Availability of food	-
3 Level of income	-
4 Land fragmentation	-
5 Land consolidation	-
6 Use of agrochemicals	-
7 Environmental pollution	-
8 Diseases	-
9 Hygienic practices	-
10 Modern farming	-
11 Livestock keeping	-
12 Cultivation of SFC	-
13 Yield	-
14 Marketing facilities	-
15 Out migration	-
16 In migration	-
17 Non farm employment	-
18 Unemployment	-
19 Regular schooling of children	-
20 Robberies	-

21 Unity in the village	-
22 Participation in community activities	-
23 Poverty	-

#### Codes

Has increased	1
No change	2
Has decreased	3

#### 4.3 What kind of occupation would you like to have for your children?

		Sons	Daughters
Government employment	1	-	-
Private sector employment	2	-	-
Agriculture	3	-	-
Other (specify)	4	-	-

#### 4.4 Where do your married children currently reside?

	Sons	Daughters
In this village	1	1
Other village (within district)	2	2
In small town (within district)	3	3
Other village (outside district)	4	4
In small town (outside district)	5	5
Big town (outside district)	6	6
Other (specify)	7	7

#### 4.5 What is your expected residence for your unmarried children?

	Sons	Daughter
In this village	1	1
In other village	2	2
In small town	3	3
In big town	4	4
As they wish	5	5
Not sure	6	6

#### 4.6 Have done anything for the future of your children?

yes	1
no	2

##### 4.6.1

		Describe
For all members	yes 1	-----
	no 2	-----
For some members	yes 1	-----
	no 2	-----

#### 4.7 What is the main source of income in your family?

Agricultural activities	1
Non agricultural activities	2

#### 4.8 Do you receive remittances from the household members who are working outside?

yes	1
no	2
NA	3

4.9 If "yes" How many members send remittances-----

4.10 How often do they send remittances-----

4.11 Have you given the inheritance right of your land to anybody?

yes	1
no	2

4.12 If "yes" State the relationship to the person concerned?

4.13 If "no" whom would you nominate as the successor?

Spouse	1
All children	2
All sons	3
All daughters	4
Youngest son	5
Youngest daughter	6
Eldest son	7
Eldest daughter	8
Undecided	9
Other (specify)	10

4.14 Have you ever considered moving away from this village?

yes	1
no	2

4.15 If "yes" what factors influenced you to consider moving?

Insufficient income	1
Insufficient land	2
Social problems	3
Family problems	4
Other (specify)	5

4.16 Are you still considering moving away from this village?

yes	1
no	2

4.17 If "yes" what places have you considered moving into?

4.18 Reasons for choice of place?

4.19 Is any of your household members is planning to move out from their village?

yes	1
no	2



SECTION V

## 5.1 Crop Management Practices

5.1.1		Maha	Yala
		A	B
Type of Seed Variety Used	<i>Traditional</i>	1	
	<i>Old Improved</i>	2	2
	<i>New Improved</i>	3	3
Method of Seeding	<i>Mud sowing</i>	1	1
	<i>Dry sowing</i>	2	2
	<i>Row seeding</i>	3	3
	<i>Transplanting</i>	4	4
Method of Weeding	<i>Manual</i>	1	1
	<i>Agro chemical</i>	2	2
	<i>Flooding</i>	3	3
First Land Preparation	<i>Manual</i>	1	1
	<i>Buffaloe</i>	2	2
	<i>2 w Tractor</i>	3	3
	<i>4 w Tractor</i>	4	4
Levelling	<i>Manual</i>	1	1
	<i>Buffaloe</i>	2	2
	<i>2 w tractor</i>	3	3
	<i>4 w tractor</i>	4	4
Threshing	<i>Manual</i>	1	1
	<i>Buffaloe</i>	2	2
	<i>4 w Tractor</i>	3	3
	<i>2 w Tractor</i>	4	4
	<i>Thresher</i>	5	5
Use of Fertilizer	<i>Organic</i>	1	1
	<i>inorganic</i>	2	2
	<i>No application</i>	3	3

## 5.1.2 Quantity of Fertilizer Applied per acre?

## 5.2 Use of Labour

Activity	Family	Hired	Exchange
1 Land Preparation	-	-	-
2 Planting	-	-	-
3 After care Operations	-	-	-
4 Harvesting	-	-	-

## 5.2.1 Use of labour for other crops

Crop-----

Activity	Yala			Maha		
	F	H	E	F	H	E
Land preparation	-	-	-	-	-	-
Fertilizer application	-	-	-	-	-	-
Weeding	-	-	-	-	-	-
Harvesting	-	-	-	-	-	-
Processing	-	-	-	-	-	-

## 5.3 Other Crops

Crops Traditionally grown			Crops currently grown			Crops currently grown with intensity		
Crop	yala	maha	crop	yala	maha	crop	yala	crop
maha	----	----	----	----	----	----	----	----
	----	----	----	----	----	----	----	----

## 5.4 Do your wife help in agricultural/other production activities?

yes 1  
no 2

## 5.5 Do children in your family contribute their labour in agricultural activities?

yes 1  
no 2

	Age < 10 yrs		Age 10-15 yrs	
Boys	yes 1	no 2	yes 1	no 2
Girls	yes 1	no 2	yes 1	no 2

## 5.6 What activities do they normally undertake?

Activity	Male children		Female children	
	<10yrs	10-15yrs	<10yrs	10-15yrs

## 5.7 Do you expect your school going children to help in the family farm?

yes 1  
no 2

## 5.8 Is there any negligence of household duties due to the engagement of your wife in agricultural/other production activities?

yes 1  
no 2

5.9 Is there any negligence of child care due to the involvement of your wife in agricultural activities/other production activities?

yes 1  
no 2

5.10 Have you experienced any shortage of farm labour during the last crop season?

yes 1  
no 2

5.11 If "yes" what were the major reasons for this labour shortage?

5.12 If "no" do you think that the supply of labour is adequate?

yes 1  
no 2

5.13 What are the major sources of labour supply for your farm?

Family labour	1
Hired labour (within the village)	2
Hired labour (Outside village within the district)	3
Hired labour (outside village from other districts)	4
Exchange labour (within the village)	5
Other (specify)	6

5.14 What are the major problems generally encountered by you in crop cultivation?

	Type of Problem
1 Land	1 Insufficient water
	2 Infertile soil
	3 Tenurial problems
	4 Other (specify)
2 Water	1 Inadequate water
	2 Excess water
	3 Distributional problems
3 Farm power	1 Not available when needed
	2 Too expensive
	3 Lack of grazing grounds
	4 Other (specify)
4 Inputs	1 Not available in time
	2 Too expensive
	3 Other (specify)
5 Marketing	1 Low price
	2 Lack of marketing channels
	3 Poor transport facilities
	4 Exploitation by middlemen
6 Finance	1 Difficult to obtain from institutional sources
	2 High interest rate
	3 Lack of own capital
	4 Other (specify)

## 5.15 State your average crop yields?

Crop	Unit	Yala	Maha
Paddy	-	-	-

## 5.16 What is the general tendency of your average crop yield?

Crop	Trend (code 1)		Reasons (code 2)	
	Yala	Maha	Yala	Maha
Code 1			Code 2	
Increasing trend	1		Infertile soil	1
Decreasing trend	2		Decreasing use of fertilizer	2
			Increasing use of fertilizer	3
			Modern/scientific farming	4
			Lack of water	5
			Improvement in water supply	6
			Too much water	7
			Other	8

SECTION VI

## 6.1 Household Income and Indebtedness

## 6.1.1 Income from Crop Cultivation (annual)

A	B	C	D	E	F
Crop	Cultivated extent	Total Output unit	Value of Output unit Rs.	Production cost (Rs.)	Amount consumed
---	-----	-----	-----	-----	-----
---	-----	-----	-----	-----	-----

## 6.1.2 Income from Livestock Keeping (annual)

Production	Unit	Total Cost Rs.	Income Rs.
-----	---	-----	-----
-----	---	-----	-----

## 6.1.3 Income from Non agricultural Production (annual)

A	B	C	D	E
Serial no. of H.H member	Activity	Value of Output Rs.	Cost Rs	Quantity Consumed Rs.
-----	-----	---	---	---
-----	-----	---	---	---

## 6.1.4 Income from Off farm Employment

Serial no. of H.H member	Employment	Monthly Income	Annual Income
-----	-----	-----	-----
-----	-----	-----	-----

## 6.15 Other Income Sources (annual)

	Description	Income Rs.
a) Renting out tractor equipment Draught animal etc.	-----	-----
b) Renting out, mortgaging out and share cropping of land	-----	-----
c) Income in kind	-----	-----
d) Food stamps	-----	-----
e) Retirement payment, social security payment etc.	-----	-----
f) Other (specify)	-----	-----

## 6.16 Indebtedness

A Source	B Amount of loan taken Code	C Purpose of loan L/Y	D Amount paid P/Y	E Amount outstanding	F Interest
1 Banks	-----	----	----	---	---
2 Employer	-----	----	----	---	---
3 Insurance Company	-----	----	----	---	---
4 Coops	-----	----	----	---	---
5 <i>Sanasa</i>	-----	----	----	---	---
6 Money lenders	-----	----	----	---	---
7 Relatives	-----	----	----	---	---
8 Friends	-----	----	----	---	---
9 Others (specify)	-----	----	----	---	---
Codes					
Paddy cultivation		1			
SFC cultivation		2			
Livestock keeping		3			
House construction		4			
House renovation		5			
Business activities		6			
Consumption		7			
Festivals		8			
Sickness, Funerals		9			
Other (specify)		10			

## 6.17 Number of Household Members with Current Account/Saving Account

Institution	S/AC	C/AC
Post office	----	----
People's Bank	----	----
Bank of Ceylon	----	----
Rural Bank	----	----
Other (specify)	----	----

## Appendix 5.1 Indices of Assets Ownership

Four separate indices were calculated to find out the relative prosperity of households in terms of the ownership of different assets. These assets included transport equipment, household durables, agricultural implements and livestock assets. A combined index was constructed pooling the scores of each asset index together in order to determine overall prosperity in asset ownership. The indices were calculated simply by assigning a score if the item was present in the household. Items considered and scores assigned under each asset index and the scores deciding poor, average and rich are given below.

### Transport Asset Index

Item	Scores
Bicycle	1
Bullock cart	3
Two wheel tractor/ Scooter/Motor cycle	4
Four wheel tractor/Bus/Lorry/Van	10
Poor	= 0-4
Average	= 5-7
Rich	= 8+

### Consumer Durable Index

Item	Scores
Radio	1
Radio & Cassette	2
TV	5
Sewing Machine	5
Cooker	4
Refrigerator	5
Iron	1
Fan	2
Wall clock	1
Poor	= 0-5
Average	= 6-9
Rich	= 10+

### Index for Agricultural Implements

Item	Scores
Iron plough	2

Wooden plough	1
Mammoty (local spade)	1
Sprayer	3
Thresher	5
Water pump	3

Poor	= 0-3
Average	= 4-6
Rich	= 7+

### Index of Livestock Assets

item	Scores
Buffaloes less than five animals	2
Buffaloes more than five animals	5
Neat cattle less than five animals	2
Neat cattle more than five animals	5
Pigs less than five animal	2
Pigs more than five animal	4
Poultry less than 20 birds	1
Poultry less than 20 birds	2

Poor	= 0-5
Average	= 6-9
Rich	= 10+

The total scores were pooled together and divided by four in order to calculate the overall asset index

### Overall Asset Index

Poor	= 0-5
Average	= 6-9
Rich	= 10+

## Appendix 8.1 Classification of Farmers on the Basis of Adoption of Cultivation Methods

The sample farmers were categorised into modern, intermediate and traditional farmers in accordance with the extent of adoption of modern methods of cultivation practices. Each cultivation method adopted by the farmers was given a score. All the scores were subsequently pooled together to decide on the above categorisation. The scores assigned to each cultivation practice is given below.

<b>Seed Paddy</b>	<b>Scores</b>
Traditional Varieties (TV)	2
Old High Yielding Varieties (OHYV)	5
New High Yielding Varieties (NHYV)	10
<b>Method of Plant Establishment</b>	<b>Scores</b>
Mud sowing	2
Transplanting	5
<b>Weeding</b>	<b>Scores</b>
Manual only	2
Chemical Only	5
Manual & Chemical	10
<b>Land preparation</b>	<b>Scores</b>
Manually	2
Buffaloe only	3
Tractor only	5
Buffaloes & Tractor	8
<b>Threshing</b>	<b>Scores</b>
Buffaloe only	2
Tractors/Mechanical thresher	5
<b>Fertilizer Application</b>	<b>Scores</b>
Less than recommended dosage	5
Recommended dosage or more	10

The total scores were pooled together and divided by six in order to calculate the overall scores obtained by each farmer

Traditional	= 0-3
Intermediate	= 4-6
Modern	= 7+

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