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**Relationship of Land Tenure on
Land Productivity, Conservation and Markets:
Case Studies on Non-Irrigated Agricultural Systems**

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This report presents the findings and recommendations of an independent group of specialists. It does not necessarily represent the official views of the government of Sri Lanka or the Agency for International development.

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**RELATIONSHIP OF LAND TENURE ON LAND PRODUCTIVITY,
CONSERVATION AND MARKETS: CASE STUDIES ON
NON-IRRIGATED AGRICULTURAL SYSTEMS**

EXECUTIVE SUMMARY

Land tenure refers to the customary and legally codified rights, which individuals or social groups have, in the use and transfer of land. In Sri Lanka, empirical studies prior to 1970's, has examined the sociological aspects of land tenure. Very few studies on economic aspects of land tenure have been undertaken during 1970's, after which, there has been a lapse of studies on land tenure.

At present, 82% of land in Sri Lanka is owned by the state. It is believed that state monopoly on land ownership may be a hinderance to efficient allocation of land in the economy. The 18% of land owned by private individuals are under different types of tenure, offering different degrees of security of ownership.

With the market economic policy adopted since 1977, it has been assumed that insecure land tenure is a cause of inefficiency in the agricultural sector thwarting national development. It is an untested hypothesis that land tenure has a significant impact on a nation's productivity and income distribution.

The objective of this study was to test the hypothesis that higher security of land tenure is related to higher levels of input and technological use and that this leads to higher productivity of land, higher labour employment and increased income. The study also tests the hypothesis that higher security of land tenure promotes better market transaction of land allowing for efficient allocation of land.

The study is based on a literature review, a sample survey of 155 households and participant observations, carried out in two Grama Seva Niladhari Divisions (GSD), viz, Nayakumbura in the Matale district and Meegahajandura in Hambantota district. Nayakumbura is in the intermediate and Meegahajandura in the dry climatic zones. Both GSDs do not have access to public irrigation water. The agricultural activities in Nayakumbura is more intensive and cash based than Meegahajandura. Nayakumbura and Meegahajandura represents traditional (pre-colonial) and modern (post-colonial) land tenure types respectively.

Seven private land tenure types were identifiable in the study areas. In ancient Sri Lanka the king was the owner of land and the right to use the land was vested among people for services provided to the state and king. These lands are referred to as praveni tenure. The lands donated by kings and laymen to temples is referred to as temple tenure. During British Colonial rule land ownership was vested with the government. Land sold to private individuals by the British Colonial government prior to 1935 is referred to as sinnakkara tenure. Land granted on long term lease under Land Development Ordinance of 1935 are referred to as LDO tenure. Short term lease of government land is referred to as temporary permit tenure. The lands under LDO and temporary permit tenure that were recently granted with land title is referred as Swarnabhoomi tenure. Encroachment tenure is illegal use of government land.

Based on literature reviewed and field observations, different tenure types have different degrees of tenure security and marketability of land. Tenure security depends on whether farmers have a deed to the land; the nature of this deed in terms of legal validity, or customary acceptance of ownership. For analytical purposes the degree of tenure security of different land tenure types were considered to be in the following descending order: Sinnakkara, Swarnabhoomi, LDO, temple, temporary permit, praveni and encroached tenure. The dominant land tenure types in Nayakumbura is pre colonial (praveni, temple, sinnakkara) and in Meegahajandura post colonial (LDO, permit, encroached).

The following four hypotheses were tested with respect to highland/homestead and lowland agricultural use.

Hypothesis 1: *Higher tenure security of land is associated with higher level of input use, agro-chemicals (weedicides, pesticides, fertilizer). This hypothesis was rejected, in the cases of weedicide use in high and low lands, pesticide use in high and lowlands, in Nayakumbura and Meegahajandura and of fertilizer use in high land and lowlands in Nayakumbura. A slight positive relationship between degree of security of tenure and fertilizer use is found in lowland cultivation in Meegahajandura. In Meegahajandura those who have secured tenure land are relatively rich.*

Hypothesis 2: *Higher tenure security of land is associated with higher use of labour. This hypothesis was rejected since there was no significant variation in the labour use in land under conditions of higher and lower tenure security. Ironically the labour use in cultivation of encroached lands is amongst the highest in Meegahajandura. This is because cultivation of encroached highlands (chena) is a main employment and income source in Meegahajandura.*

Clearing forest/shrub and maintaining such land weed free involves substantial amount of labour.

Hypothesis 3: *Higher tenure security of land is associated with adoption of improved technology, (use of tractors). The hypothesis is accepted in Meegahajandura. In Nayakumbura the variation of use of tractors among different tenure types is not strong.*

Hypothesis 4: *Higher tenure security of land is associated with increased agricultural income. An increase in net income from annual crops and seasonal crops in the homestead and high land in higher security tenure types was not clearly established, in Meegahajandura. This is because income is mostly from chena crops and wild fruits (divul) in encroached and permit tenure land rather than in secured tenure lands in Meegahajandura. The homestead lands with high secure tenure in Meegahajandura are not cultivated with seasonal crops. This is because these homesteads are not fertile. Homesteads in permit and encroached tenure lands which are newly cleared forest land and fertile are cultivated with annual crops. Hence security of tenure is not positively related to land productivity in homesteads and highland. The security of land tenure and productivity of land in paddy cultivation are positively related, in Nayakumbura and Meegahajandura.*

Since the study areas had relatively flat land, soil conservation practices was not observed, irrespective of type of security of tenure of land.

Despite low productivity of land and insecure ownership, there have been land market transactions. The land transactions that have occurred are informal and most are based on verbal acknowledgement of transfer. In some cases transactions of temporary permit holdings, lands with LDO permits or encroached lands have occurred, which is against the law. No significant difference was observed in the transactions involving secure and insecure tenure lands.

The study indicates that the degree of security of land tenure is not strongly related to use of higher levels of input and technological use, provision of more employment opportunities and increased income per unit of land. Thus, this suggests that a change in land tenure per-se towards secured tenure may not lead to improving income and reducing unemployment. However, these findings are subject to the limitations of the study being limited to specifically examining non-irrigated agricultural systems.

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CHAPTER 1

BACKGROUND AND OBJECTIVES OF THE STUDY

1.1. Introduction.

Land tenure - the customary and legally codified rights, which individuals or social groups have in the use and transfer of land - has a significant impact on a nations' productivity and income distribution. This is particularly crucial in Sri Lanka where the majority of the population is dependent on agriculture thus primarily on land.

Empirical literature is replete of sociological descriptions of the complex evolution of agricultural land tenure and its relation to social organization of Sri Lanka (Leach, 1961; Obeysekare, 1967; Abeysinghe, 1978 and 1979). Economic research on land tenure and its impact on efficiency of land use have not been undertaken up to the 1970's. Some such research has been conducted post 1970's on the impact of paddy lands act of 1958 (Sanderaratne, 1972) and more so after the implementation of the land reforms act in 1971 (Sivapalan, 1984). There onwards there has been a lapse on land tenure research. Currently there is dearth of empirical published information on agricultural land tenure and its implications on land use efficiency leading to difficulties in policy decision making on land allocation and use.

1.2. The Problem

Since 1977 Sri Lanka has followed a policy of market based economic management to achieve national development. Given the market economic policy, it has been postulated that insecure land tenure is a cause of inefficiency in the agricultural sector thwarting national development (Michael, et.al., 1990; APAP, 1991; Jayawardana, 1992)¹. The land commission as reported by APAP (1991, p17) has recommended that in the present context;

¹. For example APAP (1991, p.17) mentions:

"The country (Sri Lanka) has entered in to a free enterprise economy, where the economy has been liberalised in various ways. Even the perception that, once a paddy land should always remain a paddy land appears to be no longer valid".

"land should be allowed to compete freely in an open market to find its own level of productivity".

This study examines the validity of this postulate given its importance to current development policy.

The relevance of this research is elaborated by the policy statement of the present government as announced on the 6th January 1995 at the ceremonial opening of the parliament which mentions the following.

"Restrictions on leasing lands in agricultural settlements schemes will be immediately lifted and steps will be taken to grant freehold title to settlers. Land use choice will not be restricted".

1.3. Conceptual Framework: Ideal Type

Conducting of research is facilitated by constructing a conceptual framework that specifies an ideal type which is then used to examine the reality comparative to the ideal. Such an ideal type of relationship between land tenure security and efficiency of land use is described below based on neo-classical economic theory.

A market economic system ensures the allocation of resources to the most efficient use if perfect competition and non-attenuated property rights (secured tenure)² to resources prevail (Randall, 1987). Secured tenure to a resource is ensured through unambiguous definition and effective enforcement of ownership.

Secured tenure ensures to the owner/s of the resource exclusive rights to production/rewards

² Non-attenuated property rights required for efficient functioning of the market system has the following characteristics (Randal, 1987).

- [1] Completely specified such that ownership is clear
- [2] Exclusive such that the empowered party has the complete rights for the property
- [3] Transferable such that rights may gravitate to its highest value
- [4] Enforceable such that rights could be practiced and penalty for violation could be exercised.

gained from the use of the resource. Therefore, in the short-run secured tenure encourages individuals to use the resources in the highest rewarding (efficient) use. Further, through the possibility of market transaction (voluntary selling and buying) of a resource, secured tenure ensures the resource being used efficiently (possibly in larger farm size) in the long-run.

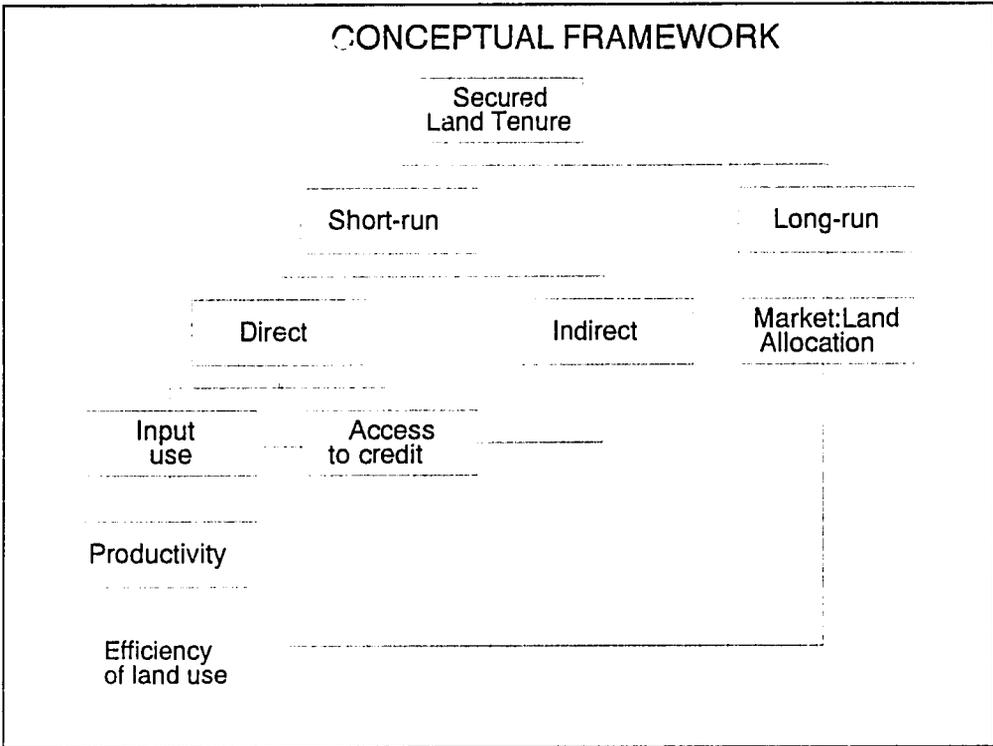
The resource that is considered in this study is agricultural land (mainly under crop cultivation). As portrayed in chart 1 the influence of tenure security on efficient use of land, occurs in the short-run and in the long-run.

In the short-run secured tenure to land encourages the use of improved technology, higher levels of inputs (including labour) and cultivation of high value crops³ that leads to higher land productivity. This is because high tenure secured land assures rewards to investments. Second, because capital scarce farmers could obtain credit through offering as co-lateral land with secured tenure. In the long-run farmers would be encouraged to invest in land conservation measures to maintain the productivity of land of land with secured tenure.

In the long-run where farmers are unable to maintain high productivity of land could readily sell such land to those who are able to use land in its most productive use (either agricultural or non-agricultural) if land has high security of tenure. Thus, in the short and long-run security of tenure ensures efficient use of land.

³ The process of shifting from the cultivation of low value crops to high value crops has been commonly referred to as crop diversification.

CHART 1.



1.4. Objectives and Hypotheses

Based on the conceptual background provided above, the broad objective of this study is to examine the following.

- [1] The impact of land tenure;
in the short-run- on use of agricultural inputs, employment, technology, land productivity and income and in the long-run- on adoption of land conservation practices.
- [2] The degree of development of land markets and its nature.

Thus, the hypotheses tested in the study are as follows.

Objective 1 will be achieved by testing the following hypotheses.

- [1] Higher tenure security of land is associated with higher level of input use (fertilizer, agrochemicals, labour etc.).
- [2] Higher tenure security of land is associated with adoption of improved technology (crop variety, use of machinery etc.).
- [3] Higher tenure security of land is related to high agricultural productivity (net income per unit land area).
- [4] Higher tenure security of land is associated with high investments in land conservation practices (investment on soil conservation and purposeful tree planting etc.).

Objective 2 will be achieved by testing the following hypotheses.

- [5] Higher tenure security of land facilitates market transactions of land (more land leases and sales).
- [6] Land with high security of tenure has higher lease and sales prices.
- [7] Qualitative information will be gathered on land market transactions, on how funds are found for leasing or purchases of land and how income from leasing in and sales of land are used.

CHAPTER 2

CONCEPTS AND REVIEW OF LITERATURE

2.1. Concepts

Land can be defined in various ways. In physical terms land implies the surface of the earth. In economic terms land is a natural resource and consists of all 'free gifts of nature'. In legal terms land consists of natural and human made resources over which possession of the earth's surface gives control to an individual or a group.

Land tenure can be defined as the customary and formally (legally as meant in the present context) codified rights to use and transfer, which individuals or groups have to land.

Security of land tenure refers to a perception of the degree of social assurance (customarily and legally) on the exclusivity of using the rewards from land use.

Land markets refer to the mutually agreed transfer of land among individuals or groups for which compensation (financial or otherwise) is paid by the buyer to the seller.

2.2. Review of Literature

The problem examined in this study requires the understanding of the following, for which literature is reviewed.

- [1] Description of land tenure types as exist at present.
- [2] Relationship of land tenure to use of inputs, technology, land productivity, income and conservation of land.
- [3] Relationship of land tenure to land market transactions.

2.2.1. Land Tenure Types

Land tenure types that exist presently in Sri Lanka are intricately related to historical, social, political and economic changes (Abeyasinghe, 1978 and 1979). The historical process of the evolution of land tenure has been reviewed by APAP, 1991. Based on this review it could be concluded that the following land tenure types exist at present. A brief description of the tenure types is provided first, and is followed by a description of the degree of security of tenure each type provides to use and transfer land.

2.2.1.1. Praveni tenure

Under the tenorial system in ancient Sri Lanka the king was the Bhoopathi (absolute owner) of land. The land user provided a 'payment' to the owner of land, the king. The payment was in the form of services rendered to the state. The lands under this form of tenure were customarily known to be owned by *praveni* tenure. In addition there are several other land tenure types that are slight variations to *praveni* tenure. viz; *nindagam*, *banadaragam* (lands used by the nobility), *gabadagam* (land producing grain for the king). The security of land tenure was customarily accepted and institutionalized rather than legally codified and institutionalized. Despite land acquisition during British colonial rule, a considerable extent of land under *praveni* tenure remains, particularly in the Matale district (APAP, 1991). This testifies to the prevalence of a customarily accepted type of land tenure, which prevail even at present.

2.2.1.2. Temple (vihare and devale) Tenure.

For religious meritorious reasons, kings as well as lay men offered lands to temples and devales' for the maintenance of these religious places of worship. These lands owned by temples were cultivated by peasants who were required to perform *rajakariyas* (services) to the temple.

2.2.1.3. Sinnakkara tenure.

Ancient land tenure systems underwent radical changes during the British colonial rule which created a land tenure free of feudal encumbrances.

The Land Commission of 1927 (which submitted its report in 1929) declared that 'crown land' (forest, unoccupied and uncultivated land) was held in trust by the state for and on behalf of the present and future generations. The recommendations of the Land Commission after some modifications were enacted as the Land Development Ordinance (LDO) of 1935. Land sold prior to 1935 to private individuals by the government under land orders are termed *sinnakkara* lands (about 2.2 million acres), for which legally abiding deeds were issued.

2.2.1.4. LDO (badu) Tenure.

Under LDO of 1935 the peasantry was granted crown land on a permanent lease (99 years). The grantee acquired a documentary title to his land and paid a rent to the government. This land is termed *badu-idan* or LDO tenure. Many colonization schemes were assigned land on LDO tenure.

2.2.1.5. Temporary Permit Tenure.

With population increases, pressure on land increased and encroachments on government land for chena took place. In the course of time the government gave temporary permits to use land to landless peasants who held encroachments. Annual permits were also granted for limited chena cultivation.

2.2.1.6. Swarnaboomi Tenure.

Since 1981, lands under LDO tenure and temporary permits were given permanent titles, under a programme referred to as swarnaboomi (based upon amendment of land development Act No.27). The government anticipated that this would give land owners more incentives

for on-farm investments and would also develop a land market (Michael, et.al., 1990).

2.2.1.7. Encroached Tenure.

Encroachments are illegal occupation of the state land which continue to occur. In 1979 about a million acres were encroached tenure land. Between 1979 to 1985, 174,029 acre were encroached.

2.2.1.8. State Tenure

At present about 82.3% of the land in Sri Lanka is owned by the state (APAP, 1991). This state monopoly on land ownership may be a hinderance to efficient allocation of land in the economy.

Thus the prevailing land tenure types could be listed as follows:

1. Praveni tenure
2. Sinnakkara tenure
3. Swarnaboomi tenure
4. LDO tenure
5. Temporary and annual permit tenure
6. Temple tenure
7. Encroachments tenure
8. State tenure

The APAP (1991, p.2) has mentioned the unavailability of information of land extent under different tenure types. In addition to long-period land tenure types discussed above, different rights to use of land in short-periods are prevalent. These are referred to as sub-tenures (discussed in section 2.2.4.2).

2.2.2. Security of Tenure

The different tenurial types discussed above have different degrees of tenurial security as perceived by the farmer. Tenurial security depends on whether the farmers have a deed or title to land cultivated; the nature of this title or deed in terms of legal validity; etc. (see section 4.1. for further details).

For analytical purposes the security of tenure can be divided by tenure types under high tenure security and low tenure security. The tenure types praveni, sinnakkara and badu are considered by previous studies under high tenure security. Temporary permits, temple land and encroachments and land under sub-tenure types of share-cropping, ande, leased and mortgaged (even if under main tenure types of praveni, sinnakkara or badu) has been considered under low tenure security (Sivapalan, 1984).

2.2.3. Impact of Land Tenure on Input Use, Land Productivity, Employment, Income and Land Conservation.

Empirical research on the above, dates back to work of Adams Smith (1937) on Wealth of Nations, where it is mentioned that share-croppers in France had no incentive to:

"in further improvement of land, any part of the little stock which they might have saved from their own share of produce, because the lord, who laid out nothing, was to get one-half of what ever produced".

This view has been empirically proved by Schickele (1941) and Heady (1947). However these findings have been refuted by Cheung (1968).

There has not been much study on land tenure and input use and land productivity in Sri Lanka. A study by Sivapalan (1984) done in Vavuniya has found statistically significant difference in labour use, cost of land preparation, cost of seed material between high security of tenure (sinnakkara, badu) and low security of tenure (rented, leased, encroached) land. High secure lands had irrigation through dug wells and were cultivated with high value crops

such as onions, chilies and groundnut. In low security of tenure lands, irrigation was not available and land was cultivated with low value crops as blackgram, cowpea and kurakkan. Similar studies using the same methodology was conducted in a village in Kalutara (Hewawitharana, 1995; Piyasekare, 1995) and the studies found that land tenure differences did not have a relationship to input use, land productivity and income.⁴

APAP (1991) has reported that productivity of temple land had dropped after the Paddy Lands Act of 1958 due to increased encroachments and neglect. This is despite some of these lands being the best lands found in the area.

Though not based on empirical research, there is a strong belief that secure tenure leads to use of higher levels of inputs and improved technology leading to increased land productivity, employment, and income (Sanderatne, 1972; APAP, 1991). However, doubts have also been expressed on the achievements of past reforms in land tenure on increasing agricultural productivity by the paddy land reform in 1958 (Sanderatne, 1972) and by Land Reform Act of 1971 (Sriharan, 1977, Wanigaratne et.al., 1978). These tenure reforms may have elevated the social status of tenants and landless peasants (APAP, 1991) though not land or labour productivity. It is mentioned (APAP, 1991, p. 16);

"Since national independence, Sri Lanka has made significant progress in achieving a higher productivity per unit area. However, there is some consensus that, this was more due to technical advances than to any tenurial institutional reforms".

It has been reported (APAP, 1991) that 75% of the subsidiary food crops as been produced in chenas which are largely on encroached tenure.

The relationship between security of land tenure and conservation has been both theoretically and empirically examined in international literature (Blackie and Brookfield, 1987). In general the conclusion is that insecure land tenure leads to lack of conservation and

⁴. Both studies are undergraduate thesis, conducted in the Department of Agricultural Economics, Faculty of Agriculture, University of Peradeniya.

degradation of land. No studies have been done in Sri Lanka on the impact of land tenure on land conservation.

2.2.4. Relationship of Land Tenure on Transfers of Land and Land Markets

2.2.4.1. Land Tenure and Transferability

The owner of praveni and sinnakkara lands has legally binding secured property rights over the land. These lands can be sold, leased and can be inherited by anyone or several persons.

For LDO lands, ownership rights are vested with the allottee who is legally prohibited from leasing, or selling the land. The right of succession to the land is confined to a single successor to be nominated by the allottee. However, evidence suggests the occurrence of hidden/informal land markets particularly in irrigation systems, despite legal constraints (see table 1).

TABLE 1. TENURE ARRANGEMENTS IN MAHAWELI H

Tenure type	Maha 81/82	Yala 82
Leased out completely	23%	19%
Leased out partially	17%	19%
Mortgaged	2%	2%
Share cropping	5%	9%
Owner cultivated	53%	51%

Source: APAP (1991).

Swarnaboomi tenure is not freehold (freedom for the owner to transfer to heirs or sell at own will). As with LDO tenure subdivision and multiple ownership is legally prevented. However, in implementing the swarnaboomi programme of granting deeds, it has been expected that the program would lead to more freedom for individuals to decide on land use thus leading to increased land productivity and land markets. The impact of the swarnaboomi programme has not yet been studied.

Property rights of temple and devale lands are exercised by the chief incumbent of the temple and devale according to his wishes. However, after the Paddy Lands Act of 1958 changing of tenants was prohibited. Sales of land is customarily unaccepted. APAP (1991) has reported large scale encroachment of temple lands.

Temporary and annual permit land are state lands issued to the farmer for cultivation on a temporary or annual basis. The permits have to be renewed frequently and sale or lease of land is not legally permitted.

2.2.4.2. Sub-tenure of land (land transactions)

The land under main tenure types are cultivated under different sub-tenure types (transactions), such as joint cultivation (thattumaru and kattimaru), ande, leased, mortgaged.

The joint cultivation of land has evolved in Wet Zone areas where land parcel sizes have become so small that further division is not feasible or economical. Therefore the right of ownership to cultivate is rotated season by season in an established order. There are various forms of joint ownership such as thattumaru (same land among co-owners) and kattimaru (different land plots among co-owners) (Moor and Wickremesinghe, 1978).

The ande cultivation (share cropping) is again a sub-tenure type very prevalent in Wet Zone. In this case, a tenant cultivates the land and pays the land lord a proportion of the total produce. The cost of inputs to production could also be shared between the tenant and landlord. The nature of sharing input costs and output produced varies between different regions and has also varied overtime (Sanderatne, 1972). The Paddy Lands Act of 1958 was

an attempt to give tenants more security of tenure and more assured rewards.

Land leasing is more recent in origin, where the land cultivation right is temporarily vested to one who pays for such right. The landowner generally does not share the cost of inputs. The payment for land generally occurs prior to cultivation. However there could be exceptions to the above where payment is by kind the end of the season.

Mortgaged tenure is where land has been obtained as security (co-lateral) for a loan and the creditor has the right to cultivate until the loan is paid back.

Rural agricultural land markets are less developed compared to urban land markets (Prematilake, personnel communications).⁵

⁵ Prematillake is currently conducting a research study as a requirement for M.Phil degree on "Comparative Analysis of Urban and Agricultural Land Markets", at the Post Graduate Institute of Agriculture, University of Peradeniya.

CHAPTER 3

METHOD OF DATA COLLECTION AND ANALYSIS

3.1. Data Collection Methods

"Obtaining data on land ownership, tenure and measurement is always difficult and expensive. Difficulties arise because of farmers' fear and suspicion of government interference and because of complexity of landownership pattern. Often local conception of concepts of ownership is different to concepts defined by the researcher."

(Jackson, et.al.. 1983).

Whilst acknowledging the above observation an attempt was made to collect reliable information within the constraints of time and other resources. The methods of data collection used are explained below.

Secondary and primary data was collected. Secondary data was collected from published literature, official documents, maps etc. Primary data was collected from two GSDs using two methods viz:

[1] data from sample GSDs was obtained with the aid of a formal questionnaire;
and

[2] through informal participant observations and interviewing key informants.

Two Research Assistants were employed for the field survey in Nayakumbura GSD in Matale and four Research Assistants (two in addition to those who worked at Nayakumbura) were employed for field surveys in Meegahajandura GSD in Hambantota. They were exposed to the objectives of the study and were trained on techniques of interviewing.

3.2. Selection of Study Area

Most recent studies on land tenure in Sri Lanka have been done in irrigated settlements.⁶ The two GSDs for the present study were selected to represent farming conditions in non-irrigated Dry and Intermediate Zones. Thus, Hambantota and Matale districts were selected to represent Dry and Intermediate Zones respectively (see map 1).

Preliminary/ reconnaissance field surveys were done in the Matale and Hambantota districts to select sample GSDs. Government and non-governmental officials at the district and GSD levels were consulted.

Official records and maps on land use and land tenure were examined in several GSDs, i.e., 5 Gramaseva Niladhari divisions in Matale (Lenadora, Nalanda, Karawilahena, Kumbiyangahaela, Nayakumbura) and 10 Gramaseva Niladhari divisions in Hambantota. The socio-economic profiles of GSDs were examined, including land tenure patterns.

Upon considering mainly the variability of land tenure patterns, dynamism of agriculture, and also the availability of secondary data/ cooperation of the Grama Niladhari, availability of accommodation facilities for research assistants, two GSDs were selected.

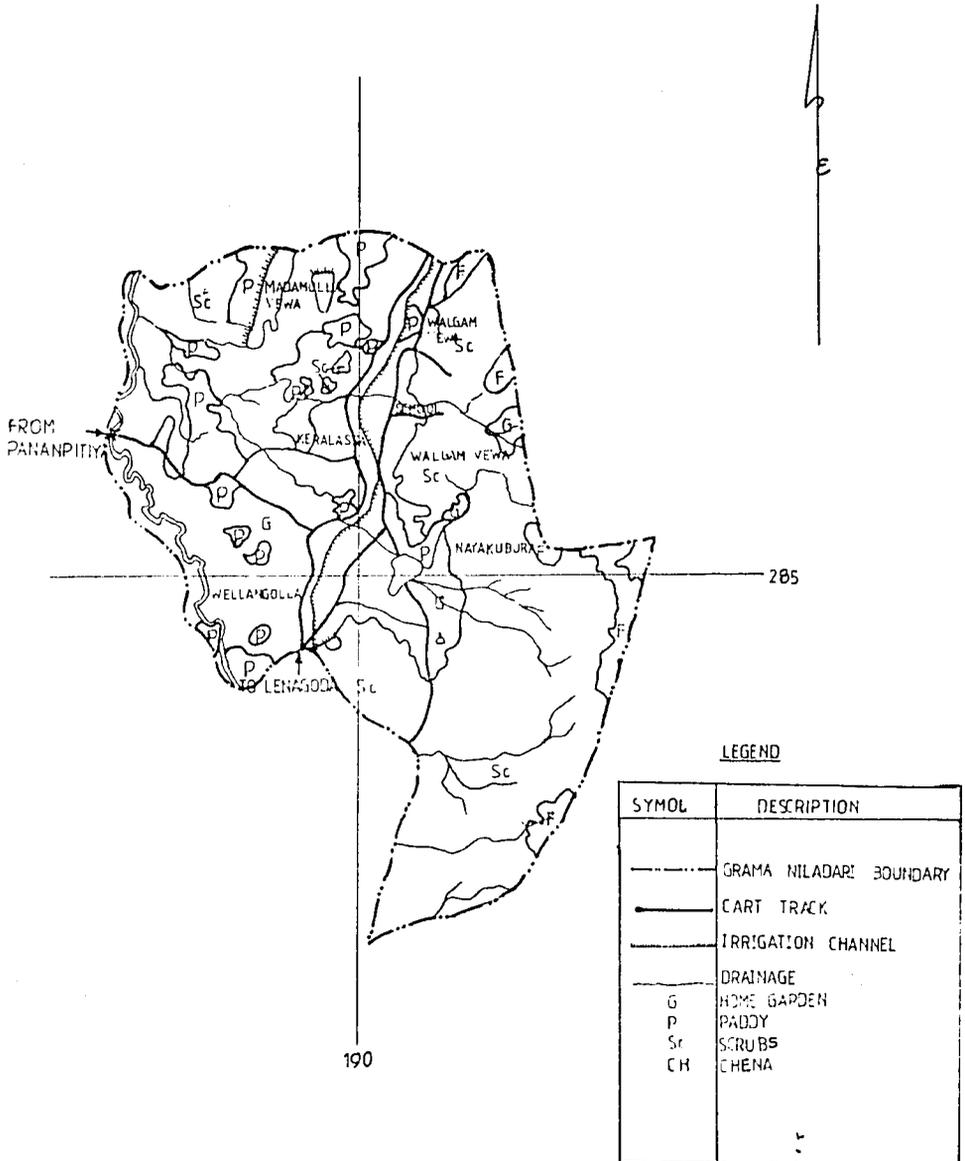
3.3. Sampling Method

The sample framework was the list of GSD households maintained by the Grama Niladhari. The procedure adopted was to initially select a household randomly and there on wards consider the every i^{th} household ($i = \text{population}/50$) as a sample unit, to arrive at 50 sample units from each GSD. However, subsequently 75 sample units were surveyed considering the variability of perceptions on land tenure systems of people in Nayakumbura and considering the migrant nature of the population in Meegahajandura 80 sample unit were surveyed⁷.

⁶ Communications with USAID officials.

⁷. Thus, though TOR specified 100 households from two GSDs to be chosen for the questionnaire survey 155 households (55% increase) were finally chosen for the questionnaire survey.

GRAMA NILADARI DIVISION - NAYAKUBURA



SCALE :- 1 : 50,000

3.4. Analytical Methods

Basic statistics (average and percentage) are estimated to examine interrelationships between land tenure, input use, yield, income, etc. Current development of the land market is described using basic statistics and observations⁸.

3.5. Description of Study Area

The study area is described based on secondary and primary information. The primary information on socio-economic variables is given in appendix.

3.5.1. Nayakumbura (Matale district)

Geography: Nayakumbura GSD could be accessed by turning off to the right from the Matale Dambulle main road at the Lenadora junction. The GSD is about 3.5 miles off the Lenadora junction. The Nayakumbura GSD is composed of two villages, viz; Nayakumbura and Wattedgammedde (see map 2).

The land in the area is undulating with reddish brown earths. Irrigation facilities are not available.

Population: The population in Nayakumbura is 972 in 207 families and 189 households. The entire sample consists of Sinhalese. Whilst most are ancestral settlers, a few families have migrated to the area.

Social: As evident in appendix tables, the level of literacy is extremely low. Only 29% have obtained school education above grade 6. The age of marriage is around 15-18 years of females and 18-22 of males. About 68% of the families have 4-6 members.

⁸. USAID clearly pointed out that a simple analytical model should be adopted. Further, since this study was treated as a case study, number of observations on aspects were insufficient for highly advanced statistical analysis.

It was observed that there was much social conflict in the GSD. Addiction to liquor and problems arising from such was also observed.

Economic: Although the villagers are although involved in cash cropping, 187 households receive food stamps. The main source of income is from farming. Paddy is cultivated in maha and onions in yala in low lands. Highlands are cultivated with semi-perennials such as banana and annuals such as greengram, cowpea, beans, tomatoes, brinjal etc.,.

Farming is the main source of income. There are 18 people employed in the national security service, 6 working as carpenters, 3 working as masons, and 13 employed overseas.

As evident in appendix table 2, only 31% have permanent housing. More than a 50% of the houses are less than 400 square feet.

Of the available labour force, 80% and 26% of males and females are employed respectively.⁹ The main source of employment (69%) is in agriculture and next is casual labour (17%), as given in appendix table 3.

About 45% receive support from social welfare programmes. The average monthly household income is around Rs. 2000/=. See appendix table 4.

Land size: Nearly 37% own 2 acres of land, whilst about 7% own more than 8 acres of land. See appendix table 5.

Land tenure: The total land extent of Nayakumbura GSD is 625 acres. The present distribution of land under different tenure arrangements is given in appendix table 6.

⁹Although the reported employment of women is low, women are employed in some farming activities. Women generally do not claim or are socially considered to be employed in farming.

Although the Grama Niladhari maintains lands owned as praveni, most of these lands are owned by the Dambulla temple. Information on lands owned by the temple is maintained by the temple in a document referred to as the 'commissioners book'.

According to a key informant, the land during the period of king Walgambahuwa was vested to the Dambulle Raja Maha Vihareya¹⁰. Six families that lived in the area were given rights to use the land in the area. They were required to provide services to the temple.

The provision of services to the temple has gradually lessened and first a system of first payment in kind and next a system of cash payments to the temple has evolved. Accordingly, earlier 5 bushels of paddy per acre was paid and subsequently Rs. 10 per acre was paid to the temple and Rs 6 per acre to the Government¹¹. These payments too are rarely made. The present perception among people is that the land is owned by the people on praveni (owned by heritage). According to people, the temple lands are transferable/saleable even outside of the family. If a family was unable to perform the required services to the temple the land could be transferred/ leased/ sold to a family that could perform such services to the temple. Such transfers are restricted to be among buddhists. However, there are few cases of land being transferred to non-Buddhists. Thus, the land tenure type has changed from temple tenure towards paraveni tenure. People thus perceive and act as if the land is owned by them on paraveni tenure.

Even at present people 'owning' temple lands do not have the right to fell trees. Felling of trees requires the approval of the temple and 10% of the income has to be paid to the temple.

3.5.2. Meegahajandura (Hambantota district)

Geography: Meegahajandura is located in the Hambantota district, Sooriyawewa AGA division. It could be accessed by turning off to the left on the Hambantota to Kataragama

¹⁰. The folkstory is that the King Walagambahu had ordered a drum to be beaten at the Dambulla temple and land that covered the extent of hearing the drum beat was vested to the temple.

¹¹ Villagers prefer this change.

road about 2 miles off Hambantota. Meegahajandura GSD consists of two villages, viz; Meegahajandura and Kaputissayaya (see map 3).¹²

Infrastructure: The GSD is accessible by motorable road from Hambantota. There are 25 permanent houses, 113 semi-permanent houses and 50 temporary houses. This indicates the level of poverty, insecurity of land tenure, and migrant nature of the population.

Water is scarcely available. There are 20 dug wells some dug privately, but most by the government. The water in some of these wells are saline and is neither suitable for drinking or for irrigation.

Population: The population of the GSD is 836 consisting of 379 females and 457 males. In 1993 there had been 210 families living in the area. However the number of registered households is 188.

Social: According to a key informant, the original settlers of the area had been three families. Most of the praveni and sinnakara lands of today were originally owned by these three families.

Most of the people currently living in the area are migrants from areas such as Beliattha, Walesmulle. Such migration has first occurred during mid 1960's and mid 1970's.

Only 35% of the people have received education above 6th grade (appendix table 1). Fifty five percent of the families have 4-6 members per family.

Economic: The main source of income (cash or subsistence) is from farming. The dominant form of farming is chena cultivation. More than 50% have more than 4 acres of land (appendix table 5). This is comparatively a very high extent of land ownership. There are 7 carpenters and 4 masons. Of the labour force 71% and 30% of males and females

¹² This demarkation has been done recently. With this demarkation, the original area of the GS division has been made into 3 GS divisions. The original GS division area was more based on a natural watershed and command area of land use, but this is not the case with the present division.

respectively are employed. About 86% are employed in agriculture. Employment as casual labour is low, perhaps due to availability of land (appendix table 3). One hundred and six families receive food stamps and 97 receive Janasaviya aid.

Land Tenure: As mentioned earlier, the original settlers of the area were 3 families whose descendants currently own most of the praveni and sinnakkara land.

In 1953, 69 families had been settled on LDO tenure lands with 2 acres of high land and 3 acres of lowland. Some of the low lands (stage II of augmenting the Meegahajandura water supply) distributed have been abandoned due to lack of sufficient water a small extent of these lands are now being cultivated with highland crops.

During 1960-1965 under middle class land settlements 13, families have been settled with land allotments ranging from 5 to 15 acres and a maximum of 50 acres. Of these families, 12 left the land upon clearing the land of trees of timber value. Post 1965 there has been an influx of migrants who have encroached the middle class land settlements and particularly land besides the Malalara (river)¹³. The in-migration has continued and heightened during the 1970's with improved road accessibility and infrastructure development in the close vicinity that is associated with the development of the Mahaweli project.

Since 1986 up to 1995, swarnaboomi land deeds have been given to 25 families. According to the GN, most people are not interested in obtaining Swarnabhoomi deeds because of the need to pay Rs 250/= . Also, issuing such deeds take a long time and leads to conflict because of the historically created complexity in land tenure with land being granted and then abandoned.

Recently temporary permits have been issued for those encroached lands cultivated by Janasaviya recipients. A large extent of land that is being presently cultivated and even those on which people live in permanently built houses are encroached land.

¹³ There is an expectation the water would be diverted from Udawalawe reservoir though Mallaara to irrigate these areas.

Several families (some who had to abandoned lowland cultivation) work as tenants in the low land praveni lands. In some cases tenancy is shared among two families. This is done to share costs and labour. Tenancy is offered on an informal competitive bidding of the payment. The one who promises to pay the highest amount in share of harvest receives the tenancy right. Payment of 1/4 of the harvest also operates in tenant cultivation. The landlords who give land on ande either have substantial extent of lands or have non-farm income, which allows them to give land on ande.

Highlands are generally not cultivated under tenancy or lease. Some extent of leasing of highland is found in land beside the Malalara. The abundance of highland that could be encroached is a reason for lack of transactions in high land. However, with increasing human-wildlife conflicts, further encroaching of highland is coming to its limit. Shifting cultivation of chena is now not been practiced extensively. Instead encroachments are largely due to increased population wanting of land to settle. Even the land cultivated for chena has informal tenurial rights.

Those close to jungles are now engaged in animal husbandry, due to wildlife damage on crops and also because animals particularly goats and cattle could graze in the forest.

The lands besides the Malalara are perceived to be of high value. Informal leasing and sales of these lands have occurred. Some highlands that had been encroached have been sold.

Meegahajandura was found to be well representative of chena cultivation. Land markets were slowly developing due to the proximity to Mahaweli project area and due to the expectation that the Malalara irrigation development project that will provide irrigation water to the Meegahajandura GSD.

CHAPTER 4

ANALYSIS AND INTERPRETATION

4.1. Analytical Basis

Two main types of land uses are identifiable in the study area viz; highland and lowland. Highlands are used as homestead (land on which the permanent house is located), or for permanent to semi-permanent cultivation with secured tenure, and chena cultivation on encroached state land¹⁴. Since only very few households had highland other than homestead (in Nayakumbura), those few were considered as homestead in the analysis. Since chena falls exclusively to tenure category of encroachment, chena is analyzed separately.

Based on literature reviewed and field observations, the degree of tenure security and marketability of land of the different types of land tenure was examined. The degree of security of land and marketability are dependent on, security offered either legally (by possession of a deed that is legally accepted) or customarily (by way of social acceptance of ownership).

For analytical simplicity 3 possible degrees of security of tenure as high, medium and low, with quantitative scores assigned as 3, 2 and 1 have been considered. The degree of security of tenure of each land tenure type is estimated by summing the scores given to individual criteria. Thus, based on analysis (table 2) the degree of security of tenure of different tenure types could be arranged in the following descending order: sinnakara; Swarnabhoomi; LDO; temple; temporary permit; praveni; and encroached tenure. The subsequent analysis is presented on this basis of ascending order of security of tenure of different tenure types.

The presentation is made graphically for simplicity. The detailed tables upon which the graphical analysis is based are given in appendix tables.

¹⁴ However the distinction between highland and chena is rather vague.

The sequence of the presentation of the analysis is based on the conceptual framework presented in section 1.3 (see chart 1). Thus, the short run effects of secured land tenure on productivity of land is examined first and the effects of secured tenure on land markets is examined next. In each case homestead/highlands and low lands are analyzed separately.

TABLE 2. THE DEGREE OF SECURITY OF TENURE OFFERED BY DIFFERENT LAND TENURE TYPES.

Tenure type	Legal security	Customary security	Transferability-inter generation	Sales	Collateral possibility	Degree of Security of tenure
Sinnakkara	high (3)	high (3)	high (3)	high (3)	high (3)	(15)
Temple	medium(2)	medium(2)	high (3)	low (1)	low (1)	(9)
LDO	high (3)	high (3)	medium(2)	low (1)	medium(2)	(11)
Swarnabhoomi	high (3)	high (3)	medium(2)	low (1)	high (3)	(12)
Permit	medium (2)	low (1)	Medium (2)	low (1)	medium (2)	(8)
Encroached	low (1)	low (1)	low(1)	medium (2)	low (1)	(6)
Praveni	low (1)	medium(2)	medium (2)	low (1)	low (1)	(7)

4.2. Analysis

4.2.1. Land Tenure Distribution

According to table 3 and 4, it is observed that most of the lands in Nayakumbura are of more secure tenure (sinnakkara)¹⁵ and in Meegahajandura more is of insecure land tenure of LDO, permit and encroachment. It is also observed that land with higher security of tenure particularly in Nayakumbura have a higher cropping intensity.

TABLE 3. EXTENT OF LAND OWNED AND CULTIVATED BY TENURE TYPE OF HOMESTEAD/HIGHLAND.

NAYAKUMBURA			
Tenure Type	No. of Households	Total Extent Homestead/Highland (acres)	Average Extent Homestead/highland (acres)
Sinnakkara	28	71.620	2.558
Temple	2	2.750	1.375
Praveni	45	63.500	1.411
MEEGAHAJANDURA			
Sinnakkara	2	3.000	1.500
Swarnabhoomi	8	17.000	2.175
LDO	12	23.500	1.958
Permit	15	31.000	2.067
Encroached	43	133.760	3.111

¹⁵Although the farmers perceive that these lands are owned under sinnakkara tenure, these lands really are temple tenure land, as mentioned by the high priest of the Dambulla temple.

TABLE 4 EXTENT OF LAND OWNED AND CULTIVATED BY TENURE TYPE OF LOWLAND

NAYAKUMBURA						
Tenure type	No. of house holds	Total extent (acres)	Extent cultivated annual crops Maha (acres)	% of extent cultivated Maha (acres)	Extent cultivated annual crops Yala (acres)	% of extent cultivated Yala (acres)
Sinnakara	21	24.00	19.75	82.3	3.50	14.5
Temple	3	2.75	0.50	18.2	0.50	18.2
Permit	2	1.50	1.25	83.3	0.00	0.0
Praveni	13	10.25	7.75	75.6	0.00	0.0
Encroached	2	2.00	1.50	75.0	1.00	50.0
MEEGAHAJANDURA						
Sinnakara	6	10.00	5.50	55.0	0.00	0.0
Swarnabhoomi	2	6.00	3.00	50.0	0.00	0.0
LDO	10	24.50	8.66	35.3	0.00	0.0
Permit	6	18.00	3.50	19.4	0.00	0.0
Encroached	6	17.75	7.25	40.8	0.00	0.0

4.2.2. The Impact of Land Tenure in the Short-run.

4.2.2.1. Use of Chemical Agricultural Inputs.

It is hypothesized that higher tenure security of land tenure is associated with higher level of input use (fertilizer, agrochemicals). With reference to appendix table 6 and charts 2-4

The above hypothesis is acceptable in the case of use of fertilizer in low lands. In all other cases (use fertilizer in highland and in the use of agrochemicals) the hypothesis is rejected. Security of tenure is not found to be positively related to increased agricultural input use.

4.2.2.2. Employment.

It is hypothesized that high tenure security of land is associated with higher use of labour (employment). The data of both GSDs show that there is no variation of labour engagement in homestead/highland cultivation among different tenure types. The per acre annual labour units engaged in highland cultivation in Nayakumbura is between 44-48 units. Meegahajandura shows a low figure (31-35 units). As for lowland cultivation, the highest number engaged in cultivation of land in Nayakumbura is reported from land which has temporary permits (113) and the lowest is reported from temple land. Meegahajandura also shows a similar pattern where the highest number of labour units is employed in cultivation of encroached lands. Thus this rejects the above hypothesis.

4.2.2.3. Technology.

It is hypothesized that higher tenure security of land is associated with adoption of improved technology (crop variety, use of machinery, etc.). With reference to appendix table 8 and chart 6 it is evident that the above hypothesis is strongly acceptable in the case of Meegahajandura, in considering the use of tractors.

CHART 2

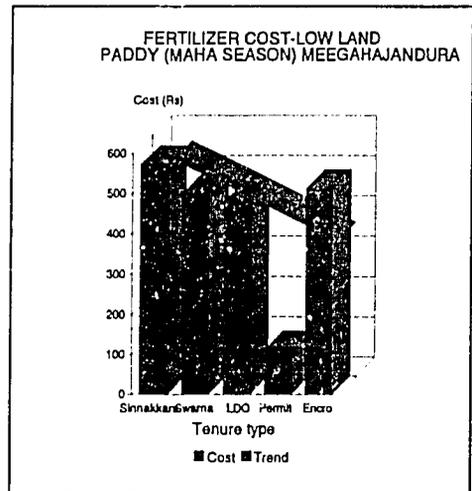
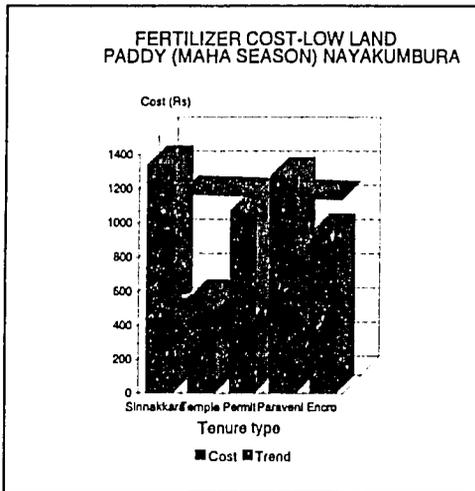
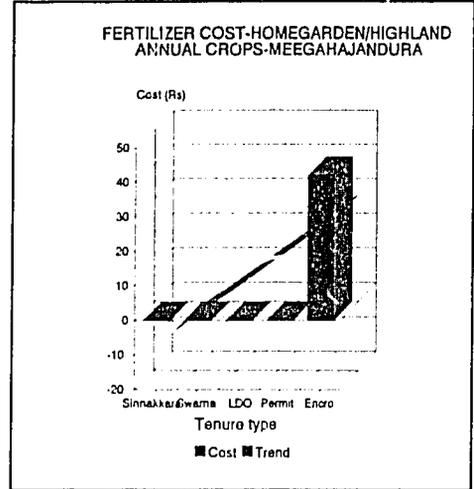
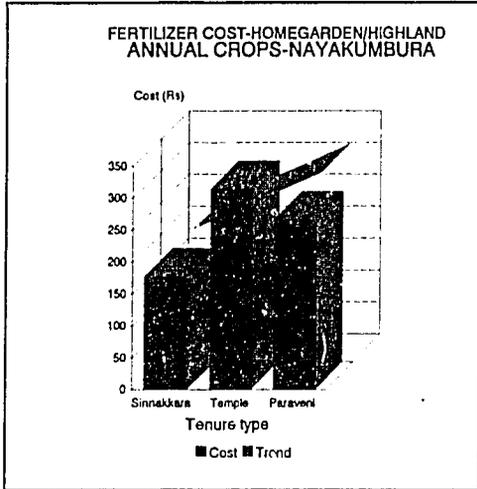


CHART 3

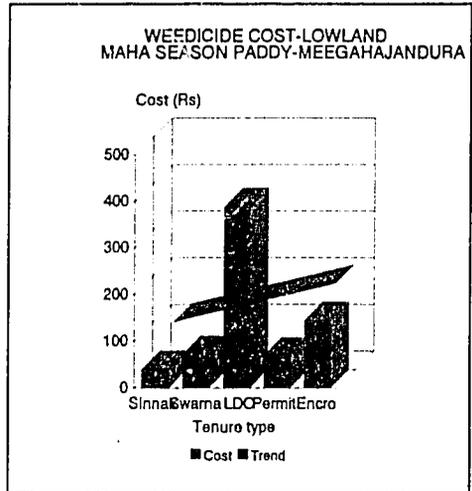
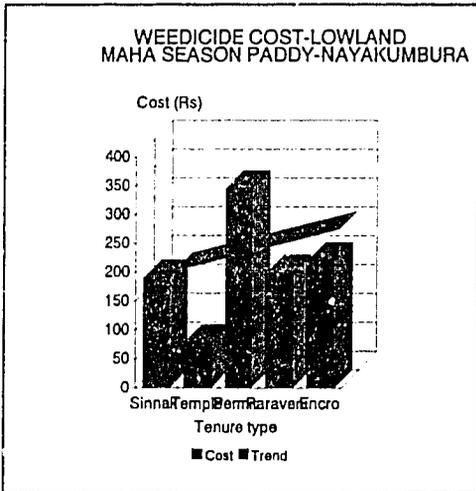
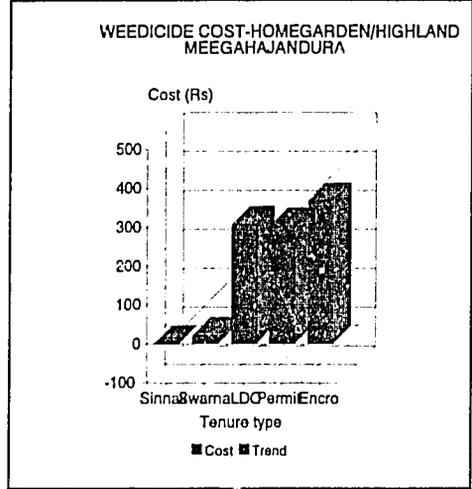
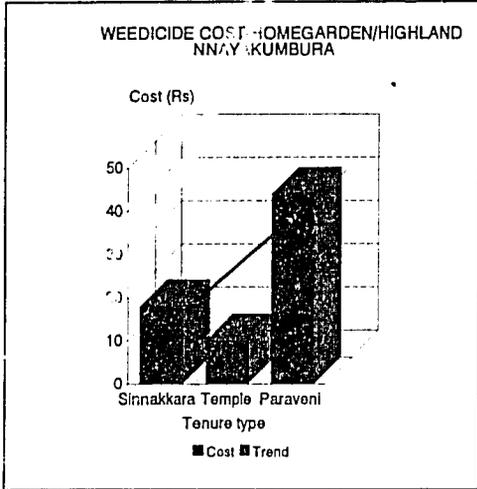


CHART 4

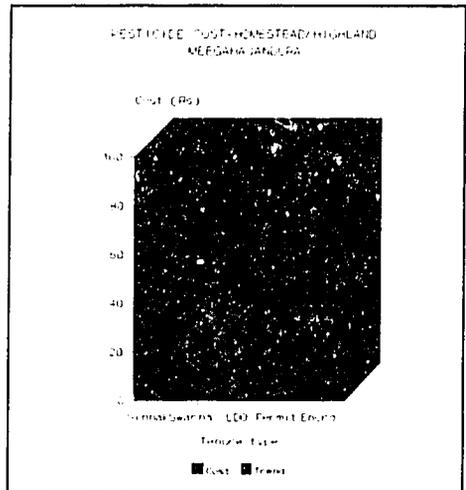
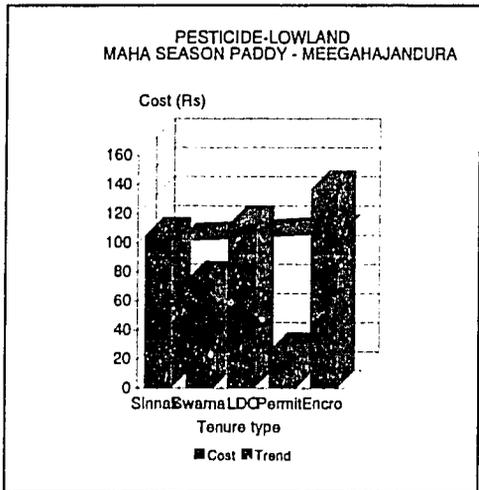
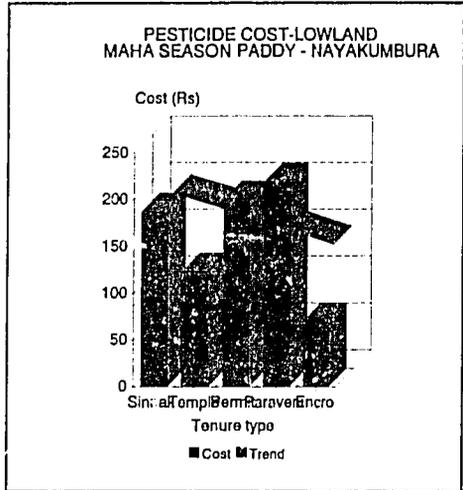
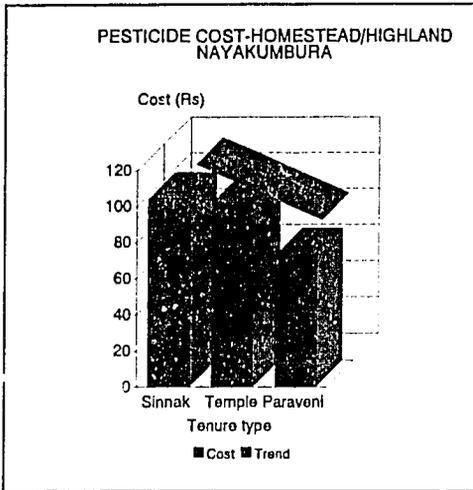


CHART 5

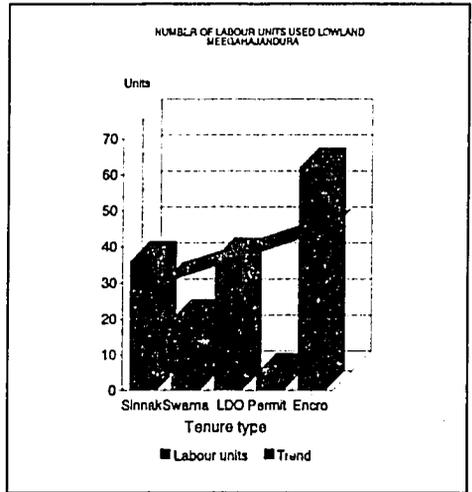
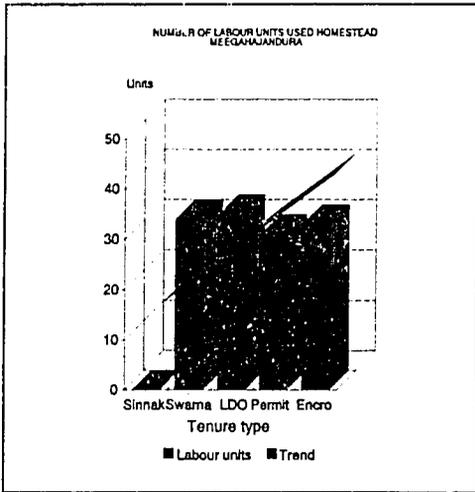
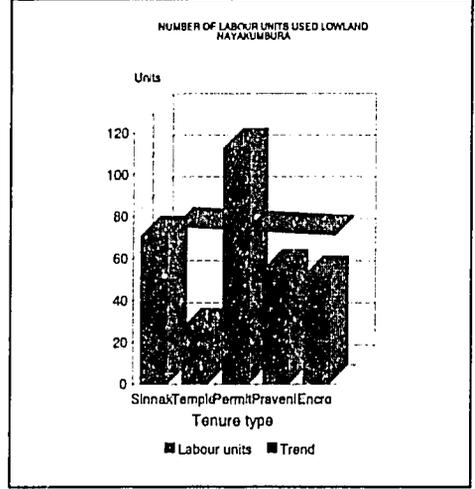
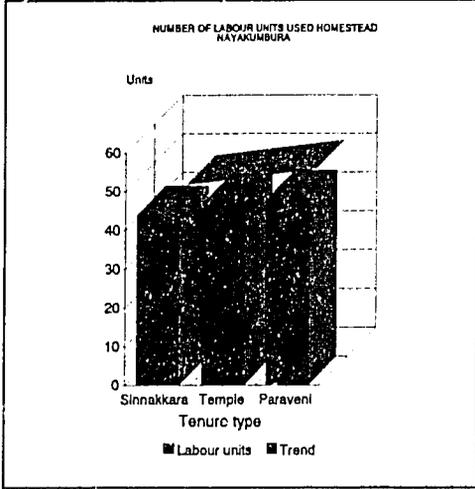
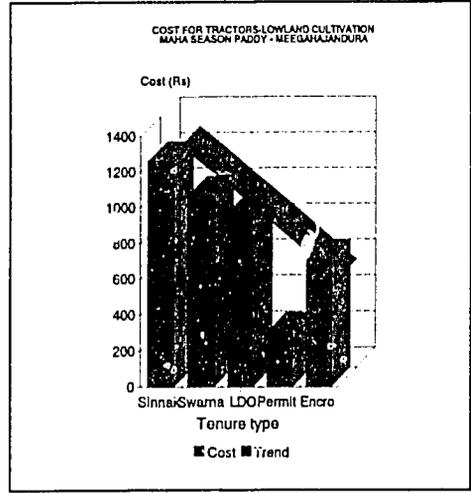
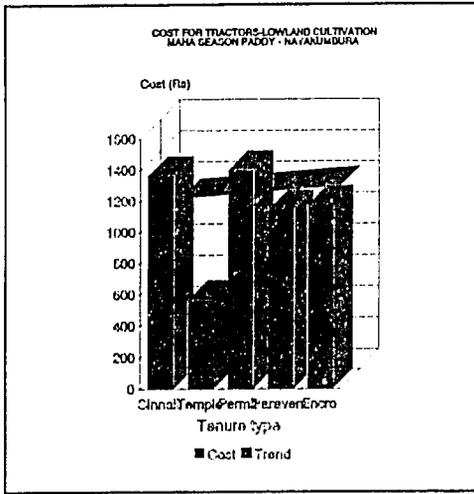


CHART 6

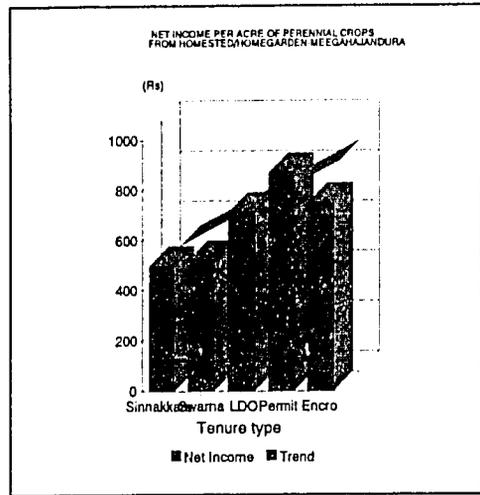
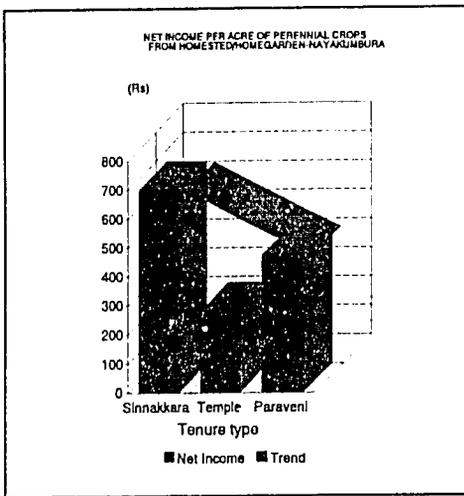


4.2.2.4. Land Productivity/ Income

Homestead: As evident in charts 7-10 and appendix table 9, the net income is high in high tenure secured lands of sinnakkara, praveni and very low in temple land in Nayakumbura. The homesteads in Nayakumbura have perennial crops where the land tenure is secured. As evident in appendix table 10 the number of trees grown is high in lands with high security of tenure in Nayakumbura.

However, a clear increase in net income from of annuals crops and security of tenure cannot be observed in Meegahajandura. The income is mostly from wild fruits (divul) which is found more closer to the forest in encroached and permit tenure land rather than in earlier cleared lands owned under more secured tenure as LDO. Perennial crops are not extensively cultivated in homesteads the Meegahajandura (see appendix table 11). This is because (as mentioned by a key informant) of an impervious gravel layer found at shallow depths of the soil and due to prolonged droughts experienced in the area, both which restrict availability of water to perenial crops.

CHART 7



Annual crops: As evident in chart 8, a clear difference in the productivity of land between different types of land tenure cannot be observed in the homesteads in Nayakumbura. The homesteads are cultivated with vegetables with good marketing potential. Hence, the income is rather high. Security of tenure does not influence short term annual cropping productivity in this area. As found through discussions with villagers the perceived security of tenure does not differ much between the land tenure types (Sinnakkara, praveni and temple).

In Meegahajandura the lands with high secure tenure are not cultivated with seasonal crops. This is particularly because these homesteads are old and are not fertile (see appendix table 12). Homesteads in permit and encroached tenure lands which are newly cleared forest land being fertile are cultivated with annual crops. Hence security of tenure is not positively related to land productivity in homesteads.

Chena: Chena cultivation is done in encroached land. (see appendix table 13). The productivity of chena lands is relatively the high in Meegahajandura. This could be a reason for high levels of state land encroachments in Meegahajandura.

CHART 8

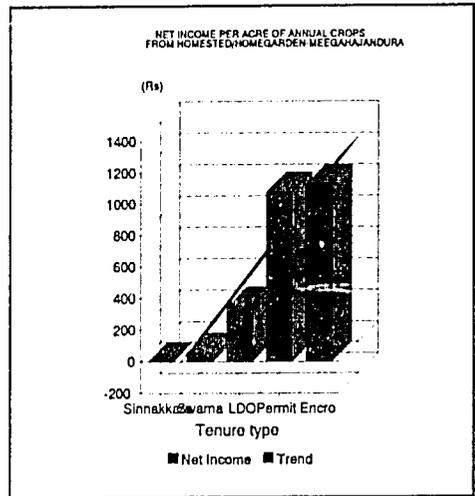
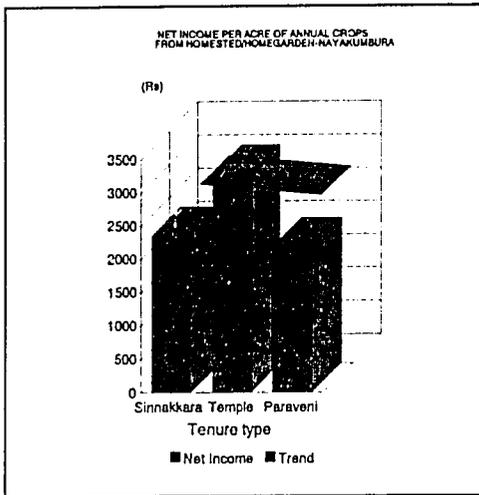


CHART 9

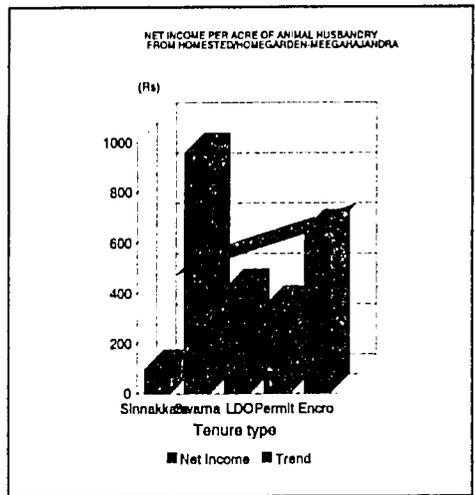
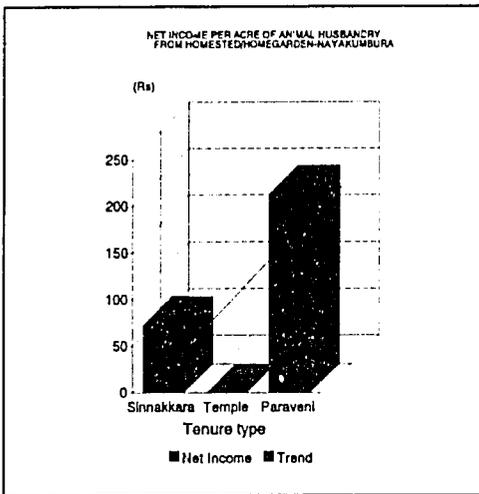


CHART 10

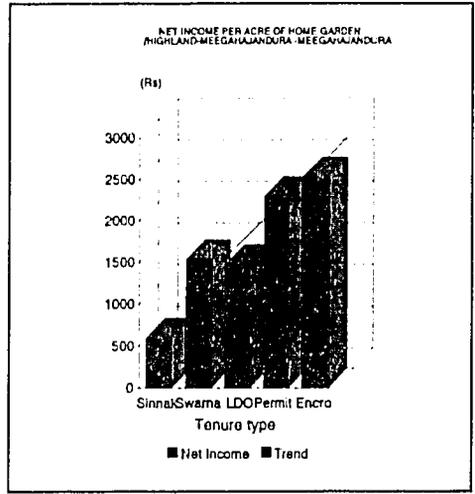
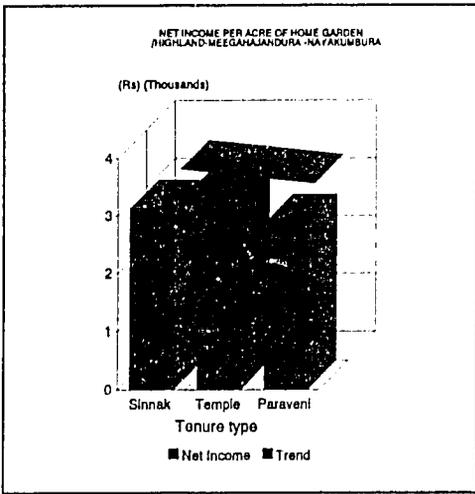


CHART 11

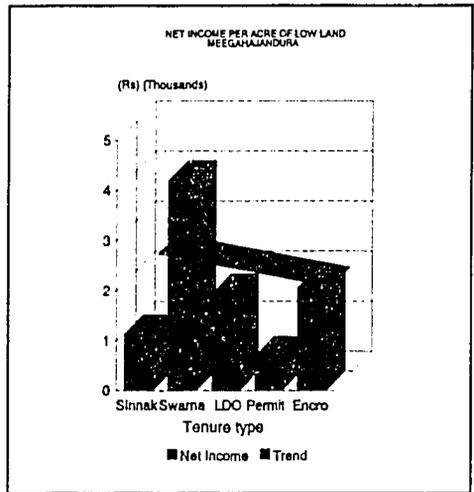
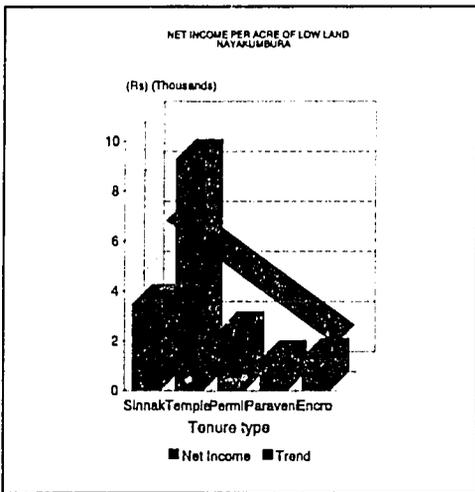
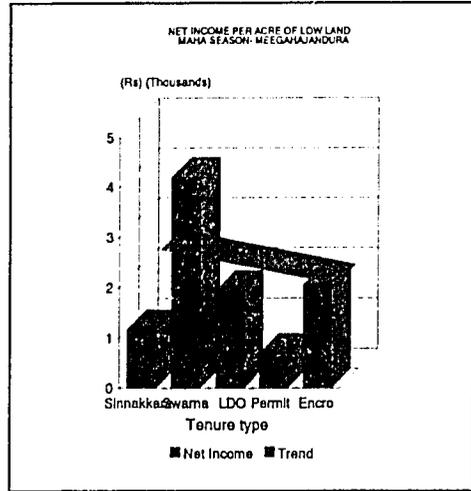
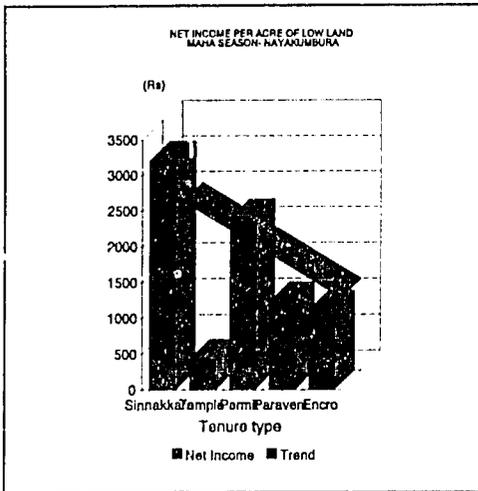


CHART 12



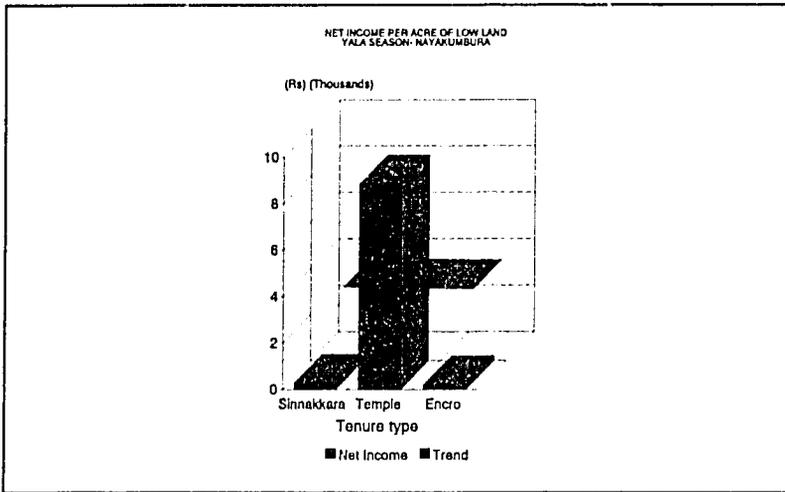
Animal husbandry: Since annuals crops are cultivated extensively in homesteads of Nayakumbura, animal husbandry is not practiced (appendix table 10). However, in Meegahajandura where annual crops are not much cultivated and where lands are close to forests people have undertaken to husband animals in homesteads. Though animals are kept in homesteads during nights occasionally, most often animals are free grazed in uncultivated lands and forests. Thus, although productivity of land appears to be high in low tenure secured land, the relationship is spurious (see appendix table 11) because animals are grazed in other lands or forests.

Lowland: In both Nayakumbura and Meegahajandura (charts 11-13 and appendix tables 14 and 15) the security of land tenure and productivity of land in paddy cultivation are clearly positively related.

Lowlands are uncultivated in Meegahajandura in yala whilst the lowlands are cultivated in yala in Nayakumbura.

A summary of land productivity from homestead, lowland and chenā under different tenure types in Nayakumbura and Meegahajandura is given in table 5.

CHART 13



4.2.3. The Impact of Land Tenure in the Long-run.

4.2.3.1. Adoption of Land Conservation Practices.

It is hypothesized that higher tenure security of land is associated with high investments in land conservation practices. Thus, it is expected that if lands require soil conservation (due to steepness, etc), lands that have high security of tenure would have more investments for land conservation and also that lands with high security of tenure due to its high value and long years of possession would have more permanent fences, and more trees would be planted and was found to be so in Nayakumbura and Meegahajandura.

The homestead/ highlands lands are reported by respondents as moderately steep in Nayakumbura. The lands are flat in Meegahajandura. Thus, irrespective of the tenure security low investments in soil conservation could be expected. This was found to be the case.

TABLE 5. NET INCOME PER ACRE (LAND PRODUCTIVITY) OF HOMESTEAD AND LOWLANDS IN NAYAKUMBURA AND MEEGAHAJANDURA

NAYAKUMBURA		
Tenure System	Net Income from - Home garden (Rs)	Net income from Lowland (Rs)
Praveni	2874.00	1236.00
Sinnakkara	3128.00	3499.00
Permit	-	2396.00
Temple land	3571.00	9296.00
Encroached	-	1336.00

MEEGAHAJANDURA			
Tenure System	Net Income - Home garden (Rs)	Net income from lowland (Rs)	Net income from chena (Rs)
Sinnakkara	600.00	1173.00	-
LDO	1481.00	1952.00	-
Swarnabhoomi	1538.00	4210.00	-
Permit	2302.00	693.00	-
Encroached	2533.00	2067.00	2093.00

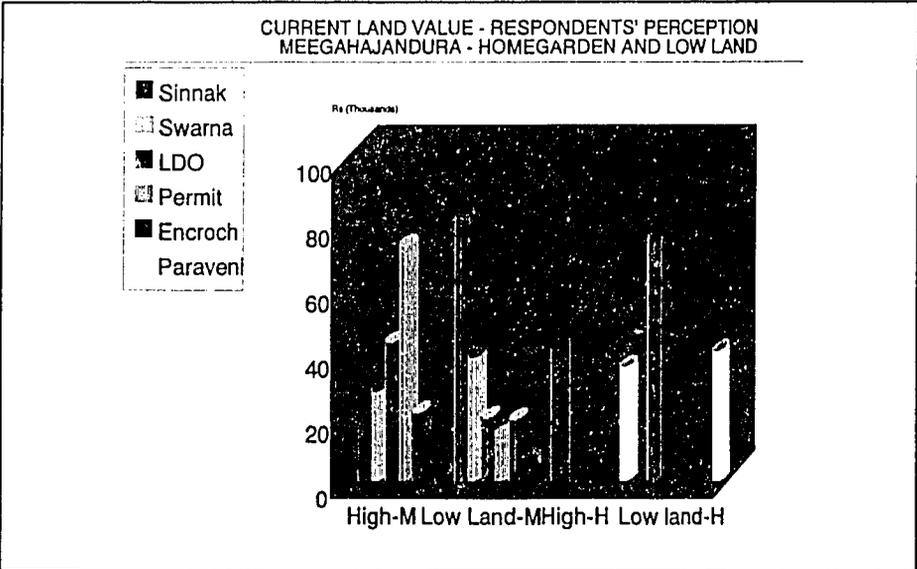
As evident in appendix tables 16-18, a clear relationship in the perception of high fertility in land with high security of tenure is not observed, in either Nayakumbura and in Meegahajandura. This would have implications on land values as fertility is not positively related to tenure security.

4.3. The Degree of Development of Land Markets and its Nature

4.3.1. Land Values

As observed in chart 14 and appendix table 21-22, the value of land as perceived by respondents, is clearly highly correlated with high security of tenure in lowlands only. However, such a clear relationship cannot be observed in highlands. Given the potential to cultivate high value crops such as onions and vegetables in Nayakumbura perceived land values are higher than of Meegahajandura and the perceived increases of land values overtime are large too. In Meegahajandura, since land productivity is not different among different tenure types, perceived land values too are not significantly different, except for encroached land that is perceived to have very low value.

CHART 14



The relationship between some factors (road accessibility, steepness of land, fertility of land, rockiness, availability) and perceived value of land are given in charts 15 and 16. Accordingly road accessibility is considered a dominant factor that contributes to increased value of land and in Meegahajandura lands without rocks fetch a higher value. In the case of Nayakumbura the problem is mostly related to transporting of products to market, whilst in Meegahajandura the problem is preparing land in gravely/rocky soil with non availability of water.

4.3.2. Land Transactions

In relation to land transactions (tables 6 and 7), both how the land is obtained and how it was transferred were studied.

Homestead: It is found in Nayakumbura that both sinnakara and praveni lands were transferred from parents to children or relations to relations as is the case customarily followed. However, table 6 shows that there has been buying praveni lands (11%) too.

Further, it was found that 82% of the praveni lands were transferred through verbal agreement and the rest with a formal letter. Although sinnakara land could have been transferred formally through deed, it has been transferred mostly (57%) through verbal agreement. This implies the difficulties in transferring land through formal and legal procedures. This may create conflicts among family members and further it may act as a constraint in getting institutional support for agricultural activities. All respondents have obtained temple land in Nayakumbura from relations on verbal agreements.

In Meegahajandura where a majority of the respondents were living in LDO, swarnabhoomi, permit and encroached lands, the tenure transfer mechanism is different from that of Nayakumbura.

TABLE 6. TRANSACTION OF HOMESTEAD/HIGHLAND LAND, NAYAKUMBURA

Tenure type	Method of Transfer/obtaining
Praveni	11% bought (1950-1990) 58% got from relations (1930-93) 31% got from parents (1938-86)
Sinnakkara	11% got from parents (1960-86): 28% bought from non-relations: (1960-94) 50% got from relations (1962-1992)
Temple land	100% obtained from relations (1961-90)
Praveni	82% verbal transfer 18% with a formal letter or with a deed
Sinnakkra	57% verbal transfer 11% with a formal letter 32% with a deed
Temple Land	100% verbal transfer

There has been sales of sinnakkara land but not with formal transfer of deed. Most LDO lands, as expected, have been transferred from relations. About 8% of LDO lands have been sold to relations. Some LDO lands (8%) probably those that have been abandoned by original allottees have been encroached subsequently by others. It is also observed that even encroached land is being sold (9% of cases reporting), most transfers of land have been on verbal agreement.

CHART 15

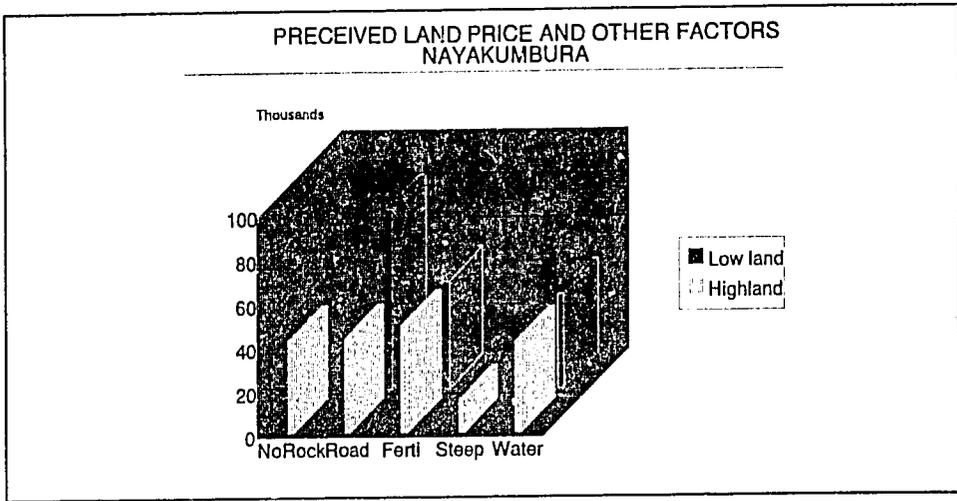


CHART 16

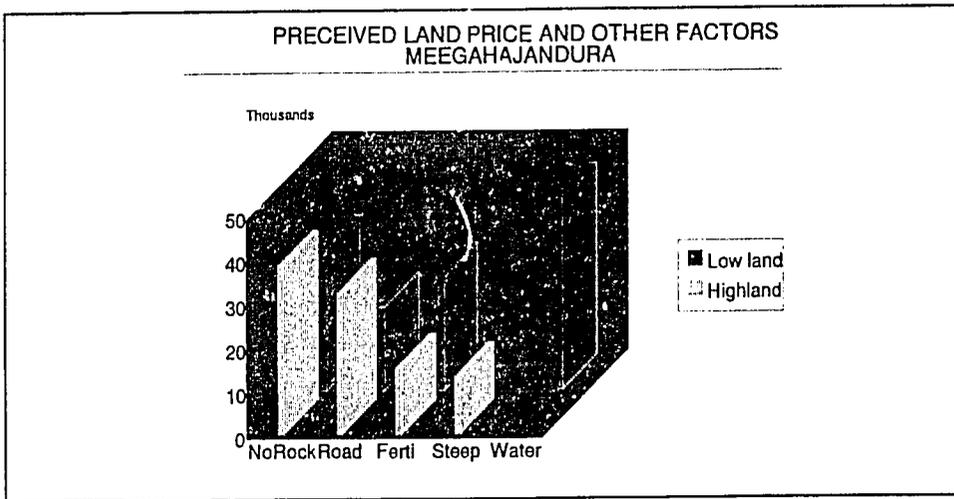


TABLE 7. TRANSACTIONS OF HOMESTEADS/HIGHLANDS MEEGAHAJANDURA

Tenure type	Method of Transfer/obtain	
Sinnakkara	50% bought (1986)	:50% got from parents (1990)
LDO	42% got from relations (1963-73): 8% bought from non-relations: (1990)	8% encroached it by them- selves (1990) 42% got from state (1958-1993)
Swarnabhoo mi	25% obtained from relations (1990-91)	75% obtained from state (1958-1986)
Permit	13% obtained from parents (1982-88) 20% encroached by themselves (1968-86)	67% obtained from state (1958-92)
Encroached	14% obtained from parents (1974-91) 65% Encroached by themselves (1963-94)	12% obtained from relations - of that 40% bought the land (1975-94) 9% bought the land (1980-89)
Sinnakkara	50% verbal transfer	50% with a formal letter
LDO	Those who obtained from relations 100% verbal agreement	Others permit and with a formal letter
Swarnabhoo mi	12% verbal transfer: Rest obtained permits	
Permit	Those who obtained from parents or relations; 100% verbal agreement	40% obtained permit 27% encroached by them selves
Encroached	23% were verbally transferred 63% encroached by themselves	14% with a formal letter

It is also interesting to note that 8% of the respondents had bought LDO lands, though these cannot legally be sold and 9% of the encroached lands have been bought. The majority of the lands of all tenure types which are transferred are done with a verbal agreement.

As evident in table 8 and 9 the SALABILITY of homestead/ highland is moderate for lands that have high security of tenure. As expected people are not willing to sell lowlands or paddy lands.

TABLE 8. SALABILITY, WILLINGNESS TO SELL OR RENT, NAYAKUMBURA

SALABILITY	Praveni %	Sinnakkara %	Temple Land %
SALABILITY			
Home garden			
Very high	6.7	10.7	0.0
Moderate	31.1	32.1	100.0
Low	62.2	57.2	0.0
Paddy land			
Very high	0.0	0.0	0.0
Moderate	83.3	60.0	100.0
Low	16.7	40.0	0.0
Willing to sell			
Home garden			
Yes	100.0	12.0	0.0
No	0.0	88.0	100.0
No Idea	0.0	0.0	0.0
Paddy land			
Yes	0.0	0.0	0.0
No	100.0	95.0	100.0
No idea	0.0	5.0	0.0
Willingness to give on rent			
Home garden			
Yes	100.0	3.6	0.0
No	0.0	96.4	100.0
No idea	0.0	0.0	0.0
Paddy land			
Yes	0.0	0.0	0.0
No	100.0	95.0	100.0
No idea	0.0	5.0	0.0

TABLE 9. SALABILITY OF LAND - MEEGAHAJANDURA

SALABILITY	Sinnakkara	LDO	Swarna- bhoomi	Permit	Encroached
Home garden					
Very high	50.0	0.0	0.0	0.0	0.0
Moderate	50.0	58.3	50.0	13.3	37.8
Low	0.0	41.7	50.0	86.7	62.2
Paddy land					
Very high	0.0	0.0	0.0	0.0	0.0
Moderate	50.0	70.0	0.0	16.7	0.0
Low	50.0	30.0	100.0	83.3	100.0
Chena land					
Very high	-	-	-	-	0.0
Moderate	-	-	-	-	28.6
Low	-	-	-	-	71.4
Willing to sell					
Home garden					
Yes					
No	0.0	9.1	28.6	0.0	0.0
No Idea	50.0	81.8	71.4	100.0	100.0
	50.0	9.1	0.0	0.0	0.0
Paddy land					
Yes	0.0	0.0	0.0	60.0	0.0
No	100.0	100.0	100.0	40.0	100.0
Chena Land					
Yes	-	-	-	-	15.4
No	-	-	-	-	76.9
No idea	-	-	-	-	7.7
Willingness to give on rent					
Home garden					
Yes					
No	0.0	9.1	28.6	6.7	4.9
No idea	50.0	81.8	71.4	93.3	95.1
	50.0	9.1	0.0	0.0	0.0
Paddy land					
Yes	0.0	9.1	0.0	40.0	0.0
No	100.0	90.0	100.0	40.0	100.0
No idea	0.0	0.0	0.0	20.0	0.0
Chena land					
Yes	-	-	-	-	23.1
No	-	-	-	-	69.2
No idea	-	-	-	-	7.7

Based on table 10 and 11, it is evident in Meegahajandura even land with low security of tenure is transacted. These transactions have mostly occurred after the 1980's. Funds to purchase land has been obtained from agriculture, from mortgaging jewellery etc. In Meegahajandura, proceeds from land sales have been used to meet direct consumption.

In Nayakumbura the land transactions are mostly with on land that has high security of tenure. Funds for the purchase of lands have been obtained from various sources such as from trade and employment overseas. Money obtained by selling lands has been used to meet only personnel family needs.

TABLE 10. SALES AND PURCHASE OF LAND, NAYAKUMBURA AND MEEGAHAJANDURA

LAND BUYING AND SELLING	
BUYING	SELLING
<p>MEEGAHAJANDURA</p> <p>Permit, 1 case Encroached 10 cases</p> <p>Money found for purchase</p> <p>from Agriculture, 6 cases (54%) from govt. employment, 2 cases from labour, 2 cases jewellery mortgaged, 1 case</p> <p>82% of the lands were bought during the period between 1981-1990</p> <p>NAYAKUMBURA</p> <p>Praveni, 7 cases Sinnakkara 14 cases</p> <p>Money found for purchase</p> <p>From agriculture, 7 cases (32%) From trade, 3 cases From govt. jobs, 1 case From overseas employments, 4 cases From savings, 2 cases From labour jobs, 5 cases</p> <p>32% land were bought during 71-80 64% land were bought during 81-94</p>	<p>MEEGAHAJANDURA</p> <p>Sinnakkara, 1 case Encroached, 1 case</p> <p>Money obtained from selling land were spent on food items.</p> <p>100% sold during the period between 1985-1990</p> <p>NAYAKUMBURA</p> <p>Praveni, 4 cases Sinnakkara, 4 cases</p> <p>Money obtained was spent on</p> <p>For food, 1 case For buying land, 2 cases For a court case, 1 case For children's education, 1 case For a festivity, 2 cases For other purposes, 1 case</p> <p>50% of the land were bought during the period between 1981-1990</p>

Note: The number buying and selling are not equal because the study is based on sample. Land leasing is equally prevalent in both Nayakumbura and Meegahajandura. Despite

restrictions for leasing of LDO land, a case of such, is reported in Meegahajandura. Leasing of land is confined mostly to lowlands for paddy cultivation in Meegahajandura. Most of the land leasing has occurred after the 1990's.

TABLE 11. LEASING OF LAND IN NAYAKUMBURA AND MEEGAHAJANDURA

LAND LEASE IN AND LEAST OUT	
LEASE IN	LEASE OUT
<p>MEEGAHAJANDURA</p> <p>Sinnakkara, 5 cases Permit, 1 case Swarnabhoomi, 1 case</p> <p>Money obtained from agriculture and trade, 3 cases</p> <p>"porondu badu", 4 cases</p> <p>100% of the lands were leased in during the period between 1990-1994</p> <p>NAYAKUMBURA</p> <p>Praveni, 1 case Sinnakkara, 1 case</p> <p>Money obtained</p> <p>from agriculture, 1 case from overseas jobs, 1 case</p>	<p>MEEGAHAJANDURA</p> <p>Sinnakkara, 1 case Swarnabhoomi, 1 case LDO, 1 case Permit, 1 case</p> <p>Money obtained from lease out land was spent on</p> <p>food items, 1 case education of children, 1 case exchange of yield, 2 cases</p> <p>75% of the lands were leased out during the period between 1990-1994</p> <p>NAYAKUMBURA</p> <p>No such activities</p>

4.4. Summary of the Findings and Conclusions.

The findings of the study are summarised in table 12. It is evident that the degree of security of land tenure is not strongly related to high input use, high technological use, high labour employment and high income from non-irrigated agriculture. This suggests that change in land tenure in perse, will not lead to increased employment and incomes from non-irrigated agriculture.

TABLE 12. SUMMARY OF THE FINDINGS

Hypothesis	Nayakumbura		Megahajandura	
	Highland	Lowland	Highland	Lowland
1. High security of land tenure is associated with high input use Fertilizer Weedicides Pesticides	Rejected Rejected Rejected	Rejected Rejected Rejected	Rejected Rejected Rejected	Accepted Rejected Rejected
2. High security of land tenure is associated with high labour use	Rejected	Rejected	Rejected	Rejected
3. High security of land tenure is associated with high adoption of technology		Rejected		Rejected
4. High security of land tenure is associated with high income	Rejected	Accepted	Rejected	Accepted
5. High security of land tenure is associated with high land conservation investments ¹⁶				
6. High security of land tenure is associated with high marketability of land	Rejected	Rejected	Rejected	Rejected

¹⁶ All lands were relatively flat hence land conservation practices were not observed..

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APPENDIX TABLE 1. BASIC INFORMATION OF THE RESPONDENTS AGE AND LEVEL OF EDUCATION

AGE OF HEAD OF HOUSEHOLD						
Age group (Years)	Meegahajandura		Nayakumbura		Total	
	No.	%	No.	%	No.	%
Below 30	8	10.0	13	17.3	21	13.5
31 - 45	33	41.2	30	40.0	63	40.7
46 - 60	21	26.2	22	29.3	43	27.7
Above 60	18	22.6	10	13.4	28	18.1
Total	80	100.0	75	100.0	155	100.0

LEVEL OF EDUCATION OF HEAD OF HOUSEHOLD						
Level of Education	Meegahajandura		Nayakumbura		Total	
	No.	%	No.	%	No.	%
No schooling	14	17.5	17	22.7	31	20.0
1-5 grades	35	43.7	36	48.0	71	45.8
6-O/Level	31	38.8	19	25.3	50	32.2
O-A Level	0	0.0	3	4.0	3	2.0
Total	80	100.0	75	100.0	155	100.0

APPENDIX TABLE 2. BASIC INFORMATION OF THE HOUSEHOLD-HOUSING

SIZE OF HOUSEHOLD						
Size of Household	Meegahajandura		Nayakumbura		Total	
	No.	%	No.	%	No.	%
1-3 members	19	23.7	12	16.0	31	20.0
4-6 members	44	55.0	51	68.0	95	61.3
Above 6	17	21.3	12	16.0	29	18.7
Total	80	100.0	75	100.0	155	100.0

NATURE OF HOUSE						
Nature of house	Meegahajandura		Nayakumbura		Total	
	No.	%	No.	%	No.	%
Permanent	49	61.2	23	30.7	72	46.4
Semi-permanent	28	35.0	36	48.0	64	41.3
Temporary	3	3.8	16	21.3	19	12.3
Total	80	100.0	75	100.0	155	100.0

TABLE 2 CONTINUED

FLOOR SPACE OF THE HOUSE						
Floor space (sq. ft.)	Meegahajandura		Nayakumbura		Total	
	No.	%	No.	%	No.	%
Below 100	10	12.5	3	4.0	13	8.4
100-200	22	27.5	9	12.0	31	20.0
200-400	37	46.3	28	37.3	65	41.9
400-600	4	5.0	15	20.0	19	12.2
600-800	2	2.5	9	12.0	11	7.1
Above 800	5	6.2	11	14.7	16	10.4
Total	80	100.0	75	100.0	155	100.0

APPENDIX TABLE 3. BASIC INFORMATION OF THE HOUSEHOLD LABOUR FORCE AND EMPLOYMENT

LABOUR FORCE (16-60 years) AND EMPLOYMENT						
Sex	Meegahajandura		Nayakumbura		Total	
	Labour force	Employed	Labour force	Employ-d	Labour force	Em- ployed
Male	136	105 77.2%	132	105 79.5%	268	210 78.3%
Female	120	36 30.0%	102	27 26.4%	222	63 28.4%

TABLE 3 CONTINUED...

MAIN AND SECONDARY EMPLOYMENT OF HHII						
Type	Meegahajandura N=80		Nayakumbura (N=75)		Total (N=155)	
	Main	Secondary	Main	Secondary	Main	Secondary
Unemployed	2.5	56.2	6.7	44.0	4.5	50.3
Agriculture	86.3	3.8	69.3	24.0	78.1	13.5
Casual Labour	2.5	26.2	17.3	26.7	9.7	26.4
Carpentry	0.0	1.2	0.0	1.3	0.0	1.3
Masonry	2.5	0.0	1.3	0.0	1.9	0.0
Trade	0.0	6.3	2.7	2.7	1.3	4.5
Labour (formal)	2.5	0.0	0.0	0.0	1.3	0.0
Other	3.7	6.3	2.7	1.3	3.2	4.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

APPENDIX TABLE 4. MONTHLY HOUSEHOLD INCOME

MONTHLY HOUSEHOLD INCOME (Rs)						
Meegahajandura Average income from social welfare Rs 231.00 average income from other sources Rs 2516.00 average family income Rs 2747.00			Nayakumbura Average income from social welfare Rs 296.00 average income from other sources Rs 3131.00 average family income Rs 3437.00			
Income (Rs)	Meegahajandura		Nayakumbura		Total	
	No.	%	No.	%	No.	%
Below 1000	19	23.8	5	6.7	24	15.5
1000-2000	20	25.0	25	33.3	45	29.0
2000-3000	8	10.0	12	16.0	20	12.9
3000-4000	16	20.0	12	16.0	28	18.1
4000-6000	9	11.2	16	21.3	25	16.1
Above 6000	8	10.0	5	6.7	13	8.4
Total	80	100.0	75	100.0	155	100.0

HOUSEHOLD ITEM SCORE						
Item Score	Meegahajandura		Nayakumbura		Total	
	No.	%	No.	%	No.	%
No score	10	12.5	7	9.3	17	11.0
1-5	43	53.7	58	77.3	101	65.2
6-10	22	27.5	5	6.7	27	17.4
11-15	4	5.0	3	4.0	7	4.5
16-20	1	1.3	2	2.7	3	1.9
Total	80	100.0	75	100.0	155	100.0

APPENDIX TABLE 5. BASIC INFORMATION OF THE HOUSEHOLD LAND OWNERSHIP AND EXTENT CULTIVATED

LAND OWNERSHIP AND EXTENT CULTIVATED (average owned 4.41 acres, average cultivated 1.96 acres)						
Size (acres)	Meegahajandura %		Nayakumbura %		Total %	
	Owned (N=80)	Cultivated (N=80)	Owned (N=75)	Cultivated (N=75)	Owned N=155	Cultivated N=155
No land	0.0	5.0	1.3	5.3	0.6	5.2
0-0.25	0.0	10.0	2.7	17.3	1.3	13.5
0.26-0.50	5.0	8.8	12.0	18.7	8.4	13.5
0.51-1.00	6.3	25.0	20.0	17.3	12.9	21.3
1.01-2.00	16.2	20.0	17.3	18.7	16.8	19.3
2.01-4.00	18.7	17.5	25.4	13.3	21.9	15.5
4.01-6.00	36.3	12.5	13.3	6.7	25.2	9.7
6.01-8.00	10.0	1.2	1.3	0.0	5.8	0.6
Above 8.00	7.5	0.0	6.7	2.7	7.1	1.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

APPENDIX TABLE 6. DISTRIBUTION OF LAND BY TENURE TYPE

Land Type	Tenure Type	Extent (Acres)
Lowland	Swarnabemi	20
Lowland	Praveni	105
Highlands (cultivable)	Praveni	125
Highlands (non-arable)	Praveni	375
Total		625

Source: Gramaseva niladhari, Nayakumbura.

APPENDIX TABLE 6. ANNUAL COST OF PRODUCTION AVERAGE PER ACRE FOR FERTILIZER, WEEDICIDE AND PESTICIDE

District/Plot/Tenure type	Amount of money spent on fertilizer (Rs)	Amount of money spent on Weedicide* (Rs)	Amount of money spent on Pesticide (Rs)
Nayakumbura Home Garden/High Land			
Sinnakkara	178	18	104
Temple	315	10	102
Paraveni	267	44	73
Meegahajandura Home Garden/High Land			
Sinnakkara	0	0	0
Swarnabhomi	0	22	49
LDO	0	308	50
Permit	0	304	93
Encroached	42	368	51
Nayakumbura Low Land			
Maha season (Paddy)			
Sinnakkara	1344	190	187
Temple	560	78	123
Permit	1074	345	200
Paraveni	1276	199	219
Encroached	945	220	70
Meegahajandura			
Sinnakkara	573	40	105
Swarnabhomi	500	72	75
LDO	482	389	113
Permit	113	69	26
Encroached	513	145	137

* Inclusive of money spent on renting sprayers

APPENDIX TABLE 7. NUMBER OF LABOUR UNITS USED FOR HOMESTEAD/HIGHLAND AND LOW LAND MAHA CULTIVATION

District/Tenure type	Number of labour units (out of total land extent)	Number of labour units (out of extent cultivated)
Nayakumbura Homestead/Highland		
Sinnakkara	44	126
Temple	47	157
Paraveni	48	122
Nayakumbura Low land (Maha only)		
Sinnakkara	71	70
Temple	27	54
Permit	113	130
Paraveni	55	60
Encroached	52	77
Meegahajandura Homestead/Highland		
Sinnakkara	0	0
Swarnabhomi	34	78
LDO	35	191
Permit	31	124
Encroached	33	94
Meegahajandura Low Land (Maha only)		
Sinnakkara	36	36
Swarnabhomi	20	20
LDO	37	82
Permit	5	16
Encroached	62	69

APPENDIX TABLE 8. ANNUAL COST FOR USE OF TRACTORS (AVERAGE PER ACRE) LOW LAND CULTIVATION - MAHA SEASON

District/Tenure type	Amount of money spent on tractor (Rs)	Nos. and % of farmers used tractors	Nos. and % do not use tractors
Nayakumbura			
Sinnakkara	1367	15 (71.4)	6 (28.6)
Temple	567	1 (33.3)	2 (66.7)
Permit	1400	2 (100.0)	0 (0.0)
Paraveni	1146	8 (61.5)	5 (38.5)
Encroached	1175	2 (100.0)	0 (0.0)
Meegahajandura			
Sinnakkara	1261	4 (56.7)	2 (33.3)
Swarnabhomi	1067	1 (50.0)	1 (50.0)
LDO	974	6 (60.0)	4 (40.0)
Permit	305	2 (33.3)	4 (66.7)
Encroached	707	6 (100.0)	0 (0.0)

APPENDIX TABLE 8. ANNUAL COST FOR USE OF TRACTORS (AVERAGE PER ACRE) LOW LAND CULTIVATION - MAHA SEASON

District/Tenure type	Amount of money spent on tractor (Rs)	Nos. and % of farmers used tractors	Nos. and % do not use tractors
Nayakumbura			
Sinnakkara	1367	15 (71.4)	6 (28.6)
Temple	567	1 (33.3)	2 (66.7)
Permit	1400	2 (100.0)	0 (0.0)
Paraveni	1146	8 (61.5)	5 (38.5)
Encroached	1175	2 (100.0)	0 (0.0)
Meegahajandura			
Sinnakkara	1261	4 (66.7)	2 (33.3)
Swarnabhomi	1067	1 (50.0)	1 (50.0)
LDO	974	6 (60.0)	4 (40.0)
Permit	305	2 (33.3)	4 (66.7)
Encroached	707	6 (100.0)	0 (0.0)

APPENDIX TABLE 9. NET INCOME PER ACRE (LAND PRODUCTIVITY) FROM HOMESTEAD-NAYAKUMBURA

ANNUAL CROPS			
Tenure System	Ave. income from annual crops (Rs)	Cost of Production for annual crops (Rs)	Balance between cost and income (Rs)
Paravni	578.00	104.00	474.00
Sinnakkara	823.00	123.00	700.00
Temple Land	360.00	80.00	280.00

TABLE 9 CONTINUED ...

SEASONAL CROPS								
Tenure type	Avg. Ext. cultivated- Single crop acres	Avg. Ext. cultivated- multi crops (acres)	Total extent cultivated -both types (acres)	Income per acre out of cultivated extent	cost of production out of cultivated extent	Income per acre out of total land extent	Cost of production out of total land extent	Balance (annual) (Rs)
Paraveni	0.127	0.061	0.188	7131.00	119.00	2239.00	52.00	2187.00
Sinnakkara	0.098	0.026	0.124	7469.00	101.00	2387.00	32.00	2355.00
Temple land	0.000	0.375	0.375	8932.00	194.00	3349.00	58.00	3291.00

ANIMAL HUSBANDRY			
Tenure System	Total annual Production Cost (Rs)	Ave. annual income (Rs)	Balance (Rs)
Paraveni	32.00	245.00	213.00
Sinnakkara	13.00	86.00	73.00
Temple Land	0.00	0.00	0.00

APPENDIX TABLE 10. NUMBER OF TREES GROWN IN HOME GARDEN NAYAKUMBURA (PERCENTAGES).

NATURALLY GROWN TREES PER ACRE								
Tenure type	No trees	Below 10	11-20	21-40	41-80	81-160	Above 160	Total
Paraveni N=45	62.5	40.0	4.5	0.0	0.0	0.0	0.0	100.0
Sinnakkara N=28	35.7	53.6	10.7	0.0	0.0	0.0	0.0	100.0
Temple land N=2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Total N=75	49.3	44.0	6.7	0.0	0.0	0.0	0.0	100.0

PLANTED TREES PER ACRE								
Tenure type	No trees	Below 10	11-20	21-40	41-80	81-160	Above 160	Total
Paraveni N=45	2.2	24.4	13.3	42.2	15.6	0.0	2.2	100.0
Sinnakkara N=28	7.1	10.7	17.9	28.6	17.9	3.6	14.2	100.0
Temple land=2	0.0	50.0	0.0	50.0	0.0	0.0	0.0	100.0
Total N=75	4.0	20.0	14.7	37.3	16.0	1.3	6.7	100.0

APPENDIX TABLE 10 (CONTD)

NATURALLY GROWN TREES PER ACRE								
Tenure type	No trees	Below 10	11-20	21-40	41-80	81-160	Above 160	Total
Sinnakkara N=2	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0
LDO N=12	33.4	55.7	8.3	8.3	0.0	0.0	8.3	100.0
Swarnabhomi N=8	12.5	75.0	12.5	0.0	0.0	0.0	0.0	100.0
Permit N=15	40.0	40.0	6.7	6.7	0.0	6.6	0.0	100.0
Encroached N=43	39.5	37.2	9.3	2.3	7.0	2.3	2.3	100.0
Total N=80	35.0	43.8	8.8	3.7	3.7	2.5	2.5	100.0

PLANTED TREES PER ACRE - MEEGAHAJANDURA								
Tenure type	No trees	Below 10	11-20	21-40	41-80	81-160	Above 160	Total
Sinnakkara N=2	0.0	50.0	0.0	50.0	0.0	0.0	0.0	100.0
LDO N=12	0.0	41.7	33.3	16.7	0.0	0.0	8.3	100.0
Swarnabhomi N=8	0.0	62.5	0.0	37.5	0.0	0.0	0.0	100.0
Permit N=15	0.0	46.7	40.0	6.7	6.7	0.0	0.0	100.0
Encroached N=43	6.7	30.2	20.9	13.9	20.9	4.6	2.3	100.0
Total N=80	3.8	38.7	23.7	16.2	12.5	2.5	2.5	100.0

APPENDIX TABLE 11. NET INCOME PER ACRE (LAND PRODUCTIVITY) FROM HOMESTEAD-MEEGAHAJANDURA

ANNUAL CROPS			
Tenure System	Ave. income from annual crops (Rs)	Cost of Production for annual crops (Rs)	Balance between cost and income (Rs)
Sinnakkara	500.00	0.00	500.00
LDO	825.00	111.00	714.00
Swarnabhoomi	563.00	41.00	522.00
Permit	871.00	0.00	871.00
Encroached	835.00	85.00	750.00

SEASONAL CROPS								
Tenure type	Avg Extent cultivated- Single crop acres	Avg Extent cultivated- multi crops (acres)	Total extent cultivated -both types (acres)	Income per acre out of cultivated extent	cost of production out of cultivated extent	Income per acre out of total land extent	Cost of production out of total land extent	Balance (annual) (Rs)
Sinnakkara	0.00 0	0.000	0.000	000.00	000.00	000.00	000.00	000.00
LDO	0.05 5	0.330	0.385	2867.0 0	1106.00	564.00	217.00	347.00
Swarnabhoomi	0.03 1	0.125	0.156	1652.0 0	889.00	121.00	65.00	56.00
Permit	0.09 1	0.567	0.658	3980.0 0	594.00	1267.0 0	189.00	1078.0 0
Encroached	0.12 2	0.648	0.770	5583.0 0	1026.00	1382.0 0	254.00	1128.0 0

APPENDIX TABLE 11 (contd)

HOME GARDEN-ANIMAL HUSBANDRY			
Tenure System	Total annual Production Cost (Rs)	Ave. annual income (Rs)	Balance (Rs)
Sinnakkara	75.00	175.00	100.00
LDO	12.00	432.00	420.00
Swarnabhoomi	44.00	1004.00	960.00
Permit	144.00	497.00	353.00
Encroached	187.00	842.00	655.00

APPENDIX TABLE 12. FERTILITY OF HOMESTEADS IN NAYAKUMBURA AND MEEGAHAJANDURA.

FERTILITY OF HOME GARDEN BY TENURE TYPE						
Tenure type/ Fertility	Meegahajandura		Nayakumbura		Total	
	No.	%	No.	%	No.	%
Paraveni						
High			0	0.0	0	0.0
Moderate	-	-	13	28.9	13	28.9
Restorable			25	55.6	25	55.6
Nonrestorable			7	15.5	7	15.5
Sinnakkara						
High	0	0.0	0	0.0	0	0.0
Moderate	1	50.0	9	32.1	10	33.3
Restorable	0	0.0	13	46.4	13	43.3
Nonrestorable	1	50.0	6	21.4	7	23.4
LDO						
High	0	0.0	-	-	0	0.0
Moderate	5	41.7			5	41.7
Restorable	6	50.0			6	50.0
Nonrestorable	1	8.3			1	8.3
Swarnabhomi						
High	0	0.0	-	-	0	0.0
Moderate	4	50.0			4	50.0
Restorable	1	12.5			1	12.5
Nonrestorable	3	37.5			3	37.5
Permit						
High	0	0.0	-	-	0	0.0
Moderate	1	6.7			1	6.7
Restorable	9	60.0			9	60.0
Nonrestorable	5	33.3			5	33.3
Encroached						
High	1	2.3	-	-	1	2.3
Moderate	15	34.9			15	34.9
Restorable	18	41.9			18	41.9
Nonrestorable	9	20.9			9	20.9
Total						
High	1	1.2	0	0.0	1	0.6
Moderate	26	32.5	22	30.1	48	31.4
Restorable	34	42.5	38	42.0	72	47.0
Nonrestorable	19	23.8	13	17.9	32	21.0

APPENDIX TABLE 13. CHENA CULTIVATION IN MEGAHAJANDURA.

CHENA CULTIVATION SEASONAL CROPS- MEEGAHAJANDURA									
Tenure type	Total Land Extent -acres (avg)	Avg. acres cultivated mono crops	Avg. acres cultivated multi crops	Total extent cultivated both types	Income per acre out of extent cultivated	Cost per acre out of extent cultivated (Rs)	Income per acre out of total land (Rs)	Cost per acre out of total land (acres)	Balance (Rs)
Encroached	2.147	0.132	1.679	1.811	2916.00	434.00	2489.00	366.00	2093.00

APPENDIX TABLE 14. NET INCOME PER ACRE (LAND PRODUCTIVITY) OF LOWLANDS LANDS IN THE MAHA AND YALA SEASONS IN NAYAKUMBURA

PADDY (MAHA)					
Tenure System	Total Land Extent-acres (avg)	Ave. acres cultivated	Income per acre out of total land (Rs)	Cost per acre out of total total land (acres)	Net income per acre(Rs)
Paraveni	0.788	0.634	4308.00	3072.00	1236.00
Sinnakkara	1.142	0.904	6474.00	3264.00	3210.00
Permit	0.750	0.750	5566.00	3170.00	2396.00
Encroached	1.000	0.250	3630.00	2512.00	1118.00
Temple Land	0.916	0.250	2024.00	1588.00	436.00

OTHER CROPS (YALA)				
Tenure type	Total Land Extent-acres (avg)	Income per acre out of total land (Rs)	Cost per acre out of total total land (acres)	Net income per acre (Rs)
Sinnakkara	1.142	951	662	289
Encroached	1.000	2000	1782	218
Temple Land	0.916	10189	1329	8860

APPENDIX TABLE 15.

NET INCOME PER ACRE (LAND PRODUCTIVITY) OF LOW LANDS DURING MAHA SEASON IN MEEGAHAJANDURA

PADDY LAND (MAHA ONLY SEASONAL CROP (PADDY)) - MEEGAHAJANDURA							
Tenure System	Total Land Estate acres (hect)	Ave. acres cultivated	Income per acre - out of estate cultivated	Cost per acre out of estate cultivated (Rs)	Income per acre out of total land (Rs)	Cost per acre out of total land (Rs)	Net income per acre (Rs)
Sinnakkara	1 467	0 917	6333 (Rs)	4202 (Rs)	3488 (Rs)	2311 (Rs)	1177 (Rs)
LDN3	2 450	0 856	9812 (Rs)	4289 (Rs)	3668 (Rs)	1516 (Rs)	1952 (Rs)
SwarthaNuvata	3 081	1 581	11882 (Rs)	3490 (Rs)	5842 (Rs)	1730 (Rs)	4210 (Rs)
Permai	3 081	0 581	6270 (Rs)	2703 (Rs)	1218 (Rs)	523 (Rs)	695 (Rs)
Unsubsidized	7 958	1 204	7348 (Rs)	2334 (Rs)	3020 (Rs)	953 (Rs)	2067 (Rs)

APPENDIX TABLE 16.

STEEPNESS OF HOMESTEAD IN NAYAKUMBURA AND MEEGAHAJANDURA

STEEPNESS OF THE HOME GARDEN						
Level	Meegahajandura		Nayakumbura		Total	
	No.	%	No.	%	No.	%
High	0	0.0	6	8.0	6	3.9
Moderate	8	10.0	45	60.0	53	34.2
Flat	72	90.0	24	42.0	96	61.9
Total	80	100.0	75	100.0	155	100.0

APPENDIX TABLE 17.

INDICATORS OF SECURITY OF TENURE, PERMANENT INVESTMENTS IN HOMESTEAD

Nayakumbura					
Tenure type	Tempo- rary hut	Permanen t House	Permanent house & well	Permanent house & other build- ings	Total
Paraveni N=45	2.2	91.2	2.2	4.4	100.0
Sinnakkara N=28	0.0	92.8	7.2	0.0	100.0
Temple Land N=2	0.0	100.0	0.0	0.0	100.0
Total N=75	1.3	92.0	4.0	2.7	100.0

TABLE 17 CONTINUED ..

MEEGAHAJANDURA					
Tenure type	Temporary hut	Permanent House	Permanent house & well	Permanent house & other build-ings	Total
Sinnakkara N=2	0.0	100.0	0.0	0.0	100.0
LDO N=12	0.0	100.0	0.0	0.0	100.0
Swarnabhomi N=8	0.0	100.0	0.0	0.0	100.0
Permit N=15	0.0	100.0	0.0	0.0	100.0
Encroached N=43	2.3	81.4	11.6	4.7	100.0
Total N=80	1.2	90.0	6.3	2.5	100.0

APPENDIX TABLE 18. INDICATORS OF SECURITY OF TENURE AVAILABILITY OF FENCE, NAYAKUMBURA

AVAILABILITY OF A FENCE BY TENURE TYPE						
Tenure type	Meegahajandura		Nayakumbura		Total	
	No.	%	No.	%	No.	%
Paraveni	-	-	40	88.8	40	88.8
Sinnakkara	0	0.0	23	82.1	23	76.7
Temple land	-	-	1	50.0	1	50.0
LDO	1	8.3	-	-	1	8.3
Swarnabhomi	0	0.0	-	-	0	0.0
Permit	1	6.7	-	-	1	6.7
Encroached	8	18.6	-	-	8	18.6
Total	10	12.5	64	85.3	74	47.7

APPENDIX TABLE 19. RESPONDENTS PERCEPTION ON VALUE OF LAND IN NAYAKUMBURA.

Tenure type and Parcel type	Land value Before 10 years	Land value now	Land value after 10 years	Bench year - 10 years before	% increase after 10 years	% increase after 20 years
Home Garden Paraveni	6309	34778	88463	100	451	1302
Sinnakkara	4654	39936	91517	100	758	1866
Paddy land Paraveni	7552	39680	104583	100	425	1284
Sinnakkara	7944	73888	126111	100	830	1487
All Lands Paraveni	6930	37229	96523	100	437	1292
Sinnakkara	6299	56912	108814	100	803	1627

APPENDIX TABLE 20. RESPONDENTS PERCEPTION ON VALUE OF LAND IN MEEGAIJANDURA

Tenure type and Parcel type	Land value Before 10 years	Land value now	Land value after 10 years	Bench year - 10 years before	% increased after 10 years	% increased after 20 years
Home Garden Sinnakkara	3150	17500	33750	100	455	971
LDO	18055	42333	102500	100	134	468
Swarnabhoomi	10261	27357	62190	100	167	506
Permit	22654	72057	161595	100	218	613
Encroached	2802	20814	69755	100	642	2389
Paddy land Sinnakkara	16267	80667	184666	100	395	1035
LDO	10500	19208	25758	100	83	145
Swarnabhoomi	17500	37500	70833	100	114	305
Permit	8333	14055	37777	100	69	353
Encroached	5166	18750	57500	100	263	1013
Chena Land Encroached	4688	9566	21465	100	104	358
All Lands Sinnakkara	9707	49083	109208	100	405	1024
LDO	14277	30770	73129	100	115	412
Swarnabhoomi	13880	32428	66511	100	134	379
Permit	15493	43056	99686	100	178	543
Encroached	4212	16376	49573	100	288	1075

APPENDIX TABLE 21. FACTORS DETERMINING THE VALUE OF LAND OTHER THAN LAND PRODUCTIVITY, NAYAKUMBURA

HOME GARDEN			
Factor	Before 10 yrs	At present	After 10 yrs
Road Accessibility Yes	7308	43103	90304
Steepness of land High Moderate Flat	1132 3966 8116	14946 32250 45250	117797 72587 104151
Fertility of land Moderate Poor-restorable Poor- nonrestorable	6389 3919 9049	49245 28656 32747	173136 70131 45597
Rockiness Rocky Not rocky	2880 8364	31481 42412	70098 107613
Water Availability Moderate Difficult	4987 5592	41752 35250	78976 86140
Water accessibility High Moderate Difficult	2324 3971 6882	16158 30041 43280	48392 36430 100461
PADDY LAND			
Factor	Before 10 yrs	At present	After 10 yrs
Road Accessibility Yes	15166	81666	163333
Fertility of land Moderate Poor-restorable	7236 8873	48962 37421	116742 61823
Availability of water Moderate No water	8415 7714	42827 49785	90911 111428
Accessibility of water Moderate No water	9010 9256	41269 50205	84333 100641

APPENDIX TABLE 22. FACTORS DETERMINING THE VALUE OF LAND OTHER THAN LAND PRODUCTIVITY, MEEGAHAJANDURA

HOME GARDEN			
Factor	Before 10 yrs	At present	After 10 yrs
Road Accessibility Yes	8949	32094	89542
Steepness of land Moderate Flat	3573 9899	12989 36347	24367 97182
Fertility of land High Moderate Poor-restorable Poor-nonrestorable	2400 5856 12305 983	15000 32083 39319 5046	29000 71923 110584 18080
Rockiness Rocky Not rocky	4862 11531	25338 38557	71862 99648
PADDY LAND			
Factor	Before 10 yr	At present	After 10 yrs
Road Accessibility Yes	11933	18916	22023
Steepness of land	Not applicable	Not applicable	Not applicable
Fertility of land Moderate Poor-restorable	11714 12083	25690 44375	33766 127706
Rockiness Rocky Not rocky	10666 11388	26666 32064	9166 72281
Availability of water Moderate No water	15833 10354	43416 28385	50833 74337
Accessibility of water Moderate No water	12250 11336	32888 32000	46944 93106

APPENDIX TABLE 23. SOCIO-ECONOMIC FACTORS CONSIDERED IN THE SELECTION OF THE TWO GSDS

Site Selection

In order to identify an appropriate site, the study team selected 5 GN divisions which have the necessary characteristics. The team visited the Divisional Secretary, the Grama Niladharis and the Land Use Planning Office in each district in order to shortlist GSDs. These Grama Niladhari divisions were studied in order to make the final selection.

The number of families in the GN divisions selected for the preliminary rapid appraisal are as follows:

Hambantota District	No of Families
Ihalakumbukwewa	134
Meegahajandura	201
Mahagalwewa	275
Matale	
Lenadora S.	255
Lenadora N.	161
Karawilahena	141
Kumbiyangahaela	124
Nalanda	190
Nayakumbura	207