AGRARIAN RESEARCH AND TRAINING INSTITUTE

THE AGRARIAN SITUATION RELATING TO PADDY CULTIVATION IN FIVE SELECTED DISTRICTS OF SRI LANKA

PART 2- KANDY DISTRICT

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THE AGRARIAN SITUATION RELATING TO PADDY CULTIVATION IN FIVE SELECTED DISTRICTS OF SRI LANKA

PART 2

KANDY DISTRICT

Agrarian Research and Training Institute

colombo 1974

PREFACE

This is the second of a series of reports based on a comprehensive survey relating to paddy cultivation carried out in five of the important paddy producing Districts in the island. The report which is being issued in six parts will contain information pertaining to all aspects of the agrarian situation in the five Districts.

The inter-disciplinary nature of the study was maintained from the time it was instituted and several of the Research and Training Staff and the FAO Experts, particularly Dr.K. Izumi, FAO Production Economist, have worked as a team to prepare this report. In view of the several disciplines involved in the study the report is being published under the name of the Institute. It is, however, important to place on record the names of those officers who have contributed to this work.

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Special mention must be made of the efforts made by Mr.A.S. Ranatunga who co-ordinated the work relating to this study and Miss T. Sanmugam who helped the research staff in the preparation of statistical tables, diagrams and in the interpretation of data.

DIRECTOR
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May 1974

ACKNOWLEDGEMENTS

With the limited resources of the Institute an exercise of this dimension would not have been possible without the unstinted co-operation of the officers in the district. Our thanks are due particularly to the Extension Staff of the Department of Agriculture who arranged for meetings with the farmers and the DAEO who made available his vehicles for this work on a number of occasions. We are also grateful to the Department of Agriculture for providing our research team with accommodation in the In-service Institute at Gannoruwa and to the Project Manager, Minipe Scheme, not only for his assistance with accommodation and vehicles, but also for his kind hospitality.

Finally we would like to express our appreciation of the manner in which the farmers and their families responded to our request for information.

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DISTRIBUTION OF SAMPLE FARMERS
IN KANDY DISTRICT

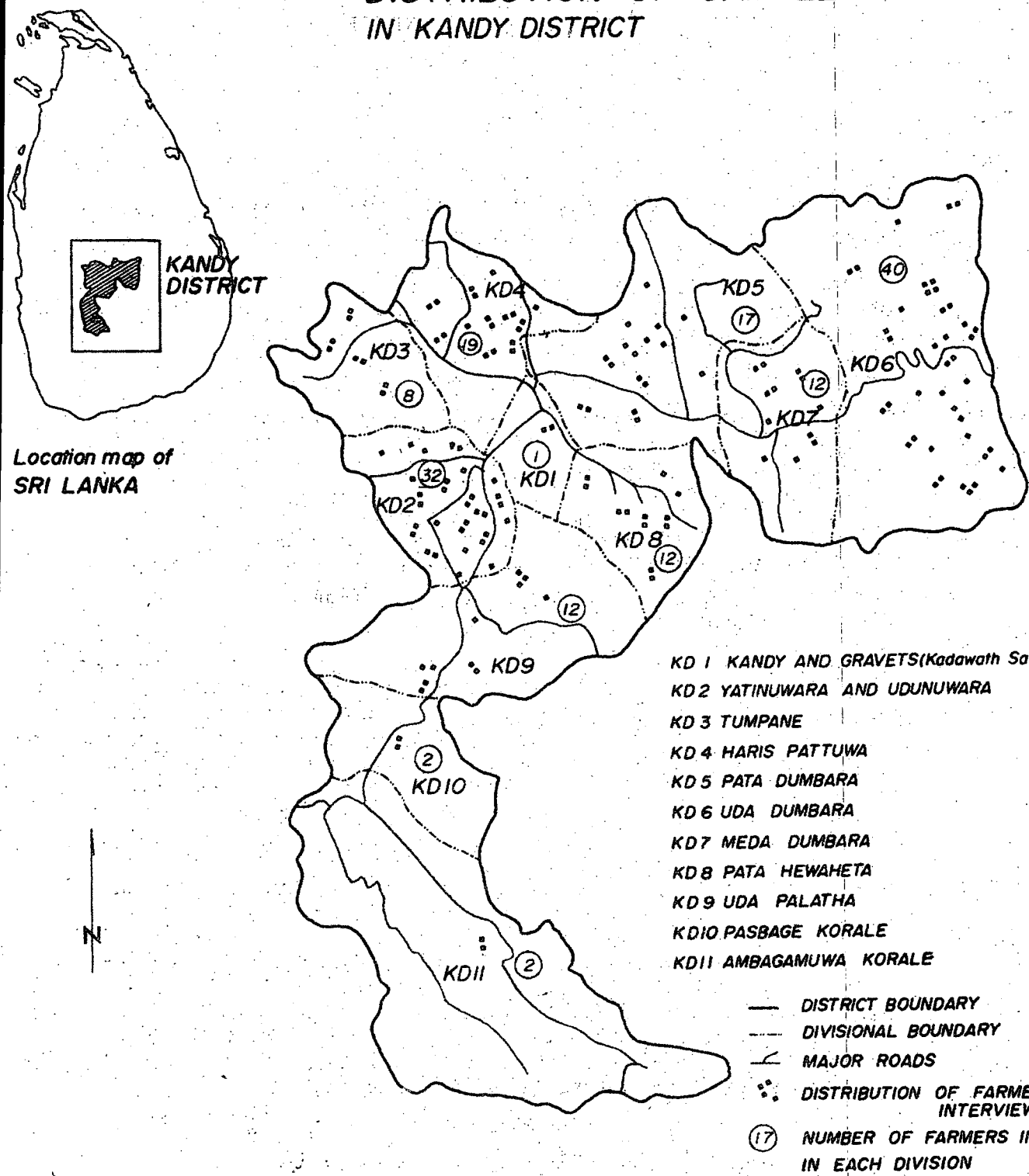

Fig. 1

INTRODUCTION

This Study of the Agrarian Situation relating to paddy cultivation in the Kandy District is part of a larger study which included the important paddy producing districts of Hambantota, Anuradhapura, Polonnaruwa and Colombo. While the study relating to each district can be examined in its own right, it would be necessary to keep the larger design of the work constantly in view. This is relevant because the conclusions and suggestions emerging in each individual case and in their totality are of value in determining the strategies of the development programme for paddy production in the future.

The Agrarian Research and Training Institute which was officially inaugurated in February 1972, is still an infant institution struggling to build up its organisation and personnel. Nevertheless, the Institute decided that even with the limited resources available to it at present, it would be worthwhile to undertake a survey relating to paddy cultivation in some of the important paddy producing districts in the island. There were several reasons for taking this decision. The Institute has been established for the purpose of studying and evaluating the agrarian situation in Sri Lanka where the cultivation of paddy by small-holders is a dominant feature of the agrarian situation. In recent years there have been several noteworthy surveys and research studies relating to various aspects of paddy cultivation in Sri Lanka; nevertheless there is a great deal of work that remains to be done on the socio-economic aspect of paddy cultivation in different parts of the island. This study inaugurated by the Institute should therefore be treated as an introductory inquiry intended to surface the major socio-economic and environmental factors affecting paddy cultivators in the selected districts. It is intended to be a forerunner to further studies which will clarify and sharpen the situation regarding paddy production in the country.

During the last few years there have been a number of noteworthy technical achievements in the area of rice cultivation in Sri Lanka. Among them are the development of new high yielding varieties of paddy, greater information on soils, the availability of fertilizer mixtures suitable for different agro-climatic regions and specific recommendations for the control of major pests and diseases. But it has been increasingly apparent that even though the scientific and technical information available in the country for achieving self-sufficiency in rice production is considerable, the information available on the human and institutional factors is still very inadequate.

The declared national goal of attaining self-sufficiency in rice has to be achieved by matching the scientific and technical basis of the paddy production programme with the human and institutional factors. The Institute releases these publications in the hope that this survey will focus greater attention on the socio-economic and environmental factors surrounding the paddy production programme in Sri Lanka.

Objectives of the Study

To ascertain

1. The influence of certain socio-economic, environmental and attitudinal factors on the adoption of different cultural practices, and the impact of such practices on the productivity of land.
2. Attitudes of farmers towards various tenurial arrangements.
3. Utilization of family and hired labour in paddy cultivation.
4. The effectiveness of different extension communication media as agents of change in cultural practices.

Area of Study

The study was confined to 833 farmers in five districts as described below:

	District	No.of farmers interviewed
Dry Zone	Anuradhapura	201
	Hambantota	160
	Polonnaruwa	162
Wet Zone	Colombo	152
	Kandy	158
	Total	833

The number of farmers to be interviewed in each district was determined mainly in relation to the resources available at the Institute.

Method of Study and Sample Design

The Survey was conducted using a questionnaire designed especially for it. In framing the questionnaire emphasis was given to the first objective dealing with production aspects. The questionnaire was divided into seven main sections as follows:

1. General information in respect of the farmer, viz: family size, particulars of land operated, sources of water, machinery, equipment, livestock, other crops cultivated, etc.
2. Tenurial arrangements and farmers' attitudes towards them.
3. Co-operatives, Credit and Indebtedness.

4.Cultural practices adopted in paddy production in Maha 1971/72.

5.Cultural practices adopted in paddy production in Yala 1972.

6.Farm Expenses connected with paddy production in Yala 1972.

7.Agricultural information and the farmer.

The questionnaire was pre-tested in three different areas in the Colombo district, and on the basis of the observations made during the tests, it was revised prior to the commencement of the survey. The same questionnaire was used without any modification in all five districts.

The selection of the sample of operators for this survey was based on the sample of parcels of paddy land chosen by the Department of Census and Statistics for the crop cutting survey in Maha 1970/71. The crop cutting survey is based on a stratified multi-stage random sampling design, the parcels of paddy within each stratum being chosen with probability proportional to the extent cultivated during the previous corresponding season.

In relation to the resources available in the Institute and the nature of the enquiry, it was decided to limit the sample size for Kandy district to about 150, as this number was considered adequate to provide representative data on the agrarian situation in the district. This sample was allocated among the strata 'major irrigation, minor irrigation and rainfed conditions' proportional to the area under cultivation in each of those strata in the district in Maha 1971/72. Having decided thus on the size and basis of the sample, the farmers to be interviewed were chosen from the list of parcels chosen for the crop cutting survey in the order in which they occurred in the list leaving out the parcels in which crop cutting experiments had not been carried out and parcels which were cultivated by a farmer already selected, until the required number of parcels was obtained. If the list of parcels did not provide the required number, the list was enlarged to include the reserve lists of parcels and selection continued until the number required was obtained. The farmers cultivating the parcels thus selected formed the sample for the survey.

As the size of the sample, which had been determined on the basis of the resources available to the Institute, was inadequate to give reliable estimates due to the wide variability amongst the sample units, it was decided not to proceed with the estimation by the appropriate estimation procedure. The data was analysed, considering the sample as a simple random sample of operators from a population of operators, and the report based on this analysis.

The sample of parcels for the crop cutting survey was chosen with probability proportional to the extent under cultivation during the previous Maha season. As this sample of parcels and consequently clusters of parcels with corresponding operators were chosen with probability proportional to

an auxiliary variate associated with size of holdings, it is expected that the estimate obtained by treating the sample as a simple random sample will be biased. Estimates of characteristics positively associated with size of holding would tend to be over-estimates and those negatively associated are likely to be under-estimates on the assumption that size of holding is linearly correlated positively with the auxiliary variable, - extent sown during Maha 1970/71. The extent of bias depends on the nature of the distribution of the auxiliary variable in the population.

The selection of sample was based on an objective randomization procedure, the units being chosen with unequal probability. This is not the sampling design suited to some aspects of the study. This sampling procedure was adopted deliberately to enable a comparison of reported yield with yield data obtained through crop cutting experiments. This was considered important because agrarian aspects connected with production and productivity were the main concern of this survey. The nature of the analysis of the data does, however, impose certain biases on estimates and conclusions in respect of characteristics related to the size of holdings.

In the sections in which such biases appear to us to be noteworthy, we have advised the reader accordingly.

Field Survey

The field work in Kandy lasted 7 days from 15 December 1972. Four investigators from the Institute assisted by ten final year geography students from the University of Sri Lanka interviewed the farmers in the sample. Although the investigators had previous experience in field survey work of this nature they were given detailed instructions on the survey objectives and the information to be collected by the Research and Training Officers of the Institute who had designed and pre-tested the questionnaire.

The sample farmers were contacted in the field with the assistance of the District Agricultural Extension Officer and his field staff. The field work was closely supervised by four Research and Training Officers from the Institute who accompanied the investigators on their field visits to interview farmers. They also scrutinised the completed questionnaires at the end of each day and rectified any discrepancies and incomplete recording in consultation with the investigators. The response of the farmers was very good and 158 farmers in all were interviewed. The analysis relates to these 158 farmers but for some sections responses were not available from all of them.

Rounding Off of Figures

Figures reported have been rounded off to the nearest whole number except where it was considered important to retain decimal places.

Slight discrepancies between the 'sum of components' and 'totals' seen in some tables are due to rounding off of figures. Non-additivity of components due to reasons other than rounding off of figures, have been indicated wherever they occur.

Definitions

Some of the classificatory and other terms used in the text of this report require definitions to avoid any confusion.

1. Lowland/Highland/Chena

   Land has been classified as Lowland, Highland, and Chena. 'Lowland' refers to asweddumized wetlands normally used for paddy cultivation although other crops may sometimes be grown in Yala perhaps due to lack of water. Some of these are terraced fields which are on hill slopes and are fed from streams by way of anicuts and channels. 'Highland' refers to dry lands, unirrigable by gravity methods, which is used on a permanent basis, and 'Chena' such dry lands used on the basis of shifting cultivation.

2. Household/Family/Farm

   Information was collected on the basis of household, 'Household' being taken as all the members living under one roof. This unit is sometimes referred to as 'Family' in the text. The farming activities of the individual members of the household where they act as operators has been taken collectively to represent the 'Farm'.

3. Tenurial Status

   This refers to the operator's tenure relationship to the lowland operated. Where the entire operated holding is owned by members of the household, the operator has been classified as 'Owner'; where the entire operated holding is rented in, leased in or taken on ande [1], the operator has been classified as 'Tenant'. Where the operated holding is made up of both these categories of land, the operator has been classified as 'Owner-tenant' or 'Tenant-owner' depending on whether more than 50% of the operated holding is owned or tenanted respectively.

4. Size of Holding

   Classification according to size of holding is based on the operated lowland holding. On this basis holdings have been classified into 7 classes as follows:

Up to 0.50 acre	- holdings up to and including 0.50 acre
0.50 - 1.00 acre	- holdings which are over 0.50 acre and up to and including 1.00 acre
1.00 - 2.00 acres	- holdings which are over 1.00 acre and up to and including 2.00 acres
Up to 2.00 acres	- holdings up to and including 2.00 acres
2.00 - 4.00 acres	- holdings over 2.00 acres and up to and including 4.00 acres
4.00 - 6.00 acres	- holdings over 4.00 acres and up to and including 6.00 acres
Over 6.00 acres	- holdings above 6.00 acres

1 'Ande' refers to the traditional system of renting out land on the basis of share-cropping. The arrangements under which such lands are cultivated vary considerably: conditions prevailing in this district are discussed in Chapter 2.

5. Paddy Varieties

Varieties cultivated by the sample cultivators have been classified as Old High Yielding Varieties, New High Yielding Varieties, and Traditional Varieties as follows:

Old High Yielding Varieties	-	H-4, H-7, H-8, H-501
New High Yielding Varieties	-	BG 11-11, BG 34-6, BG 34-8, LD 66, MI 273, IR 264, Taichung.
Traditional Varieties	-	All unselected local varieties.

6. Maha/Yala

The two main seasons during which paddy is grown are referred to as Maha and Yala. 'Maha' season normally extends from about September-October to February-March and coincides with the North-East Monsoon which brings rain to the dry zone where the major paddy growing areas are located. This is the more important season. 4-4½ months and longer age varieties of paddy are grown mainly during this season. 'Yala' season normally extends from about April to August and coincides with the South-West Monsoon during which time the dry zone gets little or no rain. Shorter age varieties of 3-3½ months are grown mainly during this season especially in the dry zone.

7. Value of Paddy Produced

For purposes of valuing the paddy produced the Guaranteed Price of Rs.14/- per bushel prevailing at that period has been used.

8. Attan - customary term used for exchange labour.

9. Abbreviation

The abbreviations used in this report are:

AI	-	Agricultural Instructor
DRO	-	Divisional Revenue Officer
HYVs	-	High Yielding Varieties
KVS	-	Krushikarma Viyapthi Sevaka (Village Level Extension worker)
NHYVs	-	New High Yielding Varieties
TDM	-	Top Dressing Mixture (fertilizer)
TVs	-	Traditional Varieties
V_1/V_2	-	Basal Dressing Mixture (fertilizer)

Chapter 1

THE SETTING

1.1 General

Kandy District, situated in the central highlands of Sri Lanka, covers an area of 914 square miles and is divided into 13 Revenue Divisions for administrative purposes. The divisions are:

1. Udunuwara
2. Ambagamuwa Korale
3. Minipe[1]
4. Yatinuwara
5. Udapalatha
6. Thumpane
7. Kadawatha Satara*
8. Patha Dumbara
9. Meda Dumbara
10. Uda Dumbara
11. Pasbage Korale
12. Harispattu
13. Patha Hewaheta

(*Kandy Gravets)

This is one of the most densely populated districts of the Island. The 1971 census gives the total population as 1,187,170 persons. *This gives a density of 1,299 persons per square mile.*

Agriculture is the mainstay of the economy of the district, and paddy cultivation is still the main activity of the village. Nearly 70% of the area of the district is under agricultural holdings of which just over 81% are cultivated[2]. *Major plantation crops occupy about 70% of the total cultivated area of 326,120 acres. Paddy occupies only 15% of the total area*[3]. 60% of the total area under plantation crops is devoted to tea[4] which is also the premier crop of the district. Other major crops include rubber, coconut and cocoa. Nearly 74% of the plantation crops are in holdings of over 50 acres in extent.

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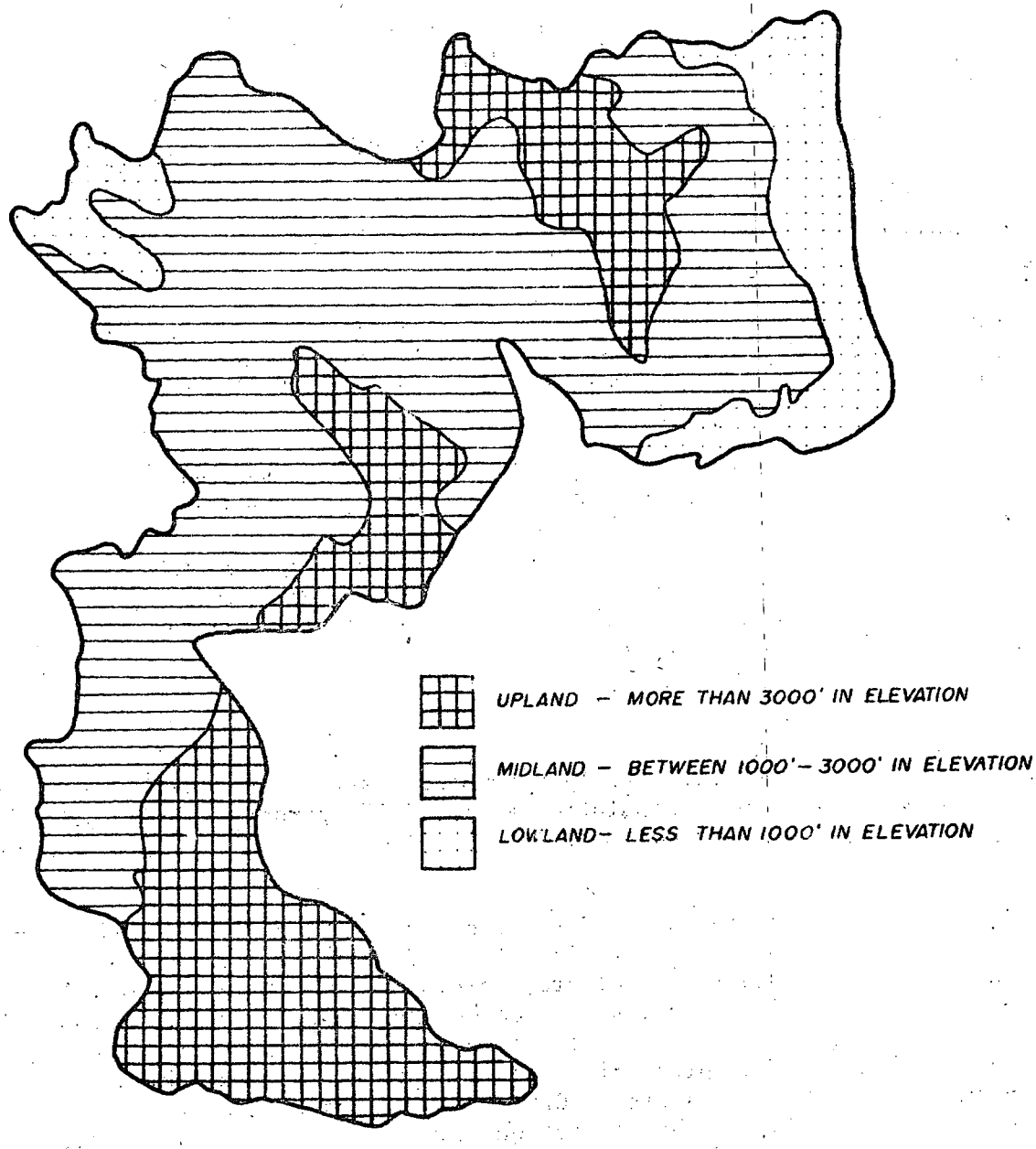
[1] At the time of drawing the sample, Minipe formed part of Uda Dumbara DRO division, but subsequently has been demarcated as a separate DRO division.

[2] Census of Agriculture, 1962, Land Use, p.37

[3] ibid p.45

[4] ibid p.246

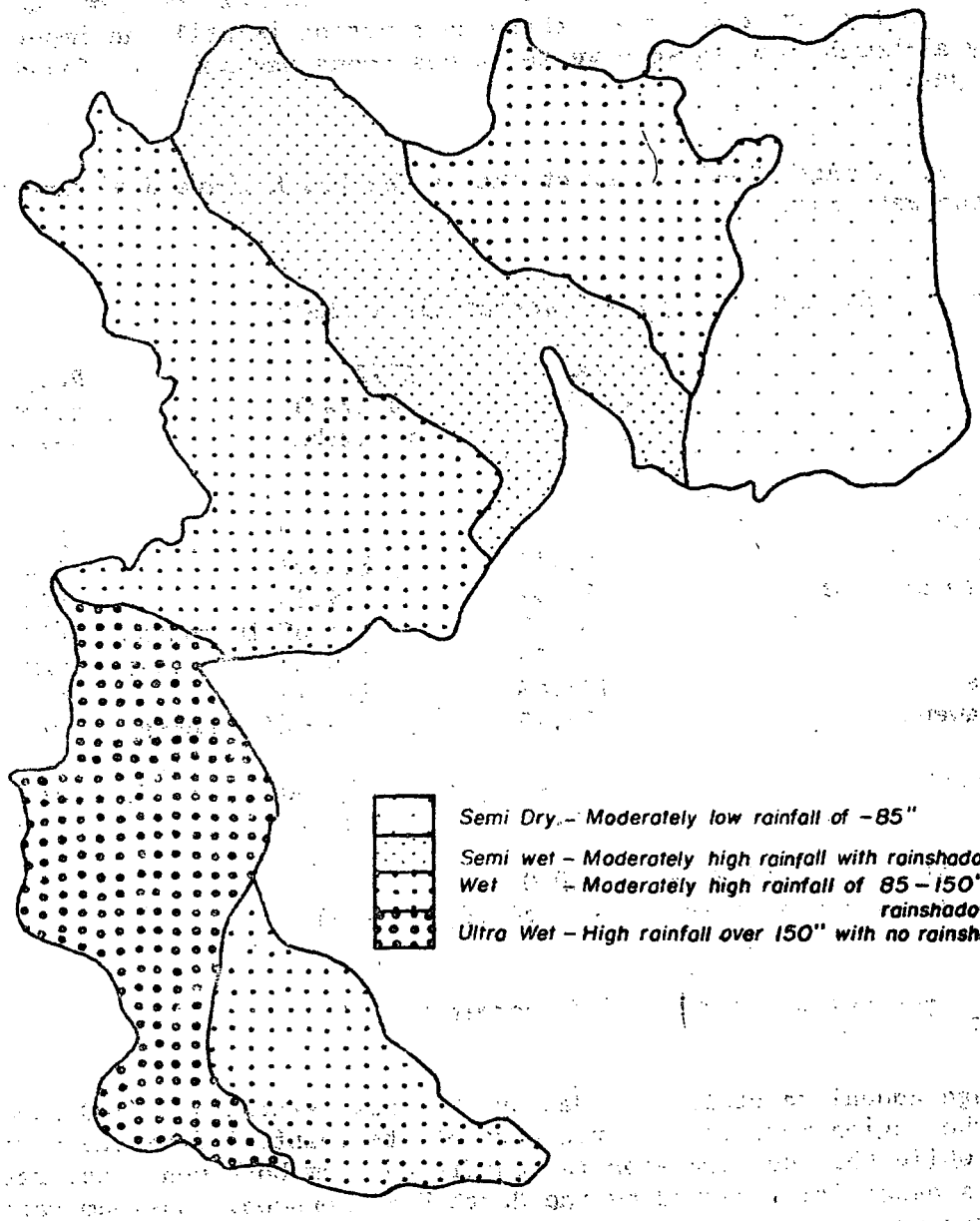
GENERALIZED RELIEF MAP OF KANDY DISTRICT



Source – Adapted from the Agro-Ecological map of Ceylon

Fig. 2

GENERALIZED RAINFALL MAP OF KANDY DISTRICT



Source – Adapted from the Agro-Ecological map of Ceylon 1972

Fig. 3

Outside the estate sector, the highlands are mostly under home gardens[1] often very small in extent but cultivated with a wide variety of useful crops. *These highly diversified home gardens, when sufficiently large, provide reasonable returns both from economic cash crops as well as from subsistence produce.* In the dry zone areas, chena cultivation is still an important activity although even in some wetter areas chena may still be found in certain parts.

In terms of climate, Kandy district except the Uda Dumbara division falls within the wet zone.

Table 1-I Rainfall in Kandy District (in inches)

Station	Average annual rainfall in inches*	1972 rainfall in inches	No. of rainy days *
Katugastota	76.60	83.37	151
Nillumale	158.10	128.21	208
Peradeniya gardens	93.52	89.34	178
Woodside	100.51	78.48(10 months)	177
Delta	110.70	106.22 (1971)	178
Idamakele	125.43	119.18	147
Mapeleadawewa	66.75	75.02(11 months 1971)	95
Soraborawewa	85.49	76.00 (1970)	101
Minipe	80.09	n.a.	116+

*for the period 1931 - 1960
+data pertains to the period 1942 - 1954

Source: Department of Meteorology

The average annual rainfall recorded by the above stations is 100 inches. Much of the region receives a large part of its rainfall from the South West monsoon, while the Knuckles area is benefitted from both monsoons, Patha Dumbara is essentially served by the North East monsoon. Maximum rainfall in the area occurs in the south western region facing the South West monsoon directly. It is ultra-wet both in terms of total rainfall and the large number of rainy days. The wet areas have a moderately high rainfall (85-100 inches), and also a large number of rainy days. These areas have no rain-shadow effect.

However, much of Harispattu, Patha Hewaheta and parts of Patha and Meda Dumbara experience a rainshadow effect and hence the rainfall is only moderately high. The number of rainy days too is less. The north east part comprising Uda Dumbara is a dry area and has a completely rain shadow effect in respect of the South West monsoon. Like the rest of the dry zone, much of the rainfall is received from the North East monsoon winds.

[1] Recently referred to as Kandyan Forest Gardens, see Economic Structure of the Kandyan Forest Garden Farms, Crop Diversification Project, Peradeniya 1973.

Thus the ultra-wet areas have better water conditions, both in terms of total rainfall and the number of rainy days than the semi-wet and semi-dry areas. *In semi-dry areas irrigation is essential for agriculture, while in the semi-wet areas too supplementary irrigation is required if land is to be cultivated during both seasons.*

1.2 Paddy Cultivation

Paddy is still the premier crop of village agriculture although in many parts of the district it is grown essentially as a subsistence crop. Most of the paddy land is in valleys or on gently sloping land. In some areas paddy is cultivated on steep slopes which have been terraced.

Table 1-II Asweddumized Paddy Land - Maha 1971/72

	Major irrigation	Minor irrigation	Rainfed	Total
Extent (acres)	8,317	21,102	19,006	48,425
%	17	44	39	100

Source: Department of Census and Statistics - 1972

Less than 20% of the paddy acreage is served by major irrigation schemes. Minipe project is the only large scheme in the district covering an area of about 7,500 acres and is confined to the drier part of the district.

44% of the paddy acreage is served by minor schemes. The rest (37%) mostly in the ultra-wet and wet areas are entirely rainfed. The minor irrigation schemes of this district need some clarification. They are distinctly different from those generally found in the dry zone areas owing to the absence of storage tanks. *The minor schemes in the semi-wet areas (cf. Map 3) are only small anicuts which divert water from streams which often run dry during Yala.* Thus the area classified as being served by minor schemes does not, in fact, have an assured supply of water during some parts of the year. *In this sense, the rainfed areas are much better off, as they receive an adequate and well distributed rainfall during most of the year.* In these areas the streams are perennial and water from seepage is available for paddy tracts in valley bottoms. Thus the rainfed areas are assured of water during both seasons. In fact, the paddy fields here are more streamfed than rainfed.

Table 1-III Asweddumised Paddy Land according to Size of Operational Holding

Size of Holding (acres)	Holdings No.	%	Extent Acres	%
Less than 0.5 acre	2,500	6	610	1
0.5 to under 1.0 acre	6,770	16	2,860	6
1.0 to under 2.5 acres	16,890	41	13,860	30
2.5 to under 5.0 acres	9,920	24	14,600	32
5.0 to under 10.0 acres	4,010	10	9,320	20
10.0 to under 25.0 acres	841	2	2,601	6
25.0 and over	319	1	2,007	4
	41,250	100	45,858	100

Source: Census of Agriculture 1962 - Vol. II Land Utilisation page 44.

The above table based on the census data for 1962 gives the broad picture of the distribution of paddy holdings in the Kandy district. 87% of the paddy area consists of holdings less than 5.0 acres in extent while 63% of the holdings are below 2.5 acres. *22% of the paddy holdings are below 1.0 acre in size.*

Even according to these figures for 1962 the bulk of the holdings in the district are extremely small. *The average holding size for the district was only 1.12 acres.* The wetter areas with a high density of population contain the largest number of extremely small holdings. Continued fragmentation of holdings would have by now made the holdings even smaller, although between 1962 and 1972 the asweddumized paddy extent has increased by a little less than 3,000 acres (cf. Tables 1-II and 1-III).

Table 1-IV Cultivators and Cultivated Extent according to Tenurial Categories

		Tenant Cultivators: On Thattu-maru and Kattimaru land	Tenant Cultivators: On other tenanted lands	Owner cultivators	Land owners using hired labour	Total
Cultivators	No.	228	28,259	41,550	345	70,372
	%	*	40	59	*	100
Extent cultivated	Acres	383	17,778	29,075	270	47,500
	%	*	37	61	*	100

*Less than 1%

Source: Department of Agrarian Services 1972

Accurate information on the tenure of paddy lands for the district is lacking. What is presented in Table 1-IV, collected by the Department of Agrarian Services on a parcel-wise basis for the purpose of registration of cultivators under the Paddy Lands Act, gives only a crude picture of the tenurial situation. The figures relating to the number of cultivators in fact refer to parcels and not holdings. Cultivators who operate more than one parcel are, therefore, counted more than once: this tends to exaggerate the number of cultivators. *This is probably why the average holding works out to only about 0.7 acre according to this Table; this is, in fact, the average size of a parcel.*

According to the above data 40% of the cultivators are tenants[1] *while nearly 60% are owners.* The tenants, however, cultivate proportionately a smaller percentage area relative to their number while the position is vice versa for owners.

The dominance of owner cultivators indicates that large tracts of paddy land are not controlled by big landlords.

Data on the extent of thattumaru lands does not appear to be complete. The Census of Agriculture reported a total of 890 acres[2]. In a district like Kandy with a high pressure of population on land and a long history of settlement one would have expected a much larger acreage under various forms of joint ownership.

1.3 The Sample Population

There were 1,195 persons in the 158 households that fell into the sample. Of these, 724 were persons 14 years of age and over who were categorised separately to estimate the availability of family labour for farm work. The distribution of the sample households and population (of 14 years of age and over) among the DRO divisions is shown in Table 1-V.

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[1] The extent of tenanted lands reported in this table is closer to that reported in the census report (17,988 acres). See Census of Agriculture, 1962, Part I p.227.

[2] Ibid. p.226.

Table 1-V Distribution of Sample Population

DRO Division	No. of families	No. of persons of 14 years and over	Average No. per family (14 years and over)
Patha Hewaheta	12	69	*5.8*
Kadawatha Satara (Kandy Gravets)	2	10	*5.0*
Yatinuwara	18	88	*4.4*
Udunuwara	14	62	*4.4*
Thumpane	8	41	*5.1*
Uda Dumbara	40	172	*4.3*
Meda Dumbara	12	56	*4.7*
Udapalatha	12	59	*4.9*
Pasbage Korale	2	12	*6.0*
Ambagamuwa Korale	2	9	*4.5*
Patha Dumbara	17	74	*4.4*
Harispattu	19	72	*3.8*
Total	158	724	*4.6*

While the average number of persons in a household was 7.6, the number of persons per family available for work was on an average 4.6. The availability of family labour varied from 3.8 in Harispattu to 6.0 in two households in Pasbage Korale; in Meda Dumbara (4.7), Udapalatha (4.9), Kadawatha Satara (5.0), Thumpane (5.1), and Patha Hewaheta (5.8), the availability of family labour was higher than the average for the district. In the age group 14 years and over, 56% worked solely on their own farm and a further 29% worked both in their own farm and outside. 9% were found to be working outside the farm only (Table 1-VI). *The average number of persons per household who worked only on their own farm was 2.6. There were altogether 132 students in this group of whom 80% were reported as helping in farm work also.*

Table 1-VI Nature of Employment of Sample Population

DRO Division	No. of persons aged 14 years & over	Persons aged 14 years and over				
		Working only on the farm	Working on the farm & outside	Working only outside farm	Disabled	Not specified
Patha Hewaheta	69	42	18	8	1	-
Kadawatha Satara (Kandy Gravets)	10	7	2	1	-	-
Yatinuwara	88	46	30	10	2	-
Udunuwara	62	33	17	10	-	2
Thumpane	41	18	20	2	1	-
Uda Dumbara	172	115	42	7	7	1
Meda Dumbara	56	37	8	3	6	2
Udapalatha	59	31	24	3	1	-
Pasbage Korale	12	8	2	2	-	-
Ambagamuwa Korale	9	5	2	-	2	-
Patha Dumbara	74	34	20	10	4	6
Harispattu	72	34	23	9	5	1
Total	724	410	208	65	29	12
%	*100*	*56*	*29*	*9*	*4*	*2*
Avg. per farm	*4.6*	*2.6*	*1.3*	*0.4*	*0.2*	*0.1*

1.4 Source of Water

Although all of them did not have their own wells 87% of the households depended on wells for domestic water. A further 9% obtained water from a pipe-borne water system.

Table 1-VII Source of Water for Household and Cultivation Purposes

DRO Division	Number of Households dependent on (for household needs)			(for cultivation needs)		
	Wells	Rivers	Pipe-borne water	Major irrigation	Minor irrigation	Rainfall
Patha Hewaheta	10	1	1	-	9	3
Kadawatha Satara (Kandy Gravets)	1	-	1	-	-	2
Yatinuwara	17	-	1	-	4	14
Udunuwara	14	-	-	-	3	11
Thumpane	8	-	-	-	5	3
Uda Dumbara	35	4	1	21	16	3
Meda Dumbara	10	1	1	-	7	5
Udapalatha	9	-	3	-	9	3
Pasbage Korale	1	-	1	-	2	-
Ambagamuwa Korale	-	-	2	-	2	-
Patha Dumbara	16	1	-	-	3	14
Harispattu	16	-	3	-	2	17
Total	137	7	14	21	62	75
%	*87*	*4*	*9*	*13*	*39*	*48*

75 (48%) of the households depend on rainfall and streams for water for cultivation purposes. A further 39% depend on minor irrigation which in this district consisted mainly of channels and anicuts rather than tanks for storage. *Only 21 households (13%) obtained water from major irrigation works, all of them under the Minipe Scheme in Uda Dumbara. Of the 336 acres of lowland operated by the 158 households, 63% were irrigated in Maha and 61% in Yala (Table 1-VIII).* A major proportion of the irrigated lowland was in Uda Dumbara, 62% of the extent in Maha and 61% of the extent in Yala.

Table 1-VIII Distribution of Irrigated Lowland

DRO Division	Maha Acres	Yala Acres
Patha Hewaheta	11.65	8.75
Kadawatha Satara (Kandy Gravets)	-	-
Yatinuwara	10.00	8.50
Udunuwara	4.25	4.25
Thumpane	2.68	2.68
Uda Dumbara	131.00	105.05
Meda Dumbara	13.00	8.25
Udapalatha	18.55	18.55
Pasbage Korale	3.00	1.25
Ambagamuwa Korale	5.00	3.75
Patha Dumbara	7.00	7.00
Harispattu	4.25	4.25
Total	210.38	172.28
%	*63*	*51*

1.5 Machinery and Equipment

The predominant position of buffalo ploughing in Kandy district is shown by the number of ploughs available (Table 1-IX). 74% of the households (117) owned 218 ploughs among them of which a very large proportion (94%) were village ploughs. Only one household reported owning a 2-wheel tractor. None of the cultivators owned a 4-wheel tractor or trailer. This is partly because in this district both the holdings as well as the 'liaddas' [1] are small. While the small 'liaddas' are a disadvantage for tractor ploughing they could be conveniently ploughed by buffaloes, supplemented by field preparation with mammoty. *The importance of field preparation with mammoties is also shown by the number owned by the households; nearly all the households owned one or more mammoties totalling altogether 421.* 2 households had no mammoties at all but 19 had 5 or more and a further 47 had 3 - 4 mammoties. The soil and topographic conditions in many areas are also unsuited to ploughing with tractors. *Tractors are used for field preparation mainly in the area under the Minipe Scheme but even there buffalo ploughing plays an important role (cf. 5.2).*

Table 1-IX Availability of Machinery and Equipment

Equipment and Machinery	No.of farms that own equipment	No.of units owned
Tractors * (2-wheel) ..	1	1
Sprayers	6	6
Dusters	1	1
Ploughs (a) Light Iron ..	7	13
(b) Village plough	110	205
Mammoties	156	421

* None of the farmers owned a 4-wheel tractor or a trailer.

Only 6 sprayers and 1 duster were owned by the cultivators themselves although the application of pesticides was practiced by most *indicating a heavy dependence on hired equipment for this agricultural operation which is not only essential but also needs to be carried out at the appropriate time.*

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[1] 'Liddias' - the bays into which paddy land is subdivided by bunds mainly to facilitate water control.

1.6 Livestock

70 households (44%) reported owning buffaloes for draught purposes, the total number being 137; the average number of buffaloes was 2 per household which reported owning buffaloes. 31 of these households, however, had 2 or more buffaloes indicating that several households had less than the average. When we consider the total sample, however, there was less than one buffalo per household. Compared to the total lowland extent cultivated by these households, the buffalo/land ratio worked out to 1/2.2. *As the buffaloes are used in pairs for ploughing only one pair of buffaloes was available for approximately every 5.0 acres of land in Maha. This is hardly adequate to complete the work in time. The ratio is more satisfactory in Yala as less land is cultivated but even then the ratio was one pair of buffaloes for every 3.5 acres of land.* Given that only one 2-wheel tractor was owned by the sample cultivators, *the figures for availability of buffalo indicate considerable dependence on others for the draught power required for field preparation and threshing.* Several households kept neat cattle and poultry. Although the number of cattle kept was not large, poultry keeping appeared to be important in some households (Table 1-X). There were 30 households which had 2 or more head of cattle and 9 households which kept 25 or more birds.

Table 1-X Livestock Population Reported by Sample Farmers

	No. of farmers reporting	Total No. of Livestock
Buffaloes (working)	70	137
Buffaloes (calves)	14	23
Cattle (milk and working)	54	110
Cattle (calves)	37	54
Poultry	41	1,008

1.7 Land Use

Highland formed an important part of the farm enterprise of cultivators in this district (cf. 2.9). A wide variety of crops are grown on this highland much of which forms home gardens under mixed crop cultivation. Most of the farmers reported having a few trees of coconut, jak, plantain and mango in their home gardens (Table 1-XI).

While coconut and jak are utilized mainly for domestic consumption, plantains are grown mainly for sale and mangoes are grown partly for sale. *There is a considerable number of crops grown by cultivators in this district which bring them a cash income, some of which are high value crops such as pepper, cloves, coffee and nutmeg.* Several households have a few plants of one or another of these. *Other crops such as tea, cocoa and rubber are important cash crops whilst arecanut, chillies, vegetables and fruits not only bring a cash income but are also used in the home.*

Table 1-XI Crops (other than Paddy) Reported by Farmers

Crop	Total No. of farmers reporting	Trees/Plants No. of farmers reporting	Trees/Plants Trees & Plants	Extent No. of farmers reporting	Extent Acres
Plantation Crops					
Tea	27	4	3750	23	46.75
Rubber	4	4	500	-	-
Coconut	130	126	3200	4	13.5
Cacao	26	23	679	3	27.75*
Permanent Crops					
Coffee	20	20	920	-	-
Pepper	24	24	602	-	-
Cloves	17	17	140	-	-
Nutmeg	8	8	55	-	-
Arecanut	34	34	1511	-	-
Other types of permanent crops	17	15	457	2	2.55
Fruit Trees					
Plantains	104	104	4245	-	-
Pineapple	9	9	340	-	-
Mango	93	93	388	-	-
Oranges	20	20	182	-	-
Lime	37	37	135	-	-
Passion fruit	12	12	94	-	-
Jak fruit	127	127	1209	-	-
Butter fruit	13	13	37	-	-
Other types of perennial crops	3	2	70	1	1
Temporary Crops					
Maize	9	2	63	7	3.93
Green gram	1	-	-	1	0.13
Yams	9	5	365	4	2.88
Onions	7	3	1003	4	0.88
Chillies	47	20	7810	27	10.41
Vegetables	16	-	-	16	4.64
Other types of annual crops	5	2	503	3	1.75

*26 acres inter-planting

Some of these crops, mainly chillies, maize, green gram and vegetables are grown in chenas which were confined to Uda Dumbara, Meda Dumbara and Patha Hewaheta (Table 1-XII).

Table 1-XII Distribution of Chena Cultivation

DRO Division	Total No. of farmers reporting	No. of farmers reporting chena No.	%	Extent of chena reported (acres)
Uda Dumbara	40	14	35	49.83
Meda Dumbara	12	5	42	5.30
Patha Hewaheta	12	3	25	2.25
Other divisions	94	-	-	-
Total	158	22	14	57.38

Although 86% of the chena land and 64% of the cultivators who reported chena were in Uda Dumbara, chena cultivation was not practised by most of the cultivators even in that area. Chena cultivation appears to play only a minor role in the district's economy but is important in areas where, due to climatic conditions, permanent cultivation of highland crops is not practised. Those areas are in the climatic zones which receive seasonal rain during the North-East monsoon.

Although in this study attention is focussed mainly on paddy cultivation and the utilization of lowland, it must be kept in mind that paddy cultivators in this district are not dependent entirely on their lowland holdings. *Even cultivators operating 0.5 acre or less of paddy land have over 1.0 acre of highland on an average (cf. 2.9). Thus they derive income and benefits from highland crops and livestock in addition to earnings that several of them get from work outside their own farms.* No attempt has been made to estimate this income but the information presented elsewhere in this report (cf.7.6) shows that it is considerable.

Chapter 2

LAND DISTRIBUTION & TENURE

2.1 Land Distribution

The full extent of land operated by the sample of 158 cultivators was 735.29 acres making an average of 4.63 acres per operator. This average holding size, however, hides many inequities which would be considered later. *Much of this land was highland (part of which was operated as chena) which accounted for 54% of the total extent.* The remainder was lowland. The distribution of this land by type of land according to how it was held is shown in Table 2-1.

Table 2-1 Classification of Operated Land by Tenure Status and Type of Land

Tenure Status	Lowland		Highland		Total	
	Acres	%	Acres	%	Acres	%
Owned	186.62	*56*	314.07	*79*	500.69	*68*
Rented/leased in	149.62	*44*	15.35	*4*	164.97	*22*
Encroached/Chena	-	-	69.63	*17*	69.63	*9*
Total	336.24	*100*	399.05	*100*	735.29	*100*

22% of the total extent was operated under some form of tenancy; the extent of land held under tenancy was very much greater in lowland (44%) than in highland (4%). Only 56% of the lowland was owned by them.

2.2 Landlessness

9 cultivators (6%) did not own any land at all; all of them were tenants accounting for 19% of the tenants. A further 37 (77%) of these tenants owned highland holdings with an extent of only 0.5 acre or less. *Altogether 44 (92%) tenants owned 1.0 acre or less of land.* There were 10 tenant-owners who owned 1.0 acre or less of land when both their lowland and highland were taken together. *Among the owners only 6 (10%) owned 1.0 acre or less when their total land holding (lowland and highland together) was taken into consideration.* Out of the 158 cultivators 60 (38%) owned 1.0 acre or less of whom 25% had only 0.5 acre or less and 6% had no land whatever of their own. *This tends to show the problem of landlessness more as one of very limited availability than as an absolute lack of land.* The magnitude of landlessness can be seen from Table 2-II.

Table 2-II Number of Operators Owning Little or No Land

Tenurial Category	Lowland only Operators owning No Land	Lowland only Operators owning Upto 0.5 Acre	Lowland only Operators owning Upto 1.0 Acre	Highland only Operators owning No Land	Highland only Operators owning Upto 0.5 Acre	Highland only Operators owning Upto 1.0 Acre	Lowland & Highland Operators owning No Land	Lowland & Highland Operators owning Upto 0.5 Acre	Lowland & Highland Operators owning Upto 1.0 Acre
Owners	-	11	23	-	11	21	-	1	6
Tenants	48	48	48	9	37	44	9	37	44
Owner-tenants	-	1	5	-	2	5	-	-	-
Tenant-owners	-	21	29	1	10	21	-	3	10
Total	48	81	105	10	60	91	9	41	60

- Indicates Nil

2.3 Distribution of Lowland

Largest proportion of the lowland is cultivated by owners who operate only their own land; of the 336.24 acres lowland, 40% is operated by 60 owners. While 21% of the lowland is cultivated by tenants who do not own any lowland, a further 39% is cultivated by farmers who cultivate their own land as well as land which has been tenanted by them (tenant-owners 28% and owner-tenants 11%). Table 2-III shows the distribution of lowland according to tenurial categories together with the highland (owned, allotted, rented or leased in), chena and encroached land operated by them. 8% of the total extent operated was reported as chena and 2% as encroachments. Only 22 cultivators (14% of the sample) reported working any chena land; of the 57.38 acres reported as chena land 86% was located in Uda Dumbara which is the drier part of the district.

Table 2-III Distribution of Operated Land among Tenurial Categories

Tenurial Categories	Operators No.	%	Lowland Acres	%	Highland Acres	%	Chena Acres	%	Encroachments[1] Acres	%	Total Acres	%
Owners[2]	60	*38*	134.02	*40*	211.67	*64*	24.30	*42*	3.00	*24*	372.99	*51*
Tenants	48	*30*	70.63	*21*	36.62	*11*	3.00	*5*	5.25	*43*	115.50	*16*
Owner-tenants	15	*9*	36.83	*11*	35.85	*11*	16.33	*28*	1.50	*12*	90.51	*12*
Tenant-owners	35	*22*	94.76	*28*	45.28	*14*	13.75	*24*	2.50	*20*	156.29	*21*
Total	158	*100*	336.24	*100*	329.42	*100*	57.38	*100*	12.25	*100*	735.29	*100*
Percentage			*46*		*45*		*8*		*2*		*100*	

[1] All encroachments were in respect of highland only.

[2] 23 operators (15 owners, 3 owner-tenants and 5 tenant-owners) were operators cum landlords, particulars in respect of their operational holdings only have been included in the respective tenurial categories in this Table.

LORENZ CURVE FOR THE DISTRIBUTION OF LOWLAND

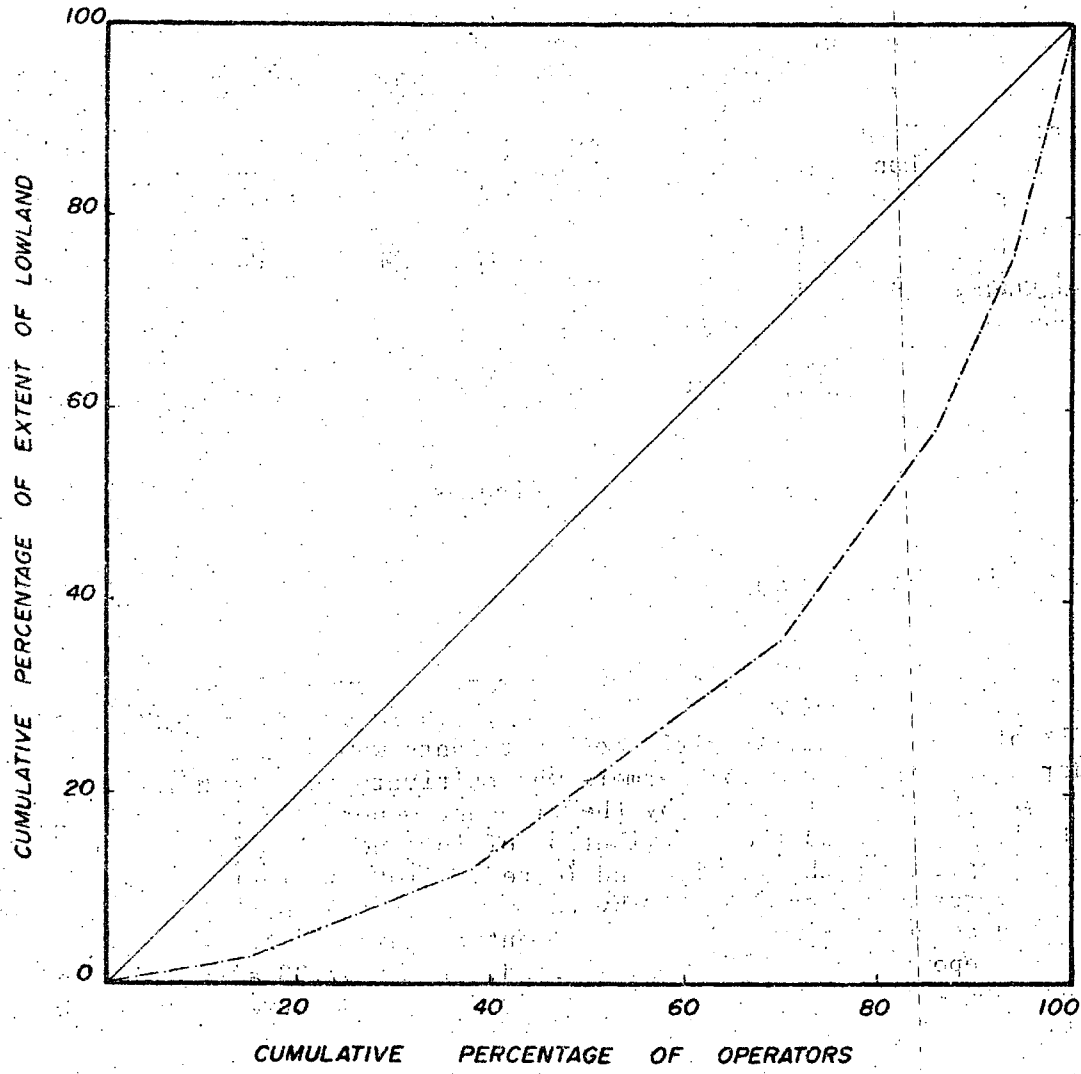

Fig. 4

When we examine the distribution of lowland holdings according to size (Table 2-IV), 0.5 - 1.0 acre and 1.0 - 2.0 acre size categories predominate. 55% of the cultivators operate holdings falling within those categories, the proportion being greater in the latter category. *Although only 6% of the cultivators fall into the category of over 6.0 acres, they operate as much as 24% of the lowland extent, about four times as much land as one would expect if the land was distributed proportionately. On the other hand, 111 cultivators with 2.0 acres or less (70%) operated only 36% of the extent of lowland.* Operators with 0.5 acre or less (15%) cultivated only 3% and those with 0.5 - 1.0 acre (23%) cultivated only 9% of the extent of lowland.

Table 2-IV Distribution of Operated Land According to Size of Lowland Holding

Size of Lowland Holding (acres)	Operators		Operated Lowland		Operated Highland		Total Extent Operated	
	No.	%	Acres	%	Acres	%	Acres	%
Upto 0.50	24	*15*	9.26	*3*	31.18	*8*	40.44	*6*
0.50-1.00	36	*23*	30.65	*9*	55.40	*14*	86.05	*12*
1.00-2.00	51	*32*	82.28	*24*	76.62	*19*	158.90	*22*
Sub-total (Upto 2.00)	111	*70*	122.19	*36*	163.20	*41*	285.39	*39*
2.00-4.00	26	*16*	75.30	*22*	101.10	*25*	176.40	*24*
4.00-6.00	12	*8*	59.75	*18*	67.00	*17*	126.75	*17*
More than 6.00	9	*6*	79.00	*24*	67.75	*17*	146.75	*20*
Total	158	*100*	336.24	*100*	399.05	*100*	735.29	*100*

2.4 Distribution of Highland[1]

Even with regard to highland, Table 2-IV shows that the cultivators with over 6.0 acres operated proportionately almost three times as much of the highland (17%). At the other extreme, the cultivators with 2.0 acres or less operated proportionately much less land; 70% of the cultivators who fell into this category cultivated only 41% of the highland. The position was much worse for the cultivators who had holdings of 0.5 acre or less and 0.5 - 1.0 acre. Although 15% of the operators fell into the former category, they cultivated only 8% of the highland. Similarly, the 23% of the operators who fell into the latter category cultivated only 14% of the highland. The cultivators in the size categories 2.0 - 4.0 and 4.0 - 6.0 acres operated proportionately more of both lowland and highland, the proportion of land cultivated being greater in the latter than in the former. The distribution of land by size category is also shown in Figs. I - III.

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[1] For purposes of this discussion the classification of operators according to their lowland holding has been retained.

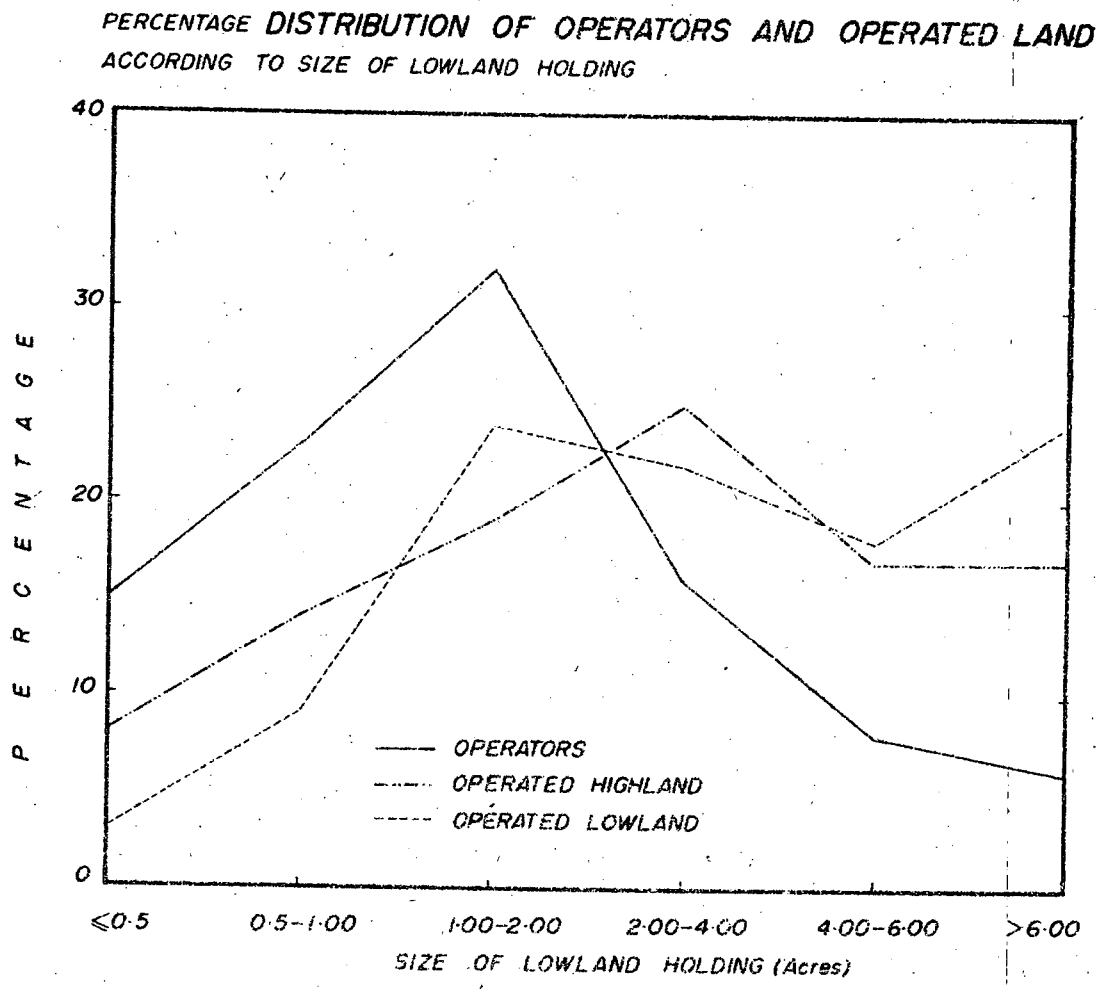
PERCENTAGE DISTRIBUTION OF OPERATORS AND OPERATED LAND
ACCORDING TO SIZE OF LOWLAND HOLDING
PERCENTAGE
40
30
20
10
0
OPERATORS
OPERATED HIGHLAND
OPERATED LOWLAND
≤0·5
0·5-1·00
1·00-2·00
2·00-4·00
4·00-6·00
>6·00
SIZE OF LOWLAND HOLDING (Acres)

Fig. 5

Ratio of percentage of land operated to percentage of operators by size of lowland holding

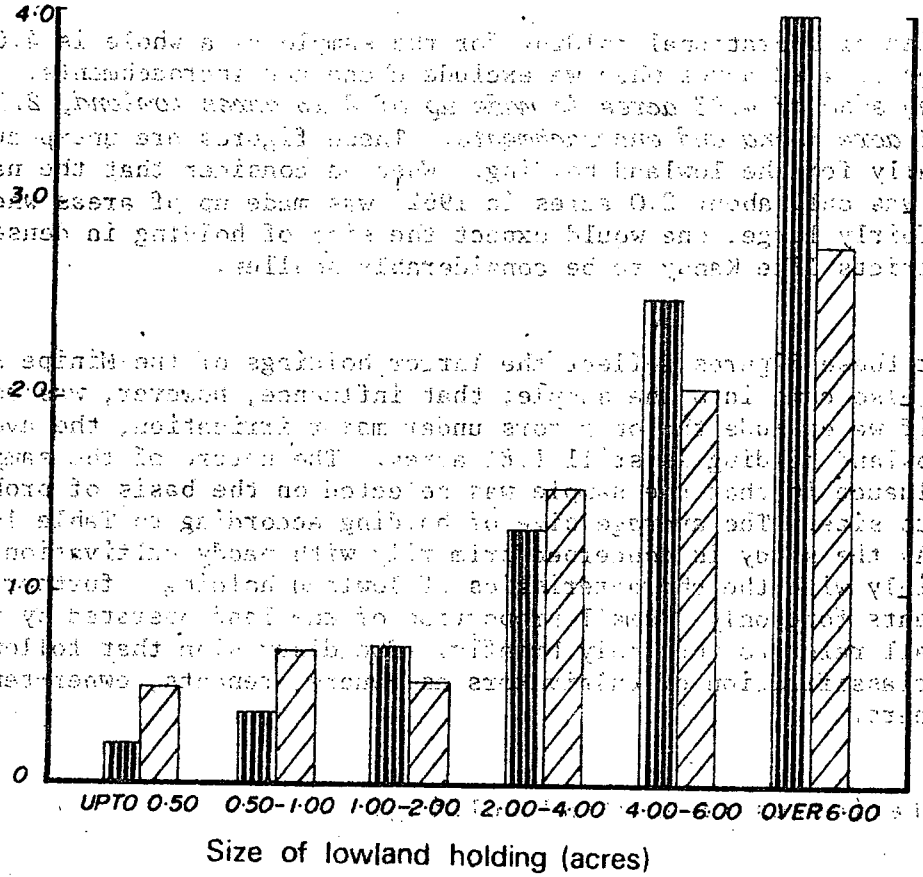

Fig. 6

2.5 Overall Size of Holding

When we consider the various characteristics relating to the distribution and tenure of land cultivated by this sample of farmers, it must be kept in mind that the sample was based on probability proportional to size. The figures are, therefore, likely to be biased by the characteristics of the larger farmers who are over represented in the sample; the figures relating to central tendency (such as average and median) as well as the interval between smaller and larger holdings are also likely to be exaggerated.

The average size of operational holding for the sample as a whole is 4.63 acres, which decreases to 4.22 acres when we exclude chena and encroachments. *The average holding size of 4.63 acres is made up of 2.13 acres lowland, 2.09 acres highland, 0.41 acre chena and encroachments.* These figures are unexpectedly high, especially for the lowland holding. When we consider that the national average which was only about 2.0 acres in 1962[1] was made up of areas where paddy holdings are fairly large, one would expect the size of holding in densely populated districts like Kandy to be considerably smaller.

To some extent these figures reflect the larger holdings of the Minipe special project which also came into the sample; that influence, however, was not very great. Even if we exclude the operators under major irrigation, the average size of the lowland holding is still 1.81 acres. The nature of the sample has a greater influence in that the sample was selected on the basis of probability proportional to size. The average size of holding according to Table 1-IV is 0.7 acres.[2] As the study is concerned primarily with paddy cultivation, we shall deal mainly with the characteristics of lowland holdings; further as chena and encroachments form only a small proportion of the land operated by this sample, we shall refer to them only briefly. The discussion that follows is based on the classification of cultivators as owners, tenants, owner-tenants and tenant-owners.

2.6 Size Characteristics of Lowland Holdings

The average of 2.13 acres for the lowland holding encompasses holdings ranging in size from 0.13 acre to 16.00 acres. The standard deviation from these holdings is 2.18 indicating that there is much variation in the size of holding. The median size of the holding was 1.50 acres with the average for the holdings smaller than the median being only 0.82 acre as compared with 3.44 acres for holdings larger than the median. *Thus the cultivators with holdings larger than the median were operating on an average more than four times as much land as cultivators with holdings smaller than the median.*

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[1] According to the 1962 Census of Agriculture, the average size of holding for all agricultural land was approximately 4.0 acres and for asweddumized paddy land it was approximately 2.0 acres.

[2] Refer p. for limitations of the data on which this figure is based

Average size of holdings varies among the cultivators falling into the different tenurial categories (Table 2-V). *The average size is largest among tenant-owners (2.71 acres) and smallest among the tenants (1.47 acres).* The average holding of the former is 84% larger than the average holding of the latter.

Table 2-V Size Characteristics of Lowland Holdings

Tenurial Category	Average size of holding	Median size of holding	Average size of Holdings for Holdings smaller than median	Holdings larger than median	Standard deviation of size of holding	Lower Quartile of size of holding	Upper Quartile of size of holding	Range of size of holding
Owners	*2.23*	1.50	*0.78*	*3.68*	2.70	0.91	2.13	0.13-16.00
Tenants	*1.47*	1.00	*0.63*	*2.32*	1.42	0.50	1.50	0.25- 6.25
Owner-tenants	*2.46*	2.25	*1.39*	*3.52*	1.63	1.16	2.63	0.75- 7.00
Tenant-owners	*2.71*	2.00	*1.15*	*4.26*	2.11	1.08	3.38	0.17- 9.50
Overall	*2.13*	1.50	*0.82*	*3.44*	2.18	0.84	2.50	0.13-16.00

If we apply the cost function derived by Izumi and Ranatunga,[1] *C = 1.25 (17.909 - 0.112Y), the estimated cost per bushel will be Rs.13.31 at 60 bushels per acre yielding a profit of Rs.4.69 per bushel on the guaranteed price of Rs.18.00 per bushel.* On that basis, the owners with their average holding of 2.23 acres could earn a profit of Rs.627.52 for a season. On the basis that tenants pay half their harvested crop as rent, as most of them do, they could earn on their average holding of 1.47 acres, Rs.206.83 for a season. Of the average holding of 2.46 acres among owner-tenants, 1.76 acres were owned and 0.70 acre was rented in; among the tenant-owners whose average holding size was 2.71 acres only 0.75 acre was owned and 1.96 acres were rented in. On the same assumptions made earlier, the owner-tenants could earn Rs.593.75 and tenant-owners Rs.486.82 per season. *If we consider that the income from one season must be sufficient for a family for six months, then the monthly income among the tenurial categories would be as follows:*

Owners	*Rs.104.59*
Tenants	*Rs. 34.47*
Owner-tenants	*Rs. 81.14*
Tenant-owners	*Rs. 98.96*

[1] K. Izumi and A.S. Ranatunga - Cost of Production of Paddy Yala 1972 ARTI Research Study Series. No.1. July 1973.

The lower incomes which appear here for tenants is due to the much smaller size of the holdings they operate and the half-shares of crop they pay as land rent. The owner-tenants and tenant-owners who have rented in land also get lower incomes than the owners although their holdings are larger because most of them pay half-share of crop as land rent on the portion of their holdings which has been taken on ande.

Low though these incomes appear to be, they tend to be over estimates in many cases for several reasons. These estimated monthly incomes are not received by all the cultivators throughout the year as all the paddy land is not cultivated in both Maha and Yala; the overall index of cropping intensity is 162%, it being considerably higher in major irrigation areas than in minor irrigation or rainfed areas (cf. Table 5-III). *Further, the yields reported for Maha 1971/72 and Yala 1972 were 50.8 and 41.9 bushels/acre which are lower than the yield of 60 bushels/acre assumed for the estimate. The estimated cost at these yields would be Rs.15.22 and Rs.17.70 respectively.*

There are also shortcomings caused by using the average size of holding. Although average size of holding is a convenient and useful measurement of central tendency, the actual size of holding could vary considerably from the average. The incomes would vary correspondingly from the estimates. The magnitude of this variation was substantial in this district. *If we consider the owners, 75% of them had holdings smaller than the average of 2.23 acres- similarly 65% of the tenants, 53% of the owner-tenants, and 57% of the tenant-owners had holdings smaller than the average for the respective tenurial category.* The co-efficients of variation show that there are large variations in the size of holdings even though the average size is small: owners - 63%, tenants - 97%, owner-tenants - 107%, tenant-owners - 77%. The range of size is greater among owners where it extends from 0.13 to 16.00 acres and smallest among tenants where it ranges from 0.25 to 6.25 acres.

There are also marked differences in the average size of holdings of the cultivators with holdings smaller and larger than the median size. *The average size of holdings is only 0.79 acre for owner cultivators with holding sizes smaller than the median size compared to 3.68 acres for those larger; that is, 4.7 times larger. The magnitude of difference for the other categories is 3.7 for tenants, 2.5 for owner-tenants and 3.7 for tenant-owners.*

The variation in the size of holding would make the income for the majority of cultivators considerably less than estimated figures quoted above. *As the cost estimates have included an imputed value for the family labour used, which in Kandy constitutes an important proportion of the labour input, the value of their labour would make up the major part of the operator's earnings from paddy cultivation.*

2.7 Proportion of Land Owned/Rented

It is useful to examine the variations in the extents owned and rented in by owner-tenants and tenant-owners. The difference in the average size of holdings between these two categories was 0.25 acre. The average extent owned by owner-tenants was 1.77 acres compared to the average of 0.75 acre owned by tenant-owners, a difference of about 1.0 acre. The tenant-owners rented on an average 1.96 acres compared to the average of 0.69 acre by owner-tenants, a difference of about 1.25 acres. Here again, considerable differences are observed when we compare the cultivators with holdings smaller and larger than the median size (Table 2-VI).

Table 2-VI Proportion of Operated Land Owned/Rented

Characteristics	Holdings of Owner-tenants						Holdings of Tenant-owners					
	Total		Smaller than median		Larger than median		Total		Smaller than median		Larger than median	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Average extent of owned land	1.77	72	0.99	71	2.54	72	0.75	28	0.34	30	1.15	27
Average extent of land rented in	0.69	28	0.40	29	0.98	28	1.96	72	0.81	70	3.11	73
Average extent of total holding	2.46	100	1.39	100	3.52	100	2.71	100	1.15	100	4.26	100

The proportion of the operational holding owned or rented in was about the same for smaller and larger cultivators[1] among owner-tenants; the proportion owned was 72% and 71% respectively. Among the tenant-owners only 26% of the operational holding was owned by the larger cultivators compared to 33% by the smaller ones.

2.8 Distribution of Land among Different Size Holdings

The distribution of holdings among the different tenurial categories by size is shown in Table 2-VII.

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[1] Refer to cultivators with holdings larger and smaller than the median size in the respective category.

Table 2-VII Distribution of Lowland Holdings according to Tenurial Categories and Size of Holding

Size of Holding (acres)	Owners				Tenants				Owner-tenants				Tenant-owners			
	Operators		Extent operated		Operators		Extent operated		Operators		Extent operated		Operators		Extent operated	
	No.	%	Acres	%	No.	%	Acres	%	No.	%	Acres	%	No.	%	Acres	%
Upto 0.50	11	*18*	3.66	*3*	12	*25*	5.43	*8*	-	-	-	-	1	*3*	0.17	-
0.50-1.00	12	*20*	10.66	*8*	14	*29*	11.60	*16*	3	*20*	2.60	*7*	7	*20*	5.79	*6*
1.00-2.00	21	*35*	35.70	*27*	16	*33*	24.85	*35*	3	*20*	4.48	*12*	11	*31*	17.25	*18*
Sub total upto 2.00	44	*73*	50.02	*37*	42	*88*	41.88	*59*	6	*40*	7.08	*19*	19	*54*	23.21	*24*
2.00-4.00	9	*15*	26.50	*20*	2	*4*	6.50	*9*	7	*47*	18.00	*49*	8	*23*	24.30	*26*
4.00-6.00	3	*5*	14.50	*11*	3	*6*	16.00	*23*	-	-	-	-	5	*14*	24.50	*26*
Over 6.00	4	*7*	43.00	*32*	1	*2*	6.25	*9*	2	*13*	11.75	*32*	3	*8*	22.75	*24*
Total	60	*100*	134.02	*100*	48	*100*	70.63	*100*	15	*100*	36.83	*100*	35	*100*	94.76	*100*

Unequal distribution of land among operators of different sizes of holding prevailed even within the tenurial categories (Fig. IV). *Most owners and tenants operated lowland holdings of 2.0 acres or less. The proportion of such operators was greater among tenants (88%) than among owners (73%).* It was much less among owner-tenants and tenant-owners, 40% and 54% respectively. These operators cultivated a disproportionately small share of the lowland cultivated by the different tenurial categories: owners - 37%, tenants - 59%, owner-tenants - 19%, and tenant-owners - 24%. A considerable proportion of the owner-tenants and tenant-owners had holdings of intermediate size (2.0 - 6.0 acres) - 47% and 37% respectively. *The proportion of operators who worked holdings of over 6.0 acres was very small in all the tenurial categories but the amount of lowland operated by them constituted a fairly large proportion of the land operated by the respective tenurial category:* owners - 7% operated 32% of the land; tenants - 2% operated 9% of the land; owner-tenants - 13% operated 32% of the land; tenant-owners - 8% operated 24% of the land. The holdings of the bigger operators appear to be larger among the owners.

2.9 Highland operated paddy cultivators

Among owners the average highland holding was largest for cultivators with lowland holdings of 2.0 to 4.0 acres and over 6.0 acres (Table 2-VIII). Tenants had the smallest average - 0.76 acre. Owner-tenants and tenant-owners had highland holdings of 2.39 and 1.29 acres respectively. *The average size of highland holding for the 158 cultivators was 2.09 acres - thus the cultivators in Kandy district operated nearly as much highland as lowland (2.13 acres). The highland holding, often devoted to year round cultivation of mixed crops, formed an important part of the farm enterprise in this district. Taken as a whole, cultivators with the largest lowland holdings (over 6.0 acres) also had the largest highland holdings (4.97 acres) and cultivators with the smallest lowland holdings (0.5 acre or less) had the smallest highland holdings (1.27 acres).* There is a marked difference in the extent of highland operated by cultivators with lowland holdings of 2.0 acres or less and those with over 2.0 acres. The larger lowland operators generally had larger highland holdings also.

LORENZ CURVES FOR THE
DISTRIBUTION OF LOWLAND BY TENURIAL CATEGORIES

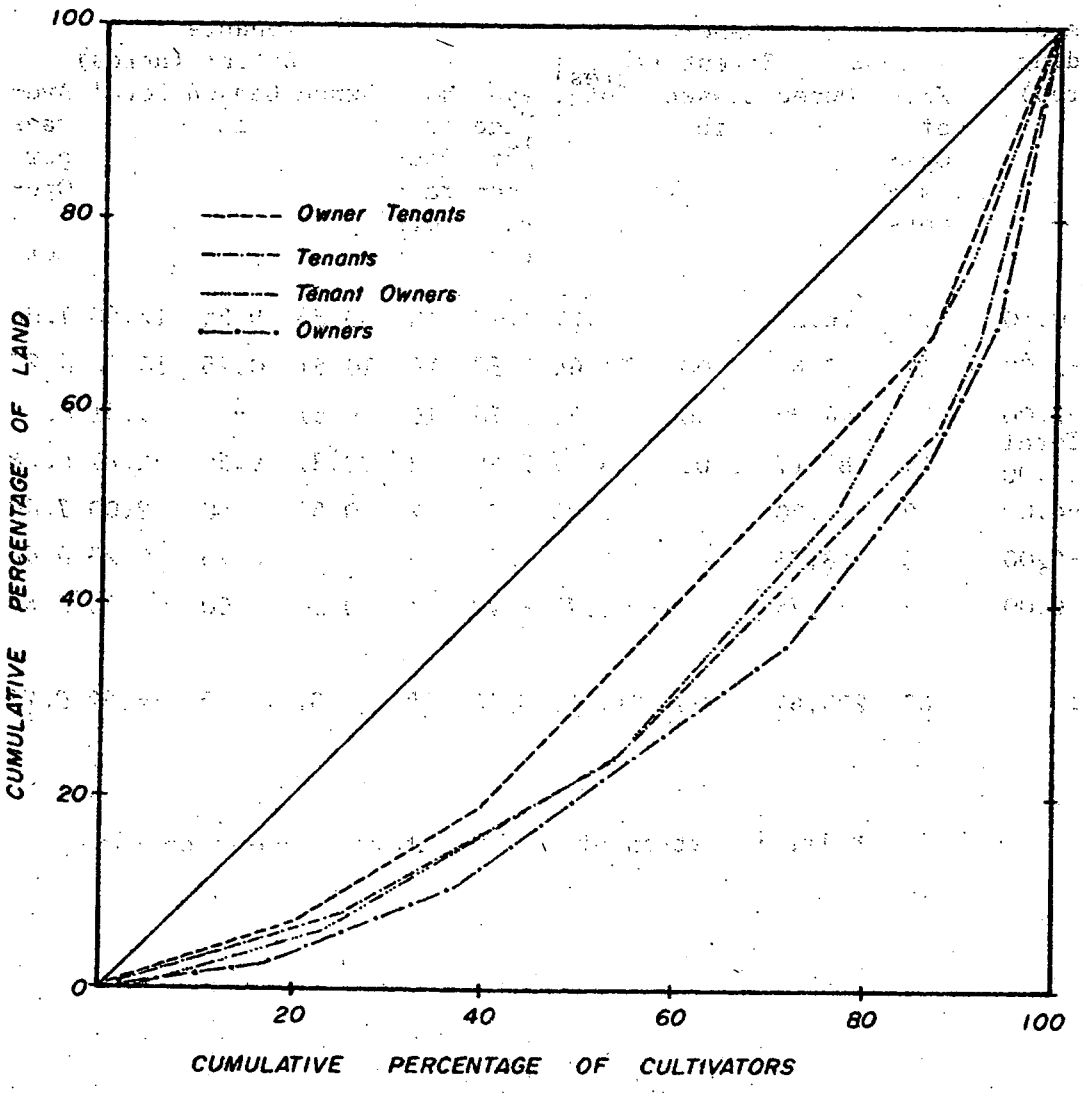

Fig.7

Table 2-VIII Distribution of Highland among Operators by

Size of Holding (acres)	Owners No. of Operators	Owners Extent (acres) Owned	Leased in	Total	Average per Operator	Tenants No. of Operators	Tenants Extent (acres) Owned	Leased in	Total	Average per Operator
Upto 0.50	11	16.20	-	16.20	*1.47*	12	3.35	9.25	12.60	*1.05*
0.50-1.00	12	20.64	1.00	21.64	*1.80*	14	10.51	0.25	10.76	*0.77*
1.00-2.00	21	44.33	1.00	45.33	*2.16*	16	9.51	-	9.51	*0.59*
Sub-Total Upto 2.00	44	81.17	2.00	83.17	*1.89*	42	23.37	9.50	32.87	*0.78*
2.00-4.00	9	76.00	-	76.00	*8.44*	2	0.50	1.50	2.00	*1.00*
4.00-6.00	3	18.75	-	18.75	*6.25*	3	-	0.25	0.25	*0.08*
Over 6.00	4	33.75	-	33.75	*8.44*	1	0.50	1.00	1.50	*1.50*
Total	60	209.67	2.00	211.67	*3.53*	48	24.37	12.25	36.62	*0.76*

*Classification of the Operators is based on the

Table 2-IX Distribution of Operated Lowland by Tenurial Category

Water Supply	Owners Operators No.	%	Extent Acres	%	Tenants Operators No.	%	Extent Acres	%
Major Irrigation	12	*20*	48.00	*36*	3	*6*	14.50	*21*
Minor Irrigation	23	*38*	49.06	*37*	13	*27*	23.55	*33*
Rainfed	25	*42*	36.96	*28*	32	*67*	32.58	*46*
Total	60	*100*	134.02	*100*	48	*100*	70.63	*100*

by Tenurial Category and Size of Holding *

Owner-Tenants					Tenant-Owners					All Tenurial Categories				
	Extent (acres)					Extent (acres)					Extent (acres)			
No. of Operators	Owned	Leased in	Total	Average per Operator	No. of Operators	Owned	Leased in	Total	Average per Operator	No. of Operators	Owned	Leased in	Total	Average per Operator
-	-	-	-	-	1	1.63	-	1.63	*1.63*	24	21.18	9.25	30.43	*1.27*
3	8.50	-	8.50	*2.83*	7	8.00	0.75	8.75	*1.25*	36	47.65	2.00	49.65	*1.38*
3	5.75	0.35	6.10	*2.03*	11	9.05	-	9.05	*0.82*	51	68.64	1.35	69.99	*1.37*
6	14.25	0.35	14.60	*2.43*	19	18.68	0.75	19.43	*1.02*	114	137.47	12.60	150.07	*1.35*
7	8.25	-	8.25	*1.18*	8	7.85	-	7.85	*0.98*	26	92.60	1.50	94.10	*3.62*
1	10.00	-	10.00	*10.00*	5	11.50	-	11.50	*2.30*	12	40.25	0.25	40.50	*3.38*
1	3.00	-	3.00	*3.00*	3	6.50	-	6.50	*2.17*	9	43.75	1.00	44.75	*4.97*
15	35.50	0.35	35.85	*2.39*	35	44.53	0.75	45.28	*1.29*	158	314.07	15.35	329.42	*2.09*

size of their lowland holdings.

according to Water Supply

Owner-Tenants				Tenant-Owners				Total			
Operators		Extent		Operators		Extent		Operators		Extent	
No.	%	Acres	%	No.	%	Acres	%	No.	%	Acres	%
4	*27*	15.00	*41*	2	*6*	11.00	*12*	21	*13*	88.50	*26*
8	*53*	13.93	*38*	18	*51*	55.89	*59*	62	*39*	142.43	*42*
3	*20*	7.90	*21*	15	*43*	27.87	*29*	75	*48*	105.31	*31*
15	*100*	36.83	*100*	35	*100*	94.76	*100*	158	*100*	336.24	*100*

2.10 Distribution of Land according to Water Supply Conditions

Because of the varying climatic conditions in this district the supply of water for cultivation varied considerably. This affected the operators very unevenly. Of the land cultivated by owners, 36% fell under major irrigation compared to only 21% of the land cultivated by tenants; 20% of the owner cultivators received water from major irrigation as against only 6% of the tenant cultivators. On the other hand 32 of the 48 tenants (67%) cultivated under rainfed conditions compared to 42% of the owners. The proportion of land under major irrigation was highest among owner-tenants (41%) and lowest among tenant-owners (12%). Owner-tenants operated much of their land (59%) under minor irrigation; the proportion varied between 33% and 42% for the other tenurial categories. *The proportion of land which had to be cultivated under rainfed conditions was highest (46%) among tenants. As a whole, the supply of water is most favourable for the owner cultivators and least favourable for tenants and tenant-owners.*

When we consider water supply by size of holding, only 12% of the extent in holdings of 2.0 acres or less obtained water from major irrigation schemes; as much as 52% was rainfed. Thus operators of the smallest holdings depended very largely on the vagaries of the weather. Conversely, only 10% of the land in the largest size class (over 6.0 acres) was rainfed and as much as 50% received water from major irrigation schemes. The proportion of land receiving water from major irrigation schemes is 18% for size class 2.0 - 4.0 acres and 34% for size class 4.0 - 6.0 acres. *It appears from these figures that the supply of water becomes more assured as the size of holding increases (Table 2-X). The main reason for this relationship is the geographical distribution of the different sizes of holding.*

The larger holdings are mainly in the newly settled areas which are in the drier part of the district. These have been developed by providing major irrigation such as under the Minipe scheme. The size of holdings in such areas is much larger than in the wetter areas of Kandy district which have been settled for several generations. In those areas topographical conditions limit the land suitable for paddy cultivation and dense population has contributed to fragmentation of operational holdings. These are the areas where paddy cultivation is carried on under rainfed conditions, sometimes supplemented by minor irrigation. The smaller holdings are found very largely in these areas. Only 16% of the 138 acres in holdings over 4.0 acres fall under rainfed conditions whereas 52% of the 122 acres in holdings of 2.0 acres or less were rainfed. *The apparent relationship between size of holding and supply of water is therefore more due to locational factors than to any advantages of scale.*

2.11 Tenancy Conditions

As was pointed out earlier, about 62% of the total number of respondents classified into four major tenurial categories cultivate at least some land on ande. The tenants without any paddy land account for nearly 49% of the total number of all categories of tenants taken together.

Needless to say that the economic conditions of a tenant depend essentially on his power of negotiation which, among other things, is affected by

(a) the extent of land (lowland and highland) owned by the tenant,

(b) the amount of outside family income, and

(c) the pressure for land in the area.

It is also affected by the relationship of the tenant to his landlord and the nature of the landlord himself. The rent paid by the tenant or that demanded by the landlord and the collateral help offered by the latter are all in one way or the other affected by this relationship.

If we re-examine the data presented in Table 2-II, it becomes clear that all the tenants were completely landless in respect of paddy land and 19% of them in respect of both lowland and highland. 77% had less than 0.5 acre of highland which, in fact, is the home garden, a holding incapable of giving any reasonable income to a family. 80% of the tenant-owners had less than 1.0 acre of paddy (54% less than 0.5 acre) and 26% less than 0.5 acre of highland, whereas 23% of the tenant-owners had less than 1.0 acre of both lowland and highland taken together.

In the discussion that follows, the total number of tenants reported in the tables does not tally with the number of tenants reported in the other sections of this report as the tenants have been multiple counted once for each landlord. This was made necessary owing to the fact that certain tenants had obtained parcels of paddy land from more than one landlord and the arrangements with different landlords had varied considerably.

2.12 Occupation of Landlords

Landlords belong to several occupational categories. As Table 2-XI shows 20% of them are landowners (some referred to as planters). The public servants account for 18%. A fairly significant proportion of landlords are priests (12%), while the traders constitute 11%. *It is interesting to note that in this district, the peasant landlords (farmers) constitute the predominant landlord group (22%).* The percentage of landowners (including planters) is slightly lower than this. *Even after excluding the landowner class including the peasant landlords and the pensioners 56% of the landlords have no direct interest in agriculture. A very noteworthy feature emerging from Table 2-XII is that the temple controls the largest percentage of tenanted lands.* Average size of the holding given on ande is also the largest (3.08 acres) for temple lands. Although 21% of the landlords are landowners by occupation, they control only 10% of the land operated by the tenants and the average extent of land given on ande by them is only 0.77 acre. This may be due to several reasons:

1. Scarcity of paddy land in the district.

2. Those classed as landowners do not always control very large extents of paddy land.

3. A relatively bigger owner by social obligation has to satisfy as many landless villagers as possible, by giving some land on ande.

Table 2-X Distribution of Operated Lowland by Size of Holding,

Size of Holding (acres)	Unit	Owners				Tenants			
		Major	Minor	Rain-fed	All Sources	Major	Minor	Rain-fed	All Sources
Upto 2.00	Acres	15.00	14.81	20.21	50.02	-	13.80	28.08	41.88
	%	*30*	*30*	*40*	*100*	-	*33*	*67*	*100*
2.00-4.00	Acres	2.50	15.25	8.75	26.50	3.00	3.50	-	6.50
	%	*9*	*58*	*33*	*100*	*46*	*54*	-	*100*
4.00-6.00	Acres	4.50	10.00	-	14.50	11.50	-	4.50	16.00
	%	*31*	*69*	-	*100*	*72*	-	*28*	*100*
Over 6.00	Acres	26.00	9.00	8.00	43.00	-	6.25	-	6.25
	%	*60*	*21*	*19*	*100*	-	*100*	-	*100*
All Holdings	Acres	48.00	49.06	36.96	134.02	14.50	23.55	32.58	70.63
	%	*36*	*37*	*28*	*100*	*21*	*33*	*46*	*100*

Tenurial Category and Water Supply

Owner-Tenants				Tenant-Owners				Total			
Major	Minor	Rain-fed	All Sources	Major	Minor	Rain-fed	All Sources	Major	Minor	Rain-fed	All Sources
-	6.18	0.90	7.08	-	9.47	13.74	23.21	15.00	44.26	62.93	122.19
-	*87*	*13*	*100*	-	*41*	*59*	*100*	*12*	*36*	*52*	*100*
8.00	7.75	2.25	18.00	-	15.17	9.13	24.30	13.50	41.67	20.13	75.30
44	*43*	*13*	*100*	-	*62*	*38*	*100*	*18*	*55*	*27*	*100*
-	-	4.75	4.75	4.25	15.25	5.00	24.50	20.25	25.25	14.25	59.75
-	-	*100*	*100*	*17*	*62*	*20*	*100*	*34*	*42*	*24*	*100*
7.00	-	-	7.00	6.75	16.00	-	22.75	39.75	31.25	8.00	79.00
100	-	-	*100*	*30*	*70*	-	*100*	*50*	*40*	*10*	*100*
15.00	13.93	7.90	36.83	11.00	55.89	27.87	94.76	88.50	142.43	105.31	336.24
41	*38*	*21*	*100*	*12*	*59*	*29*	*100*	*26*	*42*	*31*	*100*

Table 2-XI Occupation of Landlords and Their Relationship to Tenants

Relationship		Occupational Categories: Public Servants		Traders		Land Owners		Priests		Farmers		Pensioners		Others		Unspecified		Total[1]	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1.Friend	No.	7	32	8	57	17	68	3	20	11	41	2	67	4	67	2	17	54	43
	%	13		15		31		6		20		4		7		4		100	
2.Neighbour	No.	1	4	-	-	2	8	1	7	-	-	-	-	1	17	1	8	6	5
	%	17		-		33		17						17		17		100	
3.Total of 1 and 2	No.	8	36	8	57	19	76	4	27	11	41	2	67	5	83	3	25	60	48
	%	13		13		32		7		18		3		8		5		100	
4.Relative	No.	9	41	5	36	2	8	1	7	14	52	1	33	1	17	8	67	41	33
	%	22		12		5		2		34		2		2		20		100	
5.Others	No.	5	23	1	7	4	16	10	67	2	7	-	-	-	-	1	8	23	19
	%	22		4		17		43		8						4		100	
6.Total	No.	22	100	14	100	25	100	15	100	27	100	3	100	6	100	12	100	124	100
	%	18		11		20		12		22		2		5		10		100	

[1] Landlords of two tenants have not been included as information was not available in respect of these landlords, 14 operators had 2 landlords each, 7 operators had 3 landlords each.

Table 2-XII Distribution of Tenanted Paddy Land according to Occupation of Landlord

			Occupation of Landlords								
			Public Servants	Farmers	Traders	Land Owners	Priests	Pension-ers	Others	Un-specified	Total[1]
Landlords		No.	8	16	6	15	10	2	6	9	72
		%	*11*	*22*	*8*	*21*	*14*	*3*	*8*	*13*	*100*
Tenanted Paddy Holdings	Total Extent	Acres	14.45	25.88	8.26	11.61	30.75	3.25	3.80	16.14	114.14
		%	*13*	*23*	*7*	*10*	*27*	*3*	*3*	*14*	*100*
	Average Extent	Acres	1.81	1.62	1.38	0.77	3.08	1.63	0.63	1.79	

[1] Excludes particulars of 54 landlords. Information relating to occupation was not available in respect of 2 landlords. Information was not available separately for the land tenanted from each of the many landlords of a tenant.

What is mentioned under No.2 is also reflected in the high proportion of peasant landlords who only control an area roughly proportional to their share among all landlords. They are, in fact, those who possess a little more land than the very small owners or who have some other avenue of employment. The percentage area of land controlled by the traders and public servants too is roughly proportional to their numbers among landlords. As we mentioned earlier, the public servants account for about 18% of the total number of landlords. The majority of them are in white-collar employment and teaching.

The control of paddy lands by different landlord categories could be ascertained only in respect of lands cultivated by tenants and the information given may not give a precise picture of the position[1]. However, the available data highlight certain important features relating to the control of tenanted paddy lands by the different categories of landlords.

2.13 Residence of Landlords

Information available on this aspect reveals that absentee landlordism is not an acute problem in the tenurial structure of the Kandy district. The position relating to all categories of landlords taken together is shown in Table 2-XIII.

Table 2-XIII Residence of Landlords

	All Landlords		Landlords Receiving half-share as rent		Landlords Receiving one fourth share or fixed rent	
	No.	%	No.	%	No.	%
Same village	68	*55*	57	*55*	11	*52*
Same district	40	*32*	38	*37*	2	*38*
Outside district	16	*13*	8	*8*	8	*10*
	124*	*100*	103*	*100*	21	*100*

*Excludes 2 landlords for whom the mode of payment of rent was not mentioned.

Only 45% of the landlords live outside the village in which the land given on ande is situated. *The majority of landlords live in the same district and most of them are from the neighbouring villages.* The percentage of landlords living entirely outside the district (absentee landlords) is 13%.

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[1] Information pertains only to lands cultivated by the sample of tenants.

In Table 2-XIII we have also tried to ascertain whether there is any relationship between the landlords receiving different rents (i.e. those receiving half the produce and those receiving one-fourth or fixed rent) and their residence. It is evident from the Table that the difference is negligible. In both categories the largest percentage of landlords (over 50%) are from the same village while 37% and 38% come from the same district.

In both cases, the percentage of landlords living entirely outside the district is 10% or less. Does this indicate an absence of a serious problem of absentee landlordism in this district?

This discussion based essentially on data pertaining to lands cultivated by the tenants may not uncover the true nature of the problem as the extent of paddy lands controlled by the absentee landlords cannot be ascertained from the survey data.

Even when the actual residence of the landlords is considered, the absence of a serious problem of absentee landlordism is once again confirmed. Out of a total of 61 landlords classified as public servants, traders and landowners, (the three groups which are most likely to have absentee landlords), only 4 live entirely outside the district; they too are public servants. Hence, the bulk of the landlords are from the district. In the case of both public servants and traders, 22% live in the same village whereas the percentage is 68% for the landowners. The majority of the trader-landlords also live in the same district.

Even when looking at the actual residence of these landlords living outside the village, we do not come across a large number of real absentee landlords. Out of the 8 public servants who live outside the village but in the same district, only 2 live 15 miles or more away from the village and another 2 live within a radius of 5 to 10 miles. 5 out of 9 traders of the same category live outside a radius of 5 miles but less than 15 miles. *Only 2 out of 8 landowners living outside the village are found to live outside a radius of 15 miles.*

The data does not indicate the concentration of landlords in any particular area or urban centre although 5 landlords (20%) of whom 3 traders and 2 landowners are from Akurana[1] - a predominently Muslim area situated between Kandy and Matale.

2.14 Relationship of Landlords to Tenants

The landlord-tenant relationship is another significant aspect which has a bearing on the tenant particularly with reference to the rent paid and the collateral help received from the landlord.

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[1] According to our data, they do not control any paddy land beyond a radius of 7 miles.

The different categories of landlords who gave their lands on ande are also differently related to the tenants. The details of this relationship are found in Table 2-XI; a summary is presented below:

Relationship	Landlords No.	%
Friends	54	44
Neighbours	6	5
Relatives	41	33
Others	23	18
Total	124	100

82% of the landlords are either friends, neighbours or relatives. 18% have no specific relationship. Landlords who are family relatives account for 33% while friends and neighbours taken together constitute 48% of the total.

Certain important features of this relationship emerge from Table 2-XI referred to earlier. Landlords who are farmers (peasant landlords) living in the village or close to it are mostly relatives (52%). However, an important percentage of traders (36%) and public servants (41%) are also mentioned as relatives. Both these categories in this district are mainly from the villages and are not outsiders.

The percentage of relatives is the lowest among priest-landlords which shows the importance of temple lands in the district. Landowners are mostly mentioned as friends (68%). The relationship referred to as friends and neighbours should, however, be taken with care as they may not in a majority of cases differ basically from any other landlord category, in so far as the economic situation of the tenant is concerned.

2.15 Landlords' Contribution to Tenants

Table 2-XIV indicates that 50% of the tenants of all categories receive collateral help from their landlords such as seed paddy, fertilizers and so on. While a larger proportion of tenant-owners (69%) receive such help, the percentage is lowest (33%) for tenants. No tenant in any category who pays less than half-share of the produce as rent receives any collateral help. *More than 50% of the landlords who receive half-share of produce do not offer any collateral help to their tenants. This finding is contrary to the general belief that tenants who pay half-share of the produce as land rent receive certain inputs from their landlords.*

Table 2-XIV Landlords' Contribution to Tenants*

	Tenant	Owner-Tenant	Tenant-Owner	Total
Total number of tenants	51	13	39*	103*
No. of tenants receiving collateral help	17	7	27	51
% of tenants receiving collateral help	33	54	69	50

*The mode of payment to two landlords by two tenants was not mentioned and therefore these tenants have been excluded.

The different input combinations provided by the landlords to their tenants paying half-share are shown in Table 2-XV. *Those who provide seed + fertilizer combination form the largest group (21%). 24% provide only fertilizer while 12% provide only seed.*

The seed + fertilizer + agro-chemicals combination (the three key inputs) is provided only by 9% of the landlords offering collateral help. However, 60% of such landlords provide more than one input. None of the tenants paying a fixed rent or one-fourth share of produce as rent receive any collateral help from their landlords.

Table 2-XV Landlords' Contribution to Tenants paying Half-share of the Produce as Rent

	Landlords who contributed	
	No.	%
Some contribution	51	*100*
Seed only	5	*10*
Fertilizer only	10	*20*
Agro-chemicals only	1	*2*
Cash only	1	*2*
Seed + fertilizer	22	*43*
Fertilizer + agro-chemicals	3	*6*
Seed + fertilizer + agro-chemicals	2	*4*
Seed + fertilizer + other	3	*6*
Seed + fertilizer + agro-chemicals + other	4	*8*

There is also some relationship between the type of landlord and the collateral help he offers to the tenant. Table 2-XVI presents the relevant data for tenants paying half-share of the produce. A very large percentage (79%) of landlords classified as having no specific relationship to the tenants provide no collateral help. *More than 50% of friends and relatives provide at least one input, while two or more inputs are provided by a larger percentage of relatives than other groups.* However, the tenants cultivating lands belonging to their relatives do not seem to be placed more advantageously than tenants who cultivate lands obtained from friends and neighbours although the former may enjoy better security of tenure by virtue of family obligations on the part of the landlord.

Table 2-XVI Relationship to Landlord and Nature of Collateral Help received by Tenants Paying Half-share of Produce as Rent

Relationship	Tenants who pay half the produce as rent							
	Total		Tenants who receive one input		Tenants who receive more than one input		Tenants who receive no inputs	
	No.	%	No.	%	No.	%	No.	%
Friends	38	*100*	10	*26*	14	*37*	14	*37*
Neighbours	6	*100*	2	*33*	-	-	4	*66*
Relatives	40	*100*	3	*8*	18	*45*	19	*48*
Others	19	*100*	2	*11*	2	*11*	15	*79*
Total	103	*100*	17	*17*	34	*33*	52	*50*

2.16 Land Rent Paid by Tenants

A noteworthy feature emerging from the pattern of rents paid by the tenants to their landlords is the widespread prevalence of the traditional payment of half-share of the produce (Table 2-XVII). 83% of tenants in all categories pay half-share of the produce to their landlords, while 11% pay a fixed rent and only 5% pay one-fourth share of produce. Relatives are in a majority among different categories of landlords receiving half-share of the produce (39%) although friends and neighbours taken together outnumber them (43%). Landlords without any such relationship account for only 18% of the total. Relationship of tenants paying one-fourth, one-third share and fixed rent to their landlords shows a different picture. Here the relatives and neighbours are not significant; the majority are friends.

Table 2-XVII Land Rent Paid by Tenants

Tenurial Category		One-fourth share of produce	Fixed rent	Half-share of produce	Total
Tenants	No.	4	6	51	61
	%	*7*	*10*	*84*	*100*
Owner-tenants	No.	-	-	13	13*
	%	-	-	*100*	*100*
Tenant-owners	No.	2	8	39	49
	%	*4*	*16*	*78*	*100*
All Tenurial Categories	No.	6	14	103	123*
	%	*5*	*11*	*83*	*100*

*The mode of payment to two landlords by two operators was not mentioned and therefore these tenants have been excluded.

The broad pattern of rents paid suggests that the bulk of the tenants are paying half-share of the crop. In section 2.15 it was pointed out that less than 50% of the landlords receiving half-share provide any collateral help to their tenants. Out of 51 tenants who received collateral help 33% got only 1 input (See Table 2-XVI). *Hence, while the majority of the tenants pay a high rent only a smaller number benefit from sufficient collateral help from their landlords.*

The provisions of the Paddy Lands Act meant for rent regulations do not appear to have had much impact in this district. This, however, is not surprising in an area where the available paddy land is very limited and, therefore, the demand for it is very high, particularly among large numbers of landless[1]. *The tenancy arrangements are, in most cases, informal and among relatives, friends or neighbours who are themselves in many cases relatively small landowners. Hence, much of these arrangements are of a non-business type often arising out of social obligations on the part of better off relatives or neighbours towards their poorer ones.* The inability of some owners to cultivate the land themselves owing to distance, illness or old age are some of the other reasons for renting out land (Table 2-XVIII).

Table 2-XVIII Reasons for Renting Out Land by Cultivators*

Total number of cultivators who rented out land	23
Number who responded	18
Reasons for renting out land:	
The plot is too far away from home	7
Unable to operate due to illness or age	7
No other family members to operate	1
Sympathy for the landless people	3
Shortage of labour or power	1

*refers only to farmers in the sample

It is in this background that one has to understand the continued prevalence of the payment of half-share of the produce by the majority of tenants even without receiving the benefit in most cases of any type of collateral help from the landlord. It is also in this light that one has to question whether the provisions of the Paddy Lands Act[2] meant for rent regulation are adequate for this district. The data available from this survey, however, does not permit us to make specific comments on the subject especially because of the difficulty in ascertaining the degree of control exercised by different landlord categories over tenanted paddy lands.

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[1] Highland available to villages too is very little and opportunities for employment outside agriculture are also limited.

[2] Paddy Lands Act of 1958 was intended to regulate the land rent and safeguard the rights of tenants cultivating paddy land.

2.17 Attitude of Tenants to Rents Paid

Since more than 80% of the tenants in this district pay half-share of the produce to the landlord, only the attitudes of tenants from all three categories paying half-share of produce are discussed here. *55% of these tenants consider the rent they pay excessive.* The percentage number of tenants and tenant-owners who feel so is much higher (59% and 55%) than the owner-tenants (38%). This latter category is much less dependent on tenanted lands than the other two.

Table 2-XIX Attitude to Rent of Tenants who paid Half-Share

Attitude to Rent	Tenants who received no help					Tenants who receive one input				
	Tenants	Owner tenants	Tenant Owners	Total		Tenants	Owner tenants	Tenant Owners	Total	
	No.	No.	No.	No.	%	No.	No.	No.	No.	%
Fair	12	4	4	20	*38*	2	1	1	4	*24*
Excessive	22	2	8	32	*62*	5	1	7	13	*76*
Total	34	6	12	52	*100*	7	2	8	17	*100*

In the case of half-share, the burden of the rent on the tenant is closely tied to the amount of collateral help he receives from the landlord. Hence, it would be interesting to compare the attitude of the tenants paying half-share who receive and do not receive collateral help from their landlords (Table 2-XIX). 62% of tenants receiving no inputs and 76% receiving only one input stated that half-share is excessive, while only 33% of the tenants receiving more than one input considered it unfair.

The attitudes shown by the tenant to the half-share he pays depends on several factors such as -

1. his relationship to the landlord,
2. landlord's economic situation,
3. competition for land in the area.

When the landlord is a relative or a close friend and himself a small owner giving some land on ande as a gesture of help or due to his inability to cultivate it himself owing to illness, etc., the tenant who receives the land considers that the former had rendered him a service. This is more so when many others who are landless cannot even find a small plot of land to cultivate on ande due to severe competition for land. Under this situation even without the landlord contributing any inputs, the tenant does not consider the half-share as unreasonable. *However, if the Paddy Lands Act was effective enough to protect the tenants from eviction, it is doubtful whether all of them would consider the half-share as reasonable and continue to pay it.*

of Produce

Tenants who receive more than two inputs					Total							
Tenants	Owner tenants	Tenant Owners	Total		Tenants		Owner tenants		Tenant Owners		Total	
No.	No.	No.	No.	%	No.	%	No.	%	No.	%	No.	%
7	3	12+	22+	*67*	21	*41*	8	*62*	17	*45*	46	*45*
3	2	6	11	*33*	30	*59*	5	*38*	21	*55*	56	*55*
10	5	18+	33+	*100*	51	*100*	13	*100*	38	*100*	102+	*100*

+One Operator did not respond

2.18 Security of Tenure

Although a detailed study on the question of security of tenure was not attempted in this survey, a few comments may be made from the data available.

Table 2-XX shows that among tenants who responded to the question on the security of tenure 66% paying half-share of produce indicated that they enjoy secure tenancy rights. Whether this security is in fact a reality is open to doubt especially when one considers the fact that a large number of such tenants are not receiving any collateral help from the landlords. Security here is soemthing which depends more on the reciprocal goodwill between the landlord and the tenants than on the strength of the Paddy Lands Act itself or on the ability of the Cultivation Committee to protect the tenant. The tenant is certainly not in a position to act, even if he wishes, according

to the provisions of the Paddy Lands Act. A large number of tenants paying half-share of the produce, as was mentioned earlier, feel that the rent is excessive but are not in a position to reduce it owing to fear of eviction.

Table 2-XX Security of Tenure

Tenant Category	Total No.	Responding farmers No.	%	Respondents who felt their tenancy rights are: Secure No.	%	Insecure No.	%	Doubtful No.	%
Paying half-share of produce	103	97	*94*	64	*66*	16	*16*	17	*18*
Paying one-fourth share of produce	6	6	*100*	5	*83*	1	*17*	-	-
Paying fixed rent	14	10	*71*	5	*50*	2	*20*	3	*30*

The majority of the tenants who pay one-fourth share (6 in number) feel that their tenancy rights are secure[1]. Out of those who pay a fixed rent (14 only) 10 responded and of them, 50% felt either insecure or doubtful of their tenancy rights. On the whole it could be said that the provisions of the Paddy Lands Act have by and large failed to guarantee security of tenure to a large number of tenants in the Kandy district. This may be in some cases due to certain difficulties arising out of the particular economic and social situation prevailing in the district (cf. 2.17). Yet in certain other cases it may also be attributed to the inadequacy of the provisions of the Paddy Lands Act for this district. It is felt that an in-depth study on the working of the Paddy Lands Act under Kandyan conditions is an urgent necessity. Such a study may surface valuable information on the whole question of land reform in the paddy sector under Kandyan conditions.

2.19 Need for More Land to Cultivate on Ande

60% of the tenants of all categories indicated that they desire to cultivate additional land on ande. The need is higher (69%) for the tenants than for tenant-owners (54%) and owner-tenants (47%) (Table 2-XXI). The tenants, being entirely landless in respect of paddy land and with little or no high-land at their disposal (the average highland holding is only 0.77 acre), find the earnings from paddy holdings of 1.47 acres under half-share inadequate to support the family; the holdings themselves are inadequate to give work to all the family members, particularly when the holding is extremely small.

[1] Most of them cultivate temple lands in the Minipe area. They all may be properly registered in the Paddy Lands Register maintained by the Cultivation Committee.

Table 2-XXI Willingness of Tenants to Cultivate More Land on Ande if available

	Tenants		Tenant-Owners		Owner-Tenants		Overall	
	No.	%	No.	%	No.	%	No.	%
Desire to cultivate more land on ande	33	*69*	19	*54*	7	*47*	59	*60*
No desire to cultivate more land on ande	13	*27*	12	*34*	5	*33*	30	*31*
No response	2	*4*	4	*11*	3	*20*	9	*9*
Total	48	*100*	35	*100*	15	*100*	98	*100*

It is the tenants with the smallest holdings (below 2.0 acres in extent) who have the greatest need to cultivate additional land on ande (Table 2-XXII).

Table 2-XXII Tenants paying Half-share of Produce Willing to Cultivate more Land on Ande

Size of Holding (acres)	Tenants			Tenant-owners			Owner-tenants			All Tenant Categories		
	Total No.	Willing to cultivate more land No.	%	Total No.	Willing to cultivate more land No.	%	Total No.	Willing to cultivate more land No.	%	Total No.	Willing to cultivate more land No.	%
Upto 2.00	38	27	*71*	13	10	*77*	5	3	*60*	56	40	*71*
2.00-4.00	-	-	-	8	2	*25*	6	3	*50*	14	5	*36*
Over 4.00	2	2	*100*	7	3	*43*	2	1	*50*	11	6	*55*
All Holdings	40	29	*73*	28	15	*54*	13	7	*54*	81	51	*63*

The percentage is only 44 for holdings above 2.0 acres in extent. The Table also shows that tenants and tenant-owners of less than 2.0 acre holdings desire to cultivate extra land on ande more than owner-tenants. *The smaller the operational holding the greater the desire to cultivate more land, especially by those with least land of their own. The two most important reasons given for the need to cultivate such extra land were:*

(a) to increase the inadequate family income (49%), and

(b) to give more work to excess family labour (50%) (Table 2-XXIII).

The tenants who did not want to cultivate any extra land on ande (31%) gave several reasons. Among the more important reasons were lack of capital (38%) and physical inability to work (20%). The problem of capital is an important consideration here as the majority of the landlords in the district who receive half-share of produce do not offer any form of collateral help.

Table 2-XXIII Reasons given by Tenants for Their Desire to Cultivate more Land on Ande

Reasons	Tenants	Tenant-Owners	Owner-Tenants	Overall
Present income is insufficient	21	6	3	30
To utilise excess labour	15	13	4	32
Other	1	1	–	2

Out of the responding tenants only 44% thought that they could hope to own more land in the near future (Table 2-XXIV)[1] *while 56% saw no chance of owning land.* Only 20 respondents who expected to own land indicated how they aspired to do so; 40% of them wished to become owners of the land they cultivated on ande by virtue of the Paddy Lands Act, and another 20% by receiving Crown Land. *Only 30% aspired to buy a piece of land from their savings.*

Table 2-XXIV Possibility of Owning Land

Tenurial Category		Total	Respondents Those who stated that it was	
			Possible to become owner	Not possible to become owner
Tenants	No.	43	19	24
	%	*100*	*44*	*56*
Owner-Tenants	No.	1	–	1
	%	*100*	–	*100*
Tenant-Owners	No.	7	3	4
	%	*100*	*43*	*57*
Overall	No.	51	22	29
	%	*100*	*43*	*57*

The majority of those who saw no chance of becoming owners said that they are too poor to aspire for land. This indicates that many of the tenants may be living at the margin of subsistence. In addition to their incomes being lower (cf. Chapter 7), landlessness makes them also less creditworthy. This makes it nearly impossible for them to aspire to have a plot of land of their own.

[1] The number of responding farmers for owner-tenants and tenant-owners were too small to give any comments.

Chapter 3

CO-OPERATIVES AND CREDIT

3.1 Membership in Co-operative

Data collected on Co-operative membership indicate that about 22% of the respondents were not members of any co-operative at the time of interview, whereas 78% of them were co-operative members. Of the reasons given for not becoming members, the most important is the *lack of adequate information about co-operatives*. Other important reasons are the *inability to derive any benefits from the Co-operative and possibility to benefit from private traders*. Mismanagement, reorganization (in 1971), another member of the family having membership, living too far away and new residency in the area, were among other reasons given.

Table 3-1 Reasons for not being a Member of the Co-operative

Reasons	Farmers No.	Farmers %
Does not know about the Co-operative Society ..	16	*31*
No benefits from the Co-operative	7	*14*
Derive more benefits from private traders.. ..	8	*16*
Too far from the Co-operative	2	*4*
Mismanagement of Co-operative	7	*14*
Reorganization of Co-operative	4	*8*
A family member is a Co-op.member	3	*6*
*Other reasons	4	*8*
Total	51	*101*

*The reasons stated were as follows:

Membership is given only to landlords.

It is not possible to attend meetings.

Don't like to be indebted.

Not a resident of the village at that time.

A noteworthy feature about non-members is that most of them belong to small and tenant farmer groups.

Table 3-II Number of Respondents giving Information about the Services Provided by the Co-operative and making use of them

(Classified by size of lowland holdings)

Types of Service		Up to 0.50		0.50-1.00		1.00-2.00		Sub-total up to 2.00		2.00-4.00		4.00-6.00		Over 6.00		All Holdings	
		Provided	Utilised	Provided	Utilised	Provided	Utilised	Provided	Utilised	Provided	Utilised	Provided	Utilised	Provided	Utilised	Provided	Utilised
Cultivation loan	No.	13	-	26	4	35	19	74	23	21	13	12	8	9	8	116	52
	%	-			*15*		*54*		*31*		*62*		*67*		*89*		*45*
Certified seed Paddy	No.	8	2	15	4	19	10	42	16	9	4	9	4	3	2	63	26
	%		*25*		*27*		*53*		*38*		*44*		*44*		*67*		*41*
Subsidised Fertilizer	No.	19	17	35	31	46	40	100	88	23	21	12	11	8	8	143	128
	%		*89*		*89*		*87*		*88*		*91*		*92*		*100*		*90*
Agro-Chemicals	No.	11	9	23	14	33	24	67	47	20	16	11	8	8	6	106	77
	%		*82*		*61*		*73*		*71*		*80*		*73*		*75*		*73*
Marketing of Paddy	No.	19	12	32	21	47	38	98	71	25	23	12	12	8	8	143	114
	%		*63*		*66*		*81*		*72*		*92*		*100*		*100*		*80*
Other Facilities	No.	10	6	15	14	12	9	37	29	7	7	6	4	3	2	53	42
	%		*60*		*93*		*75*		*78*		*100*		*67*		*67*		*79*

3.2 Provision and Utilization of Co-operative Services

Respondents were asked a general question as to whether they were aware of the types of services usually provided by the co-operatives and whether they really made use of them. This has been examined with reference to their tenurial status and size of land holding.

It appears from Table 3-II that the smallest land size class, i.e. up to 2 acres, makes the least use of cultivation loans with only 31% as against 89% for land size class over 6 acres; the use of seed paddy is only 38% as against 67% respectively. A slight gap is also shown in the case of the utilization of subsidized fertilizers by the smallest land size class.

The different tenurial categories also demonstrate a fairly important gap in the utilization of cultivation loans: tenant -owner and owner-tenant categories utilize 63% and 54% of this service respectively. However, the difference between the owner and the tenant is not very significant in so far as the utilization of cultivation loans is concerned, *but the utilization of seed paddy among the owners is comparatively greater than that among the tenants i.e. 57% and 22% respectively.*

Table 3-III Number of Respondents giving Information about the Services provided by the Co-operatives and making use of them

(Classified by Tenurial Categories)

Type of Service		Owners		Tenants		Owner-Tenants		Tenant-Owners		Total	
		Provided	Utilized	Provided	Utilized	Provided	Utilized	Provided	Utilized	Provided	Utilized
Cultivation loans	No	45	16	32	12	12	7	27	17	116	52
	%	*36*		*38*		*54*		*63*		*45*	
Certified seed paddy	No	28	16	18	4	3	-	14	6	63	26
	%	*57*		*22*		-		*43*		*41*	
Subsidised Fertilizer	No	55	51	43	36	13	11	32	30	143	128
	%	*92*		*84*		*85*		*94*		*90*	
Agro-chemicals	No.	43	33	31	20	10	8	22	16	106	77
	%	*77*		*65*		*80*		*73*		*73*	
Marketing of paddy	No.	54	44	42	31	13	11	34	28	143	114
	%	*81*		*74*		*85*		*82*		*80*	
Other facilities	No	21	16	20	17	3	2	9	7	53	42
	%	*76*		*85*		*67*		*78*		*79*	

3.3 Indebtedness

Out of the total number of respondents 39% were in debt during 1971-72 Maha. The percentage of indebted tenant-owners was 44; this is the highest for any group. It is followed by owner-tenants with 40%. The owners and the tenants with 37% and 38% in debt respectively ranked the lowest.

Table 3-IV Borrowers classified according to Sources of Loan and Tenurial Category - Maha 1971-72

Tenurial Category		Sources of loan: Co-op.	One private source only	Co-op & private source only	More than one private source only	All sources	All borrowers as a % of total No. of operators	Total No of operators
Owners	No.	11	8	3 ≠	-	22	37	60
	%	*50*	*36*	*14*	-	*100*		
Tenants	No.	8	9	1	-	18	38	47
	%	*44*	*50*	*6*	-	*100*		
Owner-Tenants	No.	4	1	1	-	6	40	15
	%	*67*	*16*	*16*	-	*100*		
Tenant-Owners	No.	6	5	3	1	15	44	34 *
	%	*40*	*33*	*20*	*7*	*100*		
All Tenurial categories	No.	29	23	8 ≠	1	61	39	156
	%	*48*	*38*	*13*	*2*	*100*		

* Excludes two operators, one tenant and one tenant-owner who did not cultivate Maha 1971/72.

≠ One borrower obtained two private loans while others obtained only one private loan.

The general picture of all borrowers as a percentage of total number of operators does not indicate very wide differences among the various tenurial groups. *But the difference in respect of the borrowers among the tenants and the tenant-owner groups approaching co-operatives for loans is quite prominent with 44% and 40% of the operators respectively as against 50% and 67% for the owner and the owner-tenant groups respectively. It seems that the tenants and the tenant-owners presumably handicapped by their low socio-economic status find it more convenient to go frequently to private sources for their loan requirements than to co-operatives.* (See Tables 3-IV and 3-V). A few of the agricultural operators borrowed both from the co-operatives and a private source.

Out of Rs.22,607/- an amount of Rs.14,423/- or 64% was borrowed from the Co-operative during 1971-72 Maha alone. This amount thus constitutes the highest proportion of loans obtained from all sources. Other significant sources of loans next to co-operatives were friends, relatives and traders.

Table 3-V Amount of Loans according to Source of Loan and Tenurial Category of Borrower - Maha 1971/72

Tenurial Category		Sources of Loan: Co-op	Money Lender	Landlord	Traders	Friends & Relatives	All Sources	No. of borrowers	Average amount borrowed
Owners	Rs.	7,850	800	-	550	1,408	10,608	22	482
	%	*74*	*8*	-	*5*	*13*	*100*		
Tenants	Rs.	2,069	300	350	1,365	200	4,284	17(1)	252
	%	*48*	*7*	*8*	*32*	*5*	*100*		
Owner-Tenants	Rs.	1,557	-	-	500	600	2,657	6	443
	%	*58*	-	-	*19*	*23*	*100*		
Tenant-Owners	Rs.	2,947	-	21	900	1,190	5,058	15	337
	%	*58*	-	-	*18*	*24*	*100*		
All Tenurial Categories	Rs.	14,423	1,100	371	3,315	3,398	22,607	60	377
	%	*64*	*5*	*2*	*15*	*15*	*100*		

(1) Excludes particulars of a borrower who had not mentioned the amount borrowed.

\- Indicates nil.

The average loan per borrower from both institutional and non-institutional sources for owners, tenants, owner-tenants and tenant-owners works out to Rs.482.00, Rs.252.00, Rs.443.00 and Rs.337.00 respectively. Taking all tenurial categories together, the average size of loan per borrower is Rs.377.00.

Loans from Co-operatives accounted for 74% and 59% of the total amount of borrowings of owners and owner-tenants respectively; the corresponding percentages being 48 for tenants and 58 for tenant owners.

Based on the facts mentioned above the following conclusions may be drawn:

(a) the average amount of loans for all sources per borrower for the owner group is high compared to all other tenurial categories;

(b) borrowers among owners meet a greater portion of their credit requirements from co-operatives;

(c) the average amount of loans per tenant borrower is very small

and

(d) the tenant group utilizes the private sources more than the co-operatives.

Table 3-V(a) shows a close relationship between the average amount of loan from all sources and the size of land holding irrespective of different tenurial groups. The average amount of loan increases with the increasing size of land holdings with the only exception of 4.00 to 6.00 acres land size class for which the average amount borrowed is a little less (Rs.504.00) than that (Rs.526.00) for 2.00 - 4.00 acres size class. The percentage of Co-operative loans also had the same upward trend with the increasing size of holding with the exception of 2.00 - 4.00 acres land size class which had a lower percentage (46) than that (61) for 1.00 - 2.00 acres land size class. The extent of land thus determines the amount of credit obtained.

The average amount of Co-operative loan borrowed during Maha 1971-72 per borrower increased with the size of land holdings ranging from Rs.112/- to Rs.591/-. The co-operative loan per borrower averaged over all operational holdings was Rs.401.00 (see Table 3-VII). Among all borrowers during Maha 1971-72 there were six who received an amount of Rs.2,305/- from Co-operatives although they had outstanding loans amounting to Rs.3,946/- from the same source. Apart from this outstanding loan (of Rs.3,946/-) there were nine borrowers who had an amount

Table 3-V(a) Amount of Loan according to Size of Holding and Source - Maha 1971/72

Size of Holdings		Source of Loan: Co-op.	Money Lenders	Landlords	Traders	Friends & Relatives	All Sources	No. of borrowers	Average per borrower
Up to 0.50	Rs.	-	150	-	-	20	170	2	85
	%	-	*88*	-	-	*12*	*100*		
0.50 - 1.00	Rs.	224	-	-	-	588	812	9	90
	%	*28*	-	-	-	*72*	*100*		
1.00 - 2.00	Rs.	4,241	150	121	1,250	1,190	6,952	22	316
	%	*61*	*2*	*2*	*18*	*17*	*100*		
2.00 - 4.00	Rs.	2,429	-	-	2,030	800	5,259	10	526
	%	*46*	-	-	*39*	*15*	*100*		
4.00 - 6.00	Rs.	3,985	-	250	-	800	5,035	10(1)	504
	%	*79*	-	*5*	-	*16*	*100*		
Over 6.00	Rs.	3,544	800	-	35	-	4,379	7	626
	%	*81*	*18*	-	*1*	-	*100*		
All Holdings	Rs	14,423	1,100	371	3,315	3,398	22,607	60	377
	%	*64*	*5*	*2*	*15*	*15*	*100*		

(1) Excludes particulars of a borrower who had not mentioned the amount borrowed.

Table 3-VI Loans from Co-operatives classified as Current or Old Loans and Size of Holdings of Borrower

		Up to 0.50	0.50-1.00	1.00-2.00	2.00-4.00	4.00-6.00	Over 6.00	Overall
a) Current loans only	**Loans obtained during Maha 1971/72**							
	No.of borrowers	-	-	11	7	7(1)	5	30(1)
	Amount of loans	-	-	3,140	2,429	3,313	3,235	12,118(1)
	Average amount per borrower	-	-	285	347	473	647	404
b) Old loans only	Outstanding loans obtained before Maha 1971/72							
	No.of borrowers	1	1	3	4	-(1)	-	9(1)
	Amount of loans	107	20	620	900	-(1)	-	1,647
	Average amount per borrower	107	20	207	225	-	-	183
c)	Current and old loans							
	No.of borrowers	-	2	2	-	1	1	6
	i.current							
	Amount of loans	-	224	1,100	-	672	309	2,305
	Average amount per borrower	-	112	550	-	672	309	384
	ii.old							
	Amount of loans	-	160	564	-	3,000(2)	222	3,946
	Average amount per borrower	-	80	282	-	3,000(2)	222	658
d)	All loans							
	i.current							
	No.of borrowers	-	2	13	7	8(1)	6	36(1)
	Amount of loans	-	224	4,241	2,429	3,985	3,544	14,423
	Average amount per borrower	-	112	326	347	498	591	401
	ii.old							
	No.of borrowers	1	3	5	4	1(1)	1	15(1)
	Amount of loan	107	180	1,184	900	3,000(2)	222	5,593(2)
	Average amount per borrower	107	60	237	225	3,000	222	373

(1) Excludes particulars of borrower who had not mentioned the amount of loans

(2) This amount was borrowed for purchase of a tractor.

of Rs.1,647/- as loans carried over from past years* (before Maha 1971/72). Among such indebted members there was one with 4.00 - 6.00 acres land size class who had an overdue loan amounting to Rs.3,000/-. Excluding this single case, the average amount of such old loan per indebted member was Rs.183/-. A large percentage of borrowers (of current, old or both loans) were farmers with holdings of 1.00 - 2.00 or 2.00 - 4.00 acres in extent and these groups of borrowers were also those who obtained the bulk of the loan.

3.4 Reasons for not Borrowing from Co-operatives

Nearly 76% of the respondents did not borrow from Co-operatives during the 1971 Maha cultivation season. Of the various reasons given for not borrowing from Co-operatives, *lack of a need for loans was given as the most important reason.* It accounted for 47% of all the reasons given by non-borrowing respondents.

The second most important reason (20%) was the absence of any arrangement or organization for granting loans. Other reasons were non-membership of the Co-operatives, inability to repay loans, lack of knowledge about the credit scheme, difficulty of procedure, and the existence of outstanding loans to co-operatives; these accounted for 7%, 6%,6%, 5% and 4% respectively (vide ...).

3.5 Rates of Interest

The rate of interest charged by non-institutional sources varied from 0% to 180% per annum (though the period of repayment in most cases is 6-8 months). The average rate of interest was about 40% to 60% per annum.

A fairly large number of borrowings (15 out of 33 borrowings from private sources) were interest free and obtained mostly from friends and relations. Such borrowings consist of small amounts borrowed on several occasions during the cultivation season. Depending on the type of mutual relationship between the parties and the size of loans borrowed a rate of interest is charged, either in cash or in kind by friends and relatives which varies from 30% to 120%. *Friends and relatives thus advanced loans without interest as well as with interest which ranged from very low to high rates.* There were two borrowings from money lenders with high interest rates of 120% and 180%.

The interest rate on loans from People's Bank and Co-operatives was as in other districts 7½% and 9% per annum respectively.

3.6 Repayment of Loans

Of the total Co-operative loans (Rs.14,423/-) borrowed during Maha 1971/72 an amount of Rs.1,775/- or 12% of total borrowings was not repaid till the time of interview. There were 6 borrowers (16%) who defaulted such

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* In the questionnaire schedule no attempt was made to discover the origin of old loans.

Table 3-VII Repayment of Loans borrowed during Maha 1971/72

(Loans classified by Sources of Loan and Tenurial Category of borrowers)

Tenurial Category		Co-operative		Friends and Relatives		Private Traders		Money lenders		Landlords		All Sources	
		Repaid	Not Repaid	Repaid	Not Repaid	Repaid	Not Repaid	Repaid	Not Repaid	Repaid	Not Repaid	Repaid	Not Repaid
Owners	No.	12	2	7	1	2	1	1	-	-	-	22	4
	%	*86*	*14*	*87*	*13*	*67*	*33*	*100*	-	-	-	*85*	*15*
Tenants	No.	6	3	2	1	3	-	2	-	2	-	15	4
	%	*67*	*33*	*67*	*33*	*100*	-	*100*	-	*100*	-	*79*	*21*
Owner-Tenants	No.	5	-	1	-	1	-	-	-	-	-	7	-
	%	*100*	-	*100*	-	*100*	-	-	-	-	-	*100*	-
Tenant-Owners	No.	8	1	5	1	2	-	-	-	1	-	16	2
	%	*89*	*11*	*83*	*17*	*100*	-	-	-	*100*	-	*89*	*11*
Total	No.	31	6	15	3	8	1	3	-	3	-	60	10
	%	*84*	*16*	*83*	*17*	*89*	*11*	*100*	-	*100*	-	*86*	*14*

loans. Besides this, there was an amount of Rs.5,593/- obtained from co-operatives before Maha 1971-72 which was not repaid by 15 farmers. *The amount of all outstanding loans is nearly 37% of the total amounts borrowed.*

Among the private sources, landlords and moneylenders had the record of 100% recovery while private traders and friends and relatives had 89% and 83% respectively. (See Table 3-VII). It has been observed that in the case of loans obtained from private sources, even if the loans were not repaid in full (the number in this case is anyway usually small), the interest due on the loans were paid.

The reasons given for the non-repayment of co-operative loans obtained during Maha 1971-72 were: crop failure, no pressure for collection of loans by the co-operative and unavoidable family expenses like sickness, funerals, etc. The respondents gave crop failure as the most important reason for non-repayment of co-operative loans. But the defaulters of private loans (non-institutional) mentioned unavoidable family expenses as the major reason of non-repayment.

Although in this particular district there were not many defaulters either of Co-operative loans or of private loans, crop failure was considered (mostly in case of Co-operative loans) as the most important reason of non-repayment. This needs further intensive investigation, because Yala* was, in fact a failure but Maha* gave a good crop. Out of such investigation it is possible that other reasons, which might have played no less important a role, may emerge.

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* of the reporting year

Chapter 4

AGRICULTURAL INFORMATION AND EXTENSION

4.1 Extension Organisation and Activity in the District

A district agricultural extension officer with headquarters in Peradeniya is assisted by a team of technical staff who function both at Peradeniya and in the range offices. At headquarters the staff consists of the District Agricultural Extension Officer, an additional Agricultural Extension Officer, an Agricultural Instructor headquarters, and several other Instructors, one each for paddy, subsidiary food crops, vegetables, plant protection, DDC projects, young farmers clubs, home gardening and estates.

The technical staff in the field consists of 12 Agricultural Instructors and 56 village level extension workers (Krushikarma Viyapti Sevaka), deployed as indicated below:

Table 4-1 Agricultural Extension Staff Stationed at Divisional Level

Extension Centre	Agricultural Instructors	Krushikarma Viyapti Sevaka	Paddy Acreage
Kuda Dumbara	1	5	5,086
Meda Dumbara	1	6	4,159
Pata Dumbara	1	7	2,696
Harispattuwa	1	6	5,212
Tumpane	1	5	3,154
Pata Hewaheta	1	6	3,41[illegible]
Kandy Graverts	1	4	418
Udunuwara	1	4	3,725
Yatinuwara	1	4	3,530
Gampola-Udapalata	1	5	4,193
Nawalapitiya (Pasbage)	1	2	628
Norton (Ambagamuwa)	1	2	414
Total	12	56	36,627

There is a separate extension unit for Minipe as this is one of the projects where an intensive agricultural development programme is being carried out. A project manager heads the organisation and he has working for him 4 Agricultural Instructors, 5 Colonisation Officers and 19 Krushikarma Viyapti Sevakas.

At present some 7,500 acres of paddy come under Stages I and II of the Minipe special project.

Visits of extension personnel to farms, group methods like farmer training classes, mass media techniques - radio programmes, film shows and advisory leaflets are some of the methods used by the extension service of the Agricultural Department to diffuse farm information. Demonstration exercises in farmer's fields, minikit programmes are among the other methods used. Progressive farmers are also a source of influenc to their neighbours.

4.2 Sources and Agents of Agricultural Information

Table 4-II Coverage of different sources and agents of Agricultural information

Source/Agent	Types of Information					
	General Agricultural Information		Information that influenced adoption of NHYV		Fertilizer recommendations for NHYV	
	Respondents					
	No.	%	No.	%	No.	%
	145	*100*	48	*100*	44	*100*
Extension personnel visiting farms ..	107	*74*	30	*63*	35	*80*
Farmer visiting extension centre	56	*39*	16	*33*	6	*14*
Farm neighbours ..	54	*37*	10	*21*	2	*5*
Farmer training classes ..	29	*20*	10	*21*	4	*9*
Demonstration plots	52	*36*	16	*33*	-	-
Advisory leaflets	52	*36*	12	*25*	10	*23*
Radio programmes ..	40	*28*	8	*27*	-	-
Agricultural film shows ..	46	*32*	7	*15*	-	-
Newspaper articles	-	-	14	*29*	-	-
Other sources ..	18	*12*	5	*10*	1	*2*
Non Respondents ..	11	-	-	-	4	-

It is observed according to the data in Table 4-II that a very high proportion of the farmers are dependent for agricultural information on extension staff visiting individual farms. From three visits 74% of the farmers had obtained general agricultural information, 63% information on new high yielding varieties and 80% on fertilizer recommendations for these varieties. *Individual visits to farms then occupy a very significant position in diffusing agricultural information.*

In the matter of providing general agricultural information farmer visits to extension centres and farmer neighbours ranked as important sources of information (next to individual visits by extension staff), the relevant figures being 39% and 37% for visits to Extension Centres and farmer neighbours respectively. In descending order of importance were advisory leaflets and demonstration plots (36%), agricultural film shows (32%) and radio programmes (28%). The source with the least coverage was farmer training classes. *The above data shows that individual communication methods had been most effective in extension work.* However, the information available does not permit any comparison with regard to the effectiveness of different methods of communication at various stages in the adoption process.[1]

In regard to the adoption of new high yielding varieties, farmer visits to extension centres and demonstration plots were rated next in importance to individual visits made by the extension officers. Farmer neighbours and farmer training classes were not rated high, the coverage being only 21%. Radio programmes and advisory leaflets had influenced 27% and 25% of the respondents respectively while agricultural film shows had been rated lowest with 15%. A striking feature in this respect has been the impact of newspaper articles which had influenced 29% of the farmers to adopt these new varieties.

Personal visits of extension staff had been most effective in respect of fertilizer recommendations for new high yielding varieties. 80% of the farmers had relied on this source. The other important source had been advisory leaflets and farmer visits to extension centres. *This tendency illustrates that personal contact between farmers and the extension staff is vital in diffusing technical information.* Agricultural leaflets taken by themselves do not appear to be very effective in channelling technical information.

The foregoing discussion also shows that farmer training classes had not been very effective as a source of extension information in the district. This is discussed in Section 4.4 with reference to attendence at farmer training classes in 1972 Yala season. *Likewise farmer neighbours as a source of information had not been very effective in regard to information on new high yielding varieties and fertilizer use.*

4.3 Extension Contact Score

An extension contact score was used to measure the number of contacts between the farmer and the extension services. For this purpose the following types of contacts with the extension service in the Yala season of 1972 were used. The score refers to the number of sources with which the farmer had contact during the season.

Types of Contact

1. Visits to extension centres
2. Visits by extension personnel
3. Farmer training classes
4. Demonstration plots
5. Advisory leaflets (included were farmers who reported reading advisory leaflets)
6. Radio programmes (included were farmers who reported listening to radio programmes)
7. Agricultural film shows

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[1] Five stages are recognized in the process of acceptance of a new idea, namely awareness, interest, evaluation, trial and adoption. The relative importance of different sources of information will vary with the steps of the adoption process.

Table 4-III Extension Contact Score - Yala 1972

Level of Contact	Contact Score	Operators No.	Operators %
L o w	0	13	*9*
	1	21	*15*
	2	13	*9*
	3	19	*14*
Medium	4	28	*20*
H i g h	5	22	*16*
	6	15	*11*
	7	7	*5*
		138	*100*

Average contact score = 3.4

As seen in Table 4-III, 9% of the farmers had no contact with extension services during the season, while 5% of the farmers had used all contact methods. On the average farmers in the sample reported between 3 and 4 contacts. The respondents were classified into 3 groups - low, farmers with a contact score of 0-3; medium, those with a contact score of 4; and high, farmers having a contact score of 5-7. The low contact category contained 48% of the respondents with an average contact score of 1.57, the medium group included 20% of the respondents and the high contact category with an average contact score of 5.65, included 32% of the respondents. *Thus it is seen that nearly 50% of the farmers fell into low contact group while only 30% fell into the high contact group.*

Table 4-IV Distribution of Respondents by Use of Contact Methods - Yala 1972

No.of Respondents = 138 *(100%)*

Method	Respondents who used the method of contact No.	%	
Personal Contact:			
Visited extension centre ..	56	*41*	
Visited by extension personnel	87	*63*	Average for personal
Attended farmer training classes	20	*15*	contacts = 39
Impersonal Contact:			
Had seen demonstration plots ..	91	*66*	Average for
Had read advisory leafleats ..	75	*54*	impersonal
Listened to radio programmes ..	75	*54*	contacts = 56
Had seen agricultural film shows	59	*43*	

Table 4-IV shows the distribution of farmers according to the number of extension contracts they had in 1972 Yala season. *In the personal contact*

group, visits by extension personnel to farms had the highest frequency of use. It is seen that 63% of the farmers had been visited by extension staff during this season. 41% had visited the extension centres but only 15% had attended farmer training classes. Impersonal contacts in general also show a high degree of use, the highest being demonstration plots with 66% of the farmers reporting this type of contact. Radio programmes and advisory leaflets had the same frequency of use while agricultural film shows had a lower frequency of 43%. *Generally respondents had used impersonal more than personal types of contacts. The average use of personal contacts was 39% while the average for impersonal contacts was 56%.*

Table 4-V Relationship between extension contact score and adoption of New High Yielding Varieties - Yala 1972

Contact Score	No. of operators	No. of adopters of NHYV	Percentage adoption
0	13	1	8
1	21	4	19
2	13	3	23
3	19	5	26
4	28	12	43
5	22	12	55
6	15	7	47
7	7	4	57

Table 4-VI Relationship between extension contact score and paddy yields - Yala 1972

Contact	No. of farmers	Median yields (bushel/acre)
0	13	30.0
1	21	36.0
2	13	33.3
3	19	40.0
4	28	40.5
5	20 [1]	38.4
6	14 [2]	38.0
7	7	54.7

1. Two farmers had not furnished information about yield.
2. One farmer who reported crop failure has been excluded.

An attempt was made to relate the extension contact score for Yala 1972 with the adoption of new high yielding varieties and paddy yields of the same season. Although the extension contact score in any particular season does not have a direct relation to the adoption of new high yielding varieties in the same season, it is safe to assume the score as being more or less constant in different seasons. In other words farmers

who kept close contact with extension services in any one season could be expected to do so in other seasons as well. On this assumption an attempt was made to relate the extension contact score with the adoption of new high yielding varieties and paddy yields in 1972 Yala season. Although the relationship between the adoption of new high yielding varieties and extension contact is direct, the relationship between yields and extension contact is less so. *However with an increase in extension contact score an increasing trend was observed both in respect of adoption of new high yielding varieties and median yields (Figure 8).* The percentage adoption of new high yielding varieties was 8% in the case of farmers with no contact while it was 57% in the case of those with 7 contacts. Median yields showed a much slower rise from 30 bushels per acre for those with no contact to 54 bushels per acre in the case of those with 7 contacts. However, in the case of farmers with 5 and 6 contacts the median yield was only 38 bushels per acre. Yields are dependent on a whole host of factors and as such it is not intended to explain the yield variation on the basis of extension contact alone.

4.4 Farmer Relationship with Extension Services

Table 4-VII Farmer Contact with the Extension Centre

	No.	%
A. Awareness of and visits made to Extension Centres		
Farmers who responded	138	*100*
Farmers who knew the location of Extension Centre ..	68	*49*
Farmers who visited it in Yala 1972	56	*41*
B. Reasons for visiting Extension Centres		
Farmers who gave reasons for visiting	60	*100*
Reasons:		
To buy seed paddy	15	*25*
To buy other planting materials	11	*18*
For advice in general	19	*32*
Seek solution to a problem	1	*2*
To buy fertilizer, agro-chemicals or to hire spray instruments	13	*22*
To inform about diseases	1	*2*

49% of the farmers in the sample had known the location of the extension centre while 41% had visited them in 1972 Yala season. *This shows that 82% of the farmers who knew the location had visited it in this particular season.* This is very encouraging in an area of difficult terrain and poor road accessibility. *However, 65% of the visits had been made for the purchase of inputs as well as for hiring of appliances such as sprayers.* 25% of the farmers had visited the centres for the purchase of seed paddy, 18% to buy other planting materials and 22% to buy or hire various items.

RELATIONSHIP BETWEEN EXTENSION CONTACT AND ADOPTION OF NHYVs AND PADDY YIELDS

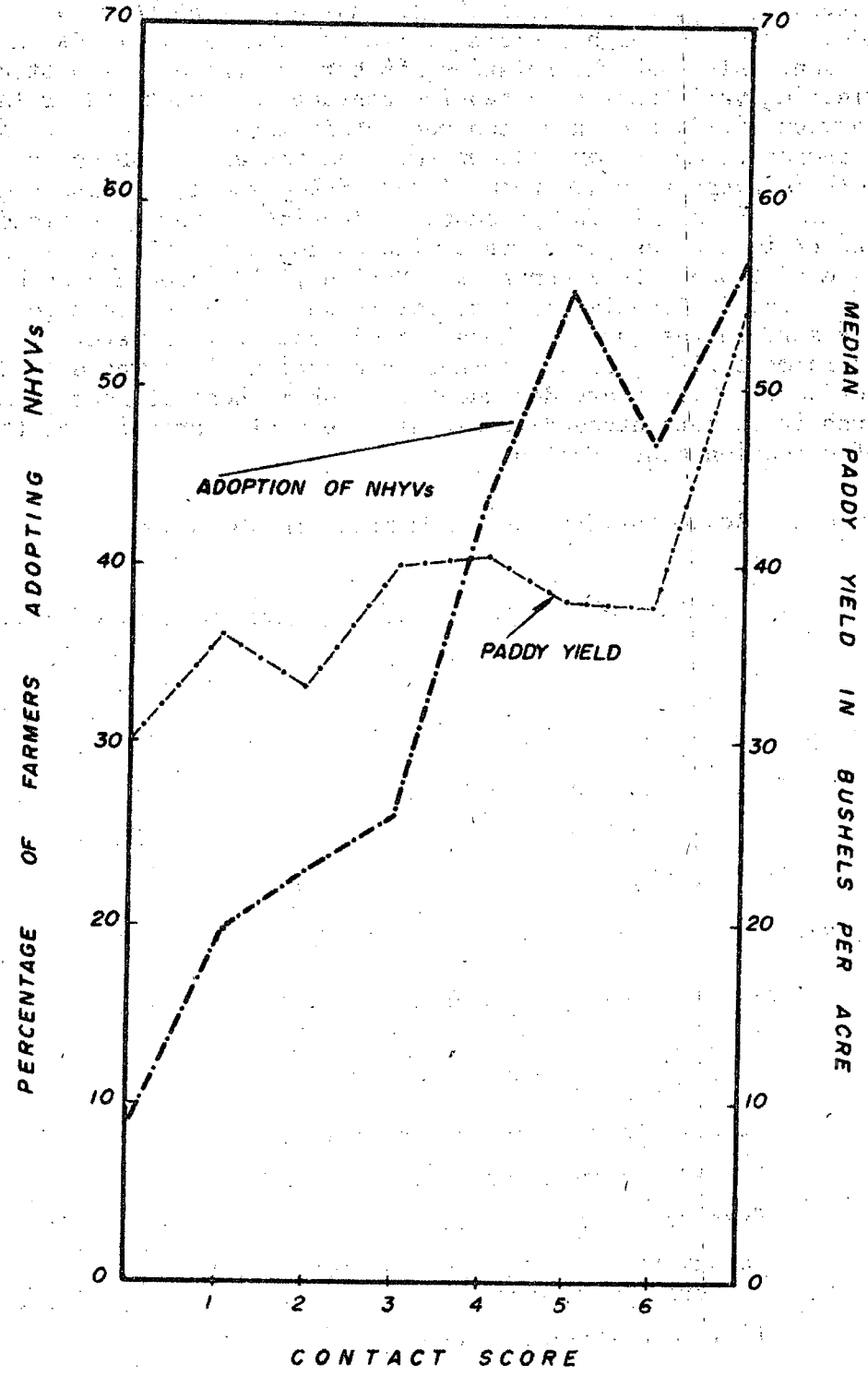

Fig. 8

Only 32% of the farmers in this sample had visited the centres to get advice. This indicates that more farmers visit extension centres to obtain inputs and these visits could be effectively made use of by the staff at these centres for farmer education. Posters, charts, exhibits of pest and disease affected specimens etc., that are already available at these centres could be used to greater effect when farmers visit these centres. With the new agricultural service centre being opened an increasing number of farmers is bound to visit them for purposes other than for advice and more opportunities for farmer education should arise in future.

Table 4-VIII Farmer Relationships with Extension Personnel

	No.	%
Farmers who responded	138	*100*
Farmers visited by extension personnel in Yala 1972 ..	87	*63*
Total visits made - Yala 1972	92	
Visits made on request of farmer	21	
Visits made on initiative of extension personnel.. ..	71	
Average No.of visits/farmer visited	1	
Farmers who preferred more visits	138	*100*
Farmers who knew how to contact Krushikarma Viyapti Sevake in need	104	*75*
Farmers who knew Krushikarama Viyapti Sevaka by name ..	62	*45*

Visits made by extension staff in the Yala 1972 season are given in Table 4-VIII.

63% of the farmers (87 in number) have been visited by extension personnel in 1972 Yala season. Altogether 92 visits have been made of which 21 were on the request of the farmers and the rest on the initiative of the extension personnel. On this basis the ratio of visits made to farmers visited works out to 1 approximately. *All the farmers interviewed (100%) preferred more visits by extension personnel.* Considering the size or the range of a village level extension worker and poor transport facilities available in rural areas it is extremely difficult to make individual visits to farms. According to the present extension organization of the Department of Agriculture an Agriculture Instructor covers about 7,500 acres of paddy land and has to deal with around 3,000-6,000 farm families. On the average each Krushikarma Viyapti Sevaka deals with around 700-1000 farm families.[1] *A practical way to comply with this request is to contact farmers in groups.* Farmer training classes, group discussions and demonstrations are made use of at present to meet groups of farmers.

The majority of farmers in the sample (75%) knew how to contact the village level extension worker while 45% even knew him by name.

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[1] Draft Agricultural Development Plan - 1971/77. Agricultural Research, Education, Extension and Training.

Table 4-IX Farmer attendance at Training Classes - Yala 1972

	No.	%
Farmers who responded	138	*100*
Farmers who attended farmer training classes	20	*15*
Farmers who attended training classes and indicated usefulness	19	*14*
Farmers who gave reasons for not attending training classes	115	*83*
Reasons for not attending training classes:		
Did not know about them..	97	*70*
Not convinced of their benefits ..	6	*4*
Place was too far	2	*1*
Too much work in the farm	6	*4*
Household problems	20	*15*

Attendance at farmer training classes and the reasons for not attending them are given in Table 4-IX.

Farmer Training classes had been attended by 15% of those in the sample during the season. Of the 118 farmers who did not attend these classes 115 were able to give reasons. 97 of them (70%) were unaware of the classes while the rest(24%) knew about them but did not attend for various reasons. Of the reasons given, domestic problems had prevented a majority from attending. However, only 50% of those who knew about the classes had attended them. *It is therefore desirable to arrange farmer training classes in locations convenient to them and during periods when farmers are relatively free from other household activities. Besides, demonstration and field days have to be organised in farmers' fields along with these training classes. More publicity has also to be given to such classes.*

Table 4-X Demonstration plots - Yala 1972

	No.	%
Farmers who responded	138	*100*
Farmers who had seen demonstration plots ..	91	*66*
Farmers who had seen and indicated usefulness..	78	*57*

Table 4-XI Farmers Acquaintance with Agricultural literature

Advisory leaflets:	No.	%
Farmers who had responded	134	100
Farmers who read advisory leaflets	75	56
Farmers who read advisory leaflets and indicated usefulness	72	54
Farmers who mentioned the name of a document they had read	43	32
Documents on paddy	4	
Documents on subsidiary food crops	13	
Govikam Sangarawa	9	
O t h e r s	17	

66% of the farmers had seen demonstration plots and a good proportion of them indicated their usefulness. 56% of the farmers had read advisory leaflets and a majority of them (54%) indicated their usefulness. It was encouraging to find that a good number of them (32%) were able to indicate the name of a pamphlet or magazine they had read. Publications on subsidiary crops appear to be more popular; 13 farmers were able to mention the names of leaflets on subsidiary crops as against 4 on paddy. 9 farmers (6%) were able to mention the name of Govikam Sangarawa.

Table 4-XII Farmers' exposure to Radio Programmes and Agricultural Film shows

	No.	%
Radio Programmes:		
Farmers who responded	137	100
Farmers who listened to radio programmes	75	55
Listening to the radio at home	47	34
At the community centre	1	1
Village boutique	16	12
Neighbours' house	15	11
Farmers who indicated usefulness of these programmes ..	72	53
Farmers who could give the name of a recent broadcast ..	19	14
About paddy 5		
About subsidiary food crops .. 3		
Others 11		
Agricultural film shows		
Farmers who responded	138	100
Farmers who had seen agricultural film shows during Yala 1972	59	43

55% of the sample reported listening to radio programmes. The majority of them had listened to these programmes at home while an appreciable number reported having listened to them at village boutiques and neighbouring houses. Almost all the farmers listening to radio programmes indicated their usefulness. However, only 14% were able to name a recent broadcast. 43% of the farmers reported that they had seen agricultural film shows in 1972 Yala season.

4.5 Farmer relationship with extension services according to supply of water, size of holding and tenurial category.

An attempt is now made to examine the variation in farmer contacts with the extension services according to water supply conditions, tenurial status and size of holdings. Farmers were classified (on the basis of water supply) into major, minor and rainfed areas. The data in Column 1 of Table 4-XIII suggests that farmers in major irrigation areas had been better served extensionwise especially with regard to their contact with the Krushikarma Viyapti Sevaka and attendance at farmer training classes. However, it has to be pointed out that in Kandy, the only area with major irrigation is the Minipe Special Project where there is also a concentration of extension effort. Farmers in better irrigated areas tend to be more responsive to extension advice as they encounter less risks due to assured water supply. Consequently, they are in a position to adopt what they learn and obtain better results.

The above data shows that 81% of the farmers in major irrigation areas had been visited by extension personnel in 1972 Yala season while this figure drops to 60% in minor and rainfed areas. 91% of the farmers in major irrigation areas knew how to contact the KVS when in need while 57% even knew him by name. The respective figures for minor and rainfed areas were 73% and 40% for the former and 66% and 45% for the latter. Attendance at farmer training classes showed a sharp drop from 29% to 8%. Even with regard to mass media the response shown by farmers in rainfed areas was lower than those in irrigated areas. The above discussion shows that farmers in major irrigation areas are better served extensionwise than minor and rainfed areas. The emphasis placed on increasing paddy production would have led the extension staff to pay more attention to farmers with a better yield potential. There was no appreciable difference between minor and rainfed areas, but farmers in the latter were less responsive particularly to farmer training classes and mass media.

Examination of the above data in relation to size of holding (Column 3 Table 4-III), shows that farmers with holdings of 5 - 10 acres had more contact with the extension services during the season. However, it has to be pointed out that only 10 farmers belonged to the category of 5 - 10 acres as against 45 in the 2 - 5 acre group and 80 in the below 2 acre group. Of the farmers in the 5 - 10 acre group 60% had visited the extension centres, 90% were visited by extension Personnel in the same season. In the other two groups 42% and 39% of the farmers had made visits to extension centres and 56% and 64% were visited by extension personnel. A very clear difference was observed in the case of attendance at farmer training classes; while 60% of those in the 5 - 10 acre group had attended these classes only 20% of them in the 2 - 5 acre group and 6% in the below 2 acre group had attended them. Even with regard to

Table 4-XIII Farmer Relationship with Extension Services according to suply of water, Tenurial Category and Size of Holding

Farmers	Source of Water Supply						Tenurial category								Size of Holding							
	Major		Minor		Rain-fed.		Owner		Tenant		Owner-Tenant		Tenant-Owner		Up to 2.00 acres		2.00 to 5.00 acres		5.00 to 10.00 acres		Over 10.00 acres		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Respondents	21	100	52	100	65	100	55	100	39	100	13	100	31	100	80	100	45	100	10	100	3	100	138	100
Knew the location of the Extension Centre..	10	48	28	54	30	46	23	42	21	54	10	77	14	45	35	44	25	56	8	80	-	-	68	49
Visited Extension Centre in Yala 1972 ..	7	33	25	48	24	37	19	35	20	51	8	62	9	29	31	39	19	42	6	60	-	-	56	41
Visited by the Extension Personnel in Yala 1972	17	81	31	60	39	60	35	64	26	67	8	62	18	58	51	64	25	56	9	90	2	67	87	63
Knew name of KVS ..	12	57	21	40	29	45	27	49	17	44	5	39	13	42	38	48	17	38	6	60	1	33	62	45
Knew how to contact him in need ..	19	91	38	73	43	66	47	76	28	72	9	69	21	68	61	76	28	62	9	90	2	67	100	73
Attended farmer training classes in Yala 1972	6	29	9	17	5	8	10	18	4	10	1	8	5	16	5	6	9	20	6	60	-	-	20	15
Had seen demonstration plots in Yala 1972 ..	16	76	37	71	38	58	33	60	28	72	13	100	17	55	58	73	22	49	9	90	2	67	91	66
Had read advisory leaflets	12	57	34	65	29	45	30	55	23	59	9	69	13	42	46	58	22	49	6	60	1	33	75	54
Listened to Radio programmes ..	14	67	28	54	33	51	31	56	21	54	9	69	14	45	49	61	19	42	6	60	1	33	75	54
Had seen agricultural film shows - Yala 1972	12	57	26	50	21	32	21	38	16	41	10	77	12	39	35	44	16	36	7	70	1	33	59	43

mass media the data suggests that farmers in the 5 - 10 acre group had shown a greater response. However, it is difficult to explain why farmers in holdings of less than 2 acres had more contacts with extension services when compared with those with holdings of 2 - 5, except with regard to attendance at farmer training classes and visits made by extension staff. No attempt is made to compare the above 10 acre group as only 3 farmers fall into this category.

No definite pattern was observed in respect of different tenurial categories and contact made with the extension services (Column 2).

Chapter 5

MANAGEMENT PRACTICES

Of the 48,425 acres of asweddumized paddy lands in Kandy district, 8,373 acres are under major schemes. This acreage falls almost exclusively in the dry zone and comes within the Minipe irrigation scheme. Minipe irrigation project includes both lands alienated by the government and those belonging to the Mahiyangana temple. The Minipe colonization scheme covers approximately an area of 7,500 acres of paddy. Stage I comprising of 4,200 acres of paddy land has been alienated on the basis of 5 acres per settler, whilst in Stage II the unit of paddy holding per allottee is only 2 acres. The entire colonization scheme has assured irrigation facilities for cultivation of paddy during both Maha and Yala seasons.

However, the major portion of paddy lands in this district (83%) falls in the densely populated mid-country wet zone, and are dependent on rainfall and streams for water supplies. Areas such as Madugoda, Medadumbara, parts of Pathadumbara (Kundasale) and Hewaheta (Hewavissa) DRO Divisions located in the intermediate zone receive less rainfall. Due to the semi-dry climatic conditions experienced in these areas, a greater proportion of paddy lands are dependent on small anicut schemes for water. These anicut (minor irrigation) schemes found in the above area are distinctly different from those in the dry zone as there are no storage tanks to feed them. Consequently such fields are fed directly from streams through small anicuts. Since these semi-dry areas receive moderate to low rainfall with rainshadow effect, the streams in these areas are non perennial and water supplies for paddy cultivation during Yala season are restricted. On the other hand, the paddy lands located in the wet zone receive adequate rainfall. Perennial streams are the main source of water supply in these areas (e.g. Udunuwara and Yatinuwara DRO Divisions), and there is an assured water supply during both seasons. In view of the diversity of both climatic conditions and population pressures in different parts of the district, the management practices adopted by farmers vary.

5.1 Duration of Sowing Operations

Unlike in some of the dry zone districts, sowing operations here are completed within a relatively short period of time. This is made possible through a reliable water supply even in rainfed areas and ready availability of labour. Of 158 farmers in the sample, 136 were able to indicate the exact month of sowing during 1971/72 Maha season, and details are given in Table 5-I.

Table 5-I Distribution of Operators according to time of sowing and sources of Water Supply during Maha 1971/72 season

Month	Farmers Major No.	Minor No.	Rainfed No.	Total No.	%
July	-	1	-	1	*1*
August	-	1	8	9	*7*
September	-	6	11	17	*12*
October	-	13	23	36	*26*
November	5	12	21	38	*28*
December	11	9	5	25	*18*
January	4	4	-	8	*6*
February	-	2	-	2	*2*
Total	20	48	68	136	*100*

This data shows that in Maha season in rainfed areas and lands dependent on minor schemes, sowing extends from September to December, with a model concentration in October and November. In fact, 54% of all the farmers in the sample had sown during these two months. *On the other hand, in the major irrigation scheme of Minipe, sowing in Maha begins only in November and extends till January.*

In order to illustrate the intensity of paddy land use, extents sown during Maha 1971/72 and Yala 1972 seasons were arranged on the basis of water supply.

Table 5-II Paddy cropping intensity in Maha 1971/72 and in Yala 1972

Water Supply	No.of farmers	Area Available for cultivation (acres)	Area Cultivated Maha 1971/72 Extent (acres)	%	Area Cultivated Yala 1972 Extent (acres)	%
Major Irrigation	21	89	81	*91*	80	*90*
Minor Irrigation	62	142	127	*89*	73	*51*
Rainfed	75	105	101	*96*	81	*77*
Total	158	336	309	*92*	234	*70*

In Maha season, the percentage of the area cultivated is very uniform irrespective of water supply, the average being 92% of the available paddy area. During Yala, the percentage of the area cultivated shows considerable variation depending on the water supply. In major schemes 90% of the land had been brought under cultivation but the extent cultivated under rainfed and minor schemes is substantially less, relative

figures being 77% and 51% respectively. Using this data "Cropping Intensity Index" for the cultivation year 1971/72 was computed. (This is the total acreage of land cultivated during the year expressed as a percentage of the physical area of land available).

Table 5-III Index of Paddy Cropping Intensity

Water Supply	Average size of operational holding (acres)	Average extent cultivated during the year (acres)	Index of Cropping Intensity %
Major Irrigation	4.21	7.67	182
Minor Irrigation	2.29	3.21	140
Rainfed	1.40	2.43	174

Cropping Intensity Index: $\frac{\text{Average acreage cultivated under paddy during the year}}{\text{Average size of lowland holding}} \times 100$

The above Cropping Intensity Index shows that in major schemes the acreage cultivated during the year is 182% of the total acreage available, indicating the very high degree of double cropping practiced in these areas due to the assured supply of water particularly in respect of Yala. Even in rainfed areas, a relatively high cropping index of 174% is shown primarily due to the very even distribution of rainfall that feeds the perennial streams scattered throughout the wet zone portion of this district. The lowest cropping index is seen in respect of minor schemes (140%), which pin-points the inadequacy of water supply for paddy during Yala season. Of the 60 farmers in the sample classified under minor schemes, 55 are from areas that experience less rainfall, such as Udadumbara, Madugoda, Medalumbara, Pathadumbara (Kundasale) and Pathahewaheta (Hewavissa). These areas receive considerably less rainfall from the south west monsoon and as a result the streams that feed small anicut schemes tend to run dry during Yala season. Consequently, cultivation of paddy under minor irrigation schemes in Yala is restricted. This results in a low cropping intensity as far as paddy cultivation is concerned. However, in some of these areas, varied types of vegetables and also cash crops such as tobacco are grown in paddy lands during Yala.

5.2 Draught Power

The pattern of draught power used for land preparation during Maha 1971/72 season is summarised below:

Table 5-IV Pattern of Draught Power Used - Maha 1971/72

Water Supply		No.of farmers reporting	Extent prepared for cultivation (acres)	Type of Draught Power used for land preparation					
				Mammoty only	Buffaloes only	2-wheel tractors only	4-wheel tractors only	Combinations Mammoty and Buffaloes	Others*
				(a)	(b)	(c)	(d)		
				%	%	%	%	%	%
Major Irrigation	(A)	21	-	-	29	5	19	29	19
	(B)	-	83.25	-	26	12	32	20	10
Minor Irrigation	(A)	60	-	-	22	-	-	75	3
	(B)	-	126.11	-	20	-	-	72	8
Rainfed	(A)	75	-	7	7	-	-	85	1
	(B)	-	99.61	3	10	-	-	86	4
Total	(A)	156	-	3	15	1	3	74	4
	(B)	-	308.97	1	18	3	9	62	7

* Combinations stated are - Buffaloes + Tractors
Mammoties + Buffaloes + Tractors

A - Farmers, B - Extent

A noteworthy feature in the use of draught power is that none of the farmers in either minor schemes or rainfed areas had depended exclusively on mechanical power (either 2-wheel or 4-wheel tractors) for land preparation. Farmers in these two categories have utilised buffaloes and mammoties mostly for field work. 85% of those in rainfed areas and 75% in minor schemes have used both buffaloes and mammoties in land preparation. On the other hand, in major schemes 24% of the farmers have depended on tractors exclusively for field work in 44% of the area cultivated in Maha. Use of tractors appears to be mainly confined to the major irrigation scheme (Minipe) where the average size of holding is large (Table 5-V).

Table 5-V Average Size of Holding by type of Irrigation

Water Supply	Average size of holding (acres)
Major Irrigation	4.21
Minor Irrigation	2.29
Rainfed	1.40

Even in major schemes where the holding size is large a slightly higher proportion of farmers - 29% have used buffaloes exclusively, for land preparation compared to 24% who have depended on machinery. *Yet the extent of land prepared with animals is 18% less than the area cultivated by machinery. This data points to the relative importance of buffaloes as a source of draught power for land preparation in the district.* In consequence the availability of draught animals was also examined. *Of the 139 farmers who used animal power, 70 of them (50%) owned 137 animals. Since this district is densely populated and a very high proportion of highland is cultivated under varied types of crops, it is important to indicate the high percentage of farmers who maintain their own draught animals despite inadequate facilities for grazing under such conditions.* The principal reasons for use of buffaloes for draught purposes as indicated by the farmers are given in Table 5-VI.

Table 5-VI Principal Reasons for Using Buffaloes

Number of farmers using buffaloes	139
Number of farmers who responded	128
Reasons	Percentage of Respondents
Liyaddas are small	27
Soils are boggy	15
Better quality of work	15
Buffaloes are owned by them	11
Tractors are not available	10
Cheaper for land preparation	8
Buffaloes easily available..	4
Reasons not specified	10

42% of the farmers have preferred the use of buffaloes primarily due to the smaller size of the "liyaddas" and the boggy nature of soils, indicating that type of draught power use in this district is largely governed by terrain and soil conditions. Another important reason was the better quality of work performed by buffaloes which again could be attributed to the prevailing physical conditions of the fields. In areas where "liyaddas" are small and soils are boggy, performance of tractors in field preparation is not satisfactory.

With regard to use of tractors it is relevant to point out that even in the major colonization schemes at Minipe, a relatively smaller proportion of farmers is dependent on machinery in contrast to farmers in most of other colonization schemes in the dry zone. Less dependence on tractors in Minipe for paddy cultivation is partly due to accessibility. On one hand, road access from Kandy to Minipe is difficult due to the terrain, and on the other the approach from Eastern Province where tractors are used extensively was hampered until the construction of the bridge at Weragantota recently. Thus movement of machinery in and out of this colonization scheme during the cultivation seasons would undoubtedly have been a constraint to large scale introduction of tractors.

5.3 Use of Improved Varieties

Farmers classified on the basis of varieties cultivated during Maha 1971/72 and Yala 1972 seasons are given in Table 5-VII.

Table 5-VII Distribution of Operators according to varieties Cultivated during Maha 1971/72 and Yala 1972

Season		Oper-ators	NHYV only	OHYV only	TV only	NHYV and OHYV	NHYV and TV	OHYV and TV	NHYV OHYV & TV	Total
Maha	1971/72	No.	14	86	20	21	4	8	3	156
		%	*9*	*55*	*13*	*13*	*2*	*5*	*2*	*100*
Yala	1972	No.	27	72	20	11	8	-	-	138
		%	*20*	*52*	*14*	*8*	*6*	-	-	*100*

In this district, OHYV varieties occupy an important place among the varieties cultivated during both seasons. Of the farmers who responded, 55% in Maha and 52% in Yala have grown only old high yielding varieties. Only a small proportion of farmers have grown NHYV exclusively, the relevant figures being 9% in Maha and 20% in Yala. *Since the NHYVV were released for extension work for the first time only in Maha 1971/72 season, the small proportion of farmers who have taken to these is understandable.* About 13% have grown traditional varieties during both seasons.

5.4 Use of Improved Seed According to Size of Holding

In order to ascertain the pattern of varietal distribution, the extents grown under different varieties during the two seasons are classified on the basis of size of holding.

Table 5-VIII Extents Grown Under Different Varieties Classified according to Size of Holding - Maha 1971/72

Size of Holding (acres)		NHYV	OHYV	TV	Total
Upto 0.50	Acres	0.75	7.39	1.10	9.24
	%	*8*	*80*	*12*	*100*
0.50-1.00	Acres	2.20	22.47	4.48	29.15
	%	*8*	*77*	*15*	*100*
1.00-2.00	Acres	14.75	49.27	16.95	80.97
	%	*18*	*61*	*21*	*100*
(Sub total) Upto 2.00	Acres	17.70	79.13	22.53	119.36
	%	*15*	*66*	*19*	*100*
2.00-4.00	Acres	17.79	39.26	11.50	68.55
	%	*26*	*57*	*17*	*100*
4.00-6.00	Acres	17.00	30.25	4.25	51.50
	%	*33*	*59*	*8*	*100*
Over 6.00	Acres	22.25	38.50	8.75	69.50
	%	*32*	*55*	*13*	*100*
(Sub total) Over 2.00	Acres	57.04	108.01	24.50	189.55
	%	*30*	*57*	*13*	*100*
Total	Acres	74.74	187.14	47.03	308.91
	%	*24*	*61*	*15*	*100*

Table 5-IX Extents Under Different Varieties Classified according to Size of Holding - Yala 1972

Size of Holding (acres)		NHYV	OHYV	TV	Total
Upto 0.50	Acres	2.18	6.06	0.56	8.80
	%	*25*	*69*	*6*	*100*
0.50-1.00	Acres	2.75	16.24	3.00	21.99
	%	*12*	*74*	*14*	*100*
1.00-2.00	Acres	18.50	27.10	16.15	61.75
	%	*30*	*44*	*26*	*100*
(Sub total) Upto 2.00	Acres	23.43	49.40	19.71	92.54
	%	*25*	*53*	*21*	*100*
2.00-4.00	Acres	18.00	25.24	7.75	50.99
	%	*35*	*49*	*15*	*100*
4.00-6.00	Acres	15.00	19.25	5.75	40.00
	%	*38*	*48*	*14*	*100*
Over 6.00	Acres	31.50	7.00	12.00	50.50
	%	*62*	*14*	*24*	*100*
(Sub total) Over 2.00	Acres	64.50	51.49	25.50	141.49
	%	*46*	*36*	*18*	*100*
Total	Acres	87.93	100.89	45.21	234.03
	%	*38*	*43*	*19*	*100*

Data presented in the two Tables show that in both seasons in the smaller sized holdings of less than two acres, the OHYV as well as traditional varieties occupy a relatively more important place than in the larger sized holdings of more than two acres. During Maha in holdings of less than two acres 66% of the extent has been under OHYV and 19% under traditional varieties, the area under NHYV being only 15%. In contrast, in the larger sized holdings of over two acres, the proportion of the area under OHYV as well as traditional varieties is relatively smaller, relevant figures being 57% and 13% respectively. *It is significiant that the proportion of the area under NHYV shows a progressive increase with the increase in holding size.* In holdings of less than one acre, only 8% of the extent cultivated is under NHYV whilst in holdings of over two acres a marked increase is seen from 18% in holdings of one to two acres to as much as 32% in holdings of over four acres in size. *These figures indicate a trend in that the farmers operating in larger sized holdings have taken up to these new high yielding varieties more rapidly even in the very first season of their release. As 68% of paddy holdings in major schemes are above 4 acres in size, the operators in larger sized holdings are in a advantageous position to take up to new varieties rapidly due to the assured supply of water.*

In Yala 1972, the total extent cultivated is less than in Maha 1972/73, but there is an increase in both the total extent as well as the proportion under NHYV compared to Maha season. This is mainly due to both release of additional quantities of seed by extension staff as well as lateral spread. Comparison of the figures in Table 5-VIII and 5-IX shows that with the increase in acreage under NHYV in Yala, the area under OHYV has declined whilst the acreage under traditional varieties has remained almost static during the two seasons. On examining the data relating to farmers it is seen that 20 farmers who have not cultivated NHYV in Maha have grown them in Yala, while 13 who had cultivated a portion of their fields in Maha with NHYV have changed over to other varieties in Yala. The main reason for abandoning NHYV in Yala appears to be problems connected with water supply; as 12 of the 13 farmers who have changed over are from areas under minor schemes and rainfed conditions. *Judging by the overall extents cultivated under different varietal groups in the two seasons, it appears that the spread of the NHYV is more at the expense of the OHYV.* Since NHYVs were released for extension work only in Maha 1971/72, it is too premature to make definite pronouncements with regard to their acceptability.

5.5 Use of Improved Seed According to Supply of Water

Distribution of varieties were also classified on the basis of water supply and relevant information in respect of Maha 1971/72 and Yala 1972 seasons is given in Tables 5-X and 5-XI.

Table 5-X Extent Under Different Varieties according to Supply of Water - Maha 1971/72

Water Supply		NHYV	OHYV	TV	Total
Major Irrigation	Acres	37.75	36.00	6.75	80.50
	%	*47*	*45*	*8*	*100*
Minor Irrigation	Acres	22.04	92.96	12.10	127.10
	%	*17*	*73*	*10*	*100*
Rainfed	Acres	14.95	58.18	28.18	101.31
	%	*15*	*57*	*28*	*100*
Total	Acres	74.74	187.14	47.03	308.91
	%	*24*	*61*	*15*	*100*

Table 5-XI Extent under Different Varieties according to Supply of Water - Yala 1972

Water Supply		NHYV	OHYV	TV	Total
Major Irrigation	Acres	52.25	4.00	23.50	79.75
	%	*66*	*5*	*30*	*100*
Minor Irrigation	Acres	19.38	40.24	13.56	73.18
	%	*26*	*55*	*18*	*100*
Rainfed	Acres	16.30	56.65	8.15	81.10
	%	*20*	*70*	*10*	*100*
Total	Acres	87.93	100.89	45.21	234.03
	%	*38*	*43*	*19*	*100*

New high yielding varieties have spread more rapidly in major schemes; the percentage extent under them has increased from 47 in Maha to 66 in Yala. However, the rate of diffusion of these varieties in other areas has been relatively slow. The small proportion of the area under NHYV in minor schemes - most of which are fed from non-perennial streams located in semi-dry areas in Udadumbara, Medadumbara and Pathadumbara - is understandable as farmers are likely to be reluctant to try out new varieties in areas with uncertain water supply; but in the case of rainfed paddy grown in the wetter parts of the district with more assured water from perennial streams, the relatively small extents grown under new varieties cannot be explained on the basis of water supply alone.

Comparison of extents under NHYV during the two seasons given in Tables 5-X and 5-XI appear to confirm the earlier observations that with the diffusion of NHYV farmers tend to replace more of the OHYV particularly in irrigated areas with the newer varieties. Data shows that with the spread of NHYV in Yala 1972 the percentage extent under old high yielding varieties has declined markedly.

Traditional varieties seem to occupy a predominant position during Yala season, particularly in the major scheme of Minipe. On the other hand in rainfed areas, the acreage under traditional varieties had decreased in the Yala season. It was observed that traditional varieties were confined more to fields that remained fallow during Yala. *It would be of interest for the Extension Services to pursue further, the reasons for cultivation of a relatively high proportion of land with traditional varieties in Yala season particularly in the major irrigation schemes of Minipe. Since Minipe is a special project where an intensive agricultural development programme is being implemented by the Government, it is all the more important to ascertain the reasons for relative popularity of traditional varieties in this area, despite the concentrated extension work that is being done in this settlement scheme.*

5.6 Use of Improved Seed According to Tenurial Category

Cultivation of High Yielding Varieties during Maha 1971/72 is also examined on the basis of tenurial status of the farmers.

Table 5-XII Distribution of the Operators and Extents of land under HYVs according to Tenurial Categories - Maha 1971/72

Tenurial Categories	All farmers	All High Yielding Varieties				New High Yielding Varieties			
		Farmers		Cultivated Extent		Farmers		Cultivated Extent	
		No.	%	acres	%	No.	%	acres	%
Owners ..	60	52	*87*	118.32	*89*	14	*23*	28.70	*21*
Tenants ..	47	41	*87*	54.03	*86*	11	*27*	20.50	*32*
Owner-Tenants	15	15	*100*	28.83	*95*	6	*40*	9.63	*32*
Tenant-Owners..	34	28	*82*	60.70	*74*	11	*32*	15.91	*19*
Total ..	156	136	*87*	261.88	*85*	42	*27*	74.74	*24*

Total number of operators who have cultivated all (old as well as new) high yielding varieties classified according to the 4 main categories of tenurial classes amounted to 136. The proportion of owners and tenants who have grown all high yielding varieties is similar, and the percentage extents cultivated under them by the two groups also show very little difference. It is also noteworthy that all the owner-tenants in the sample have grown high yielding varieties, and also had the highest proportion of their fields (95%) under them. In contrast the tenant-owners have had the lowest proportion both in respect of numbers as well as extents under these varieties.

With regard to new high yielding varieties only 42 farmers (27%) have grown them. Relatively a higher proportion of both owner-tenants, as well as tenant-owners have cultivated these varieties during this particular season. As far as extents are concerned it is observed that a higher percentage (32%) of the area cultivated by tenants and owner-tenants have been under these varieties. Tenant-owners have had a lower proportion of their land (19%) under NHYV. The data available is inadequate to explain the variations in the extents under NHYV on the basis of tenurial pattern.

5.7 Non-cultivation of Improved Seed

During Maha 1971/72 season, of the 156 farmers in the sample, 107 (68%) have not cultivated any new high yielding varieties, and the main reasons for non-cultivation of these varieties as indicated by farmers are given in descending order of importance.

Table 5-XIII Reasons for non-cultivation of New High Yielding Varieties - Maha 1971/72

Reasons reported by farmers	Farmers not cultivating NHYVs	
	No.	%
Lack of knowledge about these varieties	42	39
Difficulties in getting seed paddy	26	24
Not convinced of benefits	19	18
Prefers traditional varieties	16	15
Poor palatability	15	14
Following neighbours	12	11
High cost of cultivation	8	7
Problems of water	4	4
Other reasons	25	23

As pointed out earlier, *since these NHYVs have been released for the first time only during this particular Maha season, the main reasons given by the farmers; - lack of knowledge and difficulties of obtaining seed - are understandable. Other important reasons such as lack of conviction of the benefits of new varieties, poor palatability and preferences shown for traditional varieties may also partly explain the popularity of traditional varieties referred to in Section 5.5. Some of the important reasons classified under "other reasons" in Table 5-XIII are; new varieties have short straw, H-4 and H-8 give better yields, after care of NHYV is costly, troublesome and are not suitable for boggy fields. With the spread of "Minikit" as well as "Production kit" Programme to popularise these varieties, it should be possible to overcome some of these prejudices.* Since a very high percentage of paddy land has an assured supply of water during both seasons in this district, extension of the area under NHYV along with fertilizer use should enable farmers to obtain better yields than at present.

5.8 Methods of Planting

Distribution of farmers on the basis of planting methods adopted during Maha 1971/72 and Yala 1972 seasons are presented in Table 5-XIV.

Table 5-XIV Distribution of Operators according to Planting Methods - Cultivation Year 1971/72

Season		Trans-planting	Row-sowing	Broad-casting	Combi-nations	Total
Maha 1971/72	No.	124	2	10	20	156
	%	*79*	*1*	*6*	*13*	*100*
Yala 1972	No.	81	4	39	14	138
	%	*59*	*3*	*28*	*10*	*100*

Transplanting of paddy is more popular during the Maha season and 79% of farmers have transplanted the full extent of their fields in Maha and 59% in Yala. The traditional method of broadcast sowing has been adopted by a very small proportion of farmers in the sample. The number who have adopted row-sowing is very insignificant in both seasons.

5.9 Methods of Planting according to Size of Holding and Tenurial Category

Data pertaining to planting methods classified on the basis of size of holding are given in Tables 5-XV and 5-XVI

Table 5-XV Extent under Different Planting Methods according to Size of Holding - Maha 1971/72

Size of Holding (acres)		Trans-planting	Row-sowing	Broad-casting	Total
Upto 0.50	Acres	7.99	-	1.25	9.24
	%	*86*	-	*14*	*100*
0.50 - 1.00	Acres	28.25	-	0.90	29.15
	%	*97*		*3*	*100*
1.00 - 2.00	Acres	68.72	3.25	9.00	80.97
	%	*85*	*4*	*11*	*100*
Sub-total Upto 2.00	Acres	104.96	3.25	11.15	119.36
	%	*88*	*3*	*9*	*100*
2.00 - 4.00	Acres	51.01	-	17.54	68.55
	%	*74*		*26*	*100*
4.00 - 6.00	Acres	37.25	-	14.25	51.50
	%	*72*		*28*	*100*
Over 6.00	Acres	55.50	-	14.00	69.50
	%	*80*		*20*	*100*
Sub-total over 2.00	Acres	143.76	-	45.79	189.55
	%	*76*		*24*	*100*
Total	Acres	248.72	3.25	56.94	308.91
	%	*81*	*1*	*18*	*100*

Table 5-XVI Extent under Different Planting Methods according to Size of Holding - Yala 1972

Size of Holding (acres)		Trans-Planting	Row-sowing	Broad-casting	Total
Up to - 0.50	Acres	5.52	-	3.28	8.80
	%	*63*		*37*	*100*
0.50 - 1.00	Acres	16.00	0.75	5.24	21.99
	%	*73*	*3*	*24*	*100*
1.00 - 2.00	Acres	41.10	1.25	19.40	61.75
	%	*66*	*2*	*31*	*100*
Sub-Total Up to - 2.00	Acres	62.62	2.00	27.92	92.54
	%	*68*	*2*	*30*	*100*
2.00 - 4.00	Acres	32.49	1.00	17.25	50.74 *
	%	*64*	*2*	*34*	*100*
4.00 - 6.00	Acres	25.75	3.00	11.25	40.00
	%	*64*	*8*	*28*	*100*
O v e r 6.00	Acres	32.50	-	18.00	50.50
	%	*64*		*36*	*100*
Sub-Total O v e r 2.00	Acres	90.74	4.00	46.50	141.24
	%	*64*	*3*	*33*	*100*
Total	Acres	153.36	6.00	74.42	233.78 *
	%	*66*	*3*	*32*	*100*

Transplanting of paddy is more popular in Maha, but this tendency is more striking in smaller sized holdings of less than 2 acres. This method of planting is most widely adopted in the 0.5 - 1.00 acre size class, i.e. 97% of the extent cultivated has been under this practice.

Since a very high proportion of holdings of less than 2 acres are located in the wet zone (Table 5-V), where the population density is also very high, labour is available in such areas to adopt transplanting on a wider scale. It was observed in Section 1.3, that the availability of family labour in these areas was also higher. Consequently operators in such holding faced with a larger family labour supply and very restricted land to cultivate adopt labour intensive cultural practices such as transplanting more readily in order to obtain higher yields. Even in larger size holdings of over 2 acres, a very high proportion - over 72% has been transplanted during Maha; the degree of variation in the proportion of the area transplanted in different size classes within the group is small. Broadcast sowing is practiced to a greater degree in holdings of over 2 acres. On the other hand in Yala

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* Excludes 0.25 acres in respect of which information on methods of planting was not available.

season the proportion of land transplanted shows more uniformity among different holding size classes, and has ranged from 62 - 66%, the only exception being the 0.5 - 1.0 acre size class where the percentage area transplanted is higher (73%). In both seasons transplanting appears to be most popular in holdings of 0.5 - 1.0 acre size class as was pointed out earlier.

Information on transplanting during Maha 1971/72 and Yala 1972 is also arranged on the basis of the 4 main tenurial groups and is given in Tables 5-XVII and 5-XVIII.

Table 5-XVII Adoption of Transplanting according to Tenurial Categories - Maha 1971/72

Tenurial Category	No. of farmers reporting	Farmers who transplanted		Extent cultivated acres	Extent transplanted acres	Extent transplanted as % of Extent cultivated
		No.	%			
Owners ..	60	52	83	133.02	101.13	76
Tenants ..	47	45	96	63.13	58.73	92
Owner-Tenants	15	15	100	30.33	27.33	90
Tenant-Owners	34	32	94	82.43	61.64	75
Total ..	156	144	92	308.91	248.83	80

Table 5-XVIII Adoption of Transplanting according to Tenurial Categories - Yala 1972

Tenurial Category	No. of farmers reporting	Farmers who transplanted		Extent cultivated acres	Extent transplanted acres	Extent transplanted as % of Extent cultivated
		No.	%			
Owners ..	55	30	56	103.42	63.76	62
Tenants ..	38	30	79	49.88	40.00	80
Owner-Tenants	13	8	57	25.45	12.95	51
Tenant-Owners	32	26	81	55.28	36.65	66
Total ..	138	94	68	234.03	153.36	66

Data pertaining to the two principal tenurial groups viz. Tenants and Owners shows that a higher proportion of Tenants transplant their fields in both seasons. It was observed earlier in Table 2-XVI that 83% of Tenants have paid as much as half of the harvested crop as land rent. Under such circumstances, Tenants are generally left with only a very limited quantity of the produce harvested for their own use. Thus the tendency observed among Tenants to adopt certain cultural practices that contribute to higher yields such as transplanting on a wider scale is understandable.

In Maha, 96% of tenants have transplanted 92% of the cultivated extent compared to 83% of owners who have transplanted only 76% of cultivated fields. Even in Yala, a similar tendency is seen in that 79% of tenants have adopted this cultural practice in 80% of their fields compared to 56% of the owners who have only transplanted 62% of the extent cultivated, indicating that transplanting is adopted by tenants on a wider scale in both seasons. All the owner-tenants (100%) in Maha have transplanted 90% of their fields cultivated, compared to tenant-owners 94% of whom have adopted this practice in 73% of their holdings. However, during Yala a substantially lower proportion of owner-tenants (57%) have adopted this practice in only 51% of their holdings. Extents transplanted are considerably less in Yala season in respect of all tenurial categories.

5.10 Methods of Planting according to Supply of Water

As ready availability of water is a crucial factor that influences farmers' decisions to adopt improved methods of cultivation relevant data is examined on the basis of water supply conditions.

Table 5-XIX Extent under Different Planting Methods according to Water Supply - Maha 1971/72

Water Supply		Trans-planting	Row-sowing	Broad-casting	Total
Major Irrigation	Acres	66.25	-	14.25	80.50
	%	*82*		*18*	*100*
Minor Irrigation	Acres	87.19	3.25	36.66	127.10
	%	*69*	*3*	*29*	*100*
Rainfed	Acres	95.28	-	6.03	101.31
	%	*94*		*6*	*100*
Total	Acres	248.72	3.25	56.94	308.91
	%	*81*	*1*	*18*	*100*

Table 5-XX Extent under Different Planting Methods according to Water Supply - Yala 1972

Water Supply		Trans-planting	Row-sowing	Broad-casting	Total
Major Irrigation	Acres	53.00	-	26.75	79.75
	%	*66*		*34*	*100*
Minor Irrigation	Acres	43.83	6.00	23.35	73.18
	%	*60*	*8*	*32*	*100*
Rainfed	Acres	56.53	-	24.32	80.85*
	%	*70*		*30*	*100*
Total	Acres	153.36	6.00	74.42	233.78*
	%	*66*	*3*	*32*	*100*

* Method of planting in respect of 0.25 acres was not mentioned.

The data shows that a higher proportion of land is transplanted during both seasons in rainfed areas compared to major irrigation schemes. This difference is more striking in Maha season. A high proportion of the rainfed areas have an assured supply of water and the average size of paddy holdings in these densely populated rainfed areas is also smaller. In Table 5-V it was shown that average size of paddy holdings in rainfed areas was only 1.40 acres compared to 4.21 in major schemes. Thus with an abundant supply of labour widespread adoption of transplanting in smaller size holdings in rainfed areas particularly in Maha is to be expected. In spite of efforts made by the extension services to popularise the practice of row-sowing for over 10 years, this method does not appear to have caught on in this district except in a few isolated instances under minor schemes.

5.11 Application of Fertilizer according to Seasons

With regard to fertilizer use, information was available only in respect of 144 farmers in Maha and 128 in Yala. Relevant data pertaining to the respective seasons is given in Tables 5-XXI and 5-XXII.

Table 5-XXI Application of Fertilizer - Maha 1971/72
Number of farmers reporting .. 144

Type of Fertilizer	Farmers Reporting use of fertilizer		Quantity per acre (cwts)
	No.	%	
Any type of fertilizer ..	136	94	1.1
Urea	126	88	1.0
V_1/V_2	88	61	1.3
TDM	48	33	1.1
Ammonium Sulphate	1	1*	0.8
Pelleted Fertilizer	4	3	0.5
Super Phosphate	9	6	0.9
Muriate of Potash	14	10	0.9

* Less than 1%

Table 5-XXII Application of Fertilizer - Yala 1972
Number of farmers reporting .. 128

Type of Fertilizer	Farmers reporting use of fertilizer		Quantity per acre (cwts)
	No.	%	
Any type of fertilizer ..	121	95	1.1
Urea	108	84	1.1
V_1/V_2	80	62	1.2
TDM	45	35	1.0
Ammonium sulphate	2	2	1.8
Pelleted fertilizer	5	4	0.8
Super Phosphate	1	1*	0.7
Muriate of Potash	6	5	0.6
Saphos Phosphate	4	3	1.3
Amorphous	3	2	1.4

* Less than 1%

It is observed that in both seasons over 90% of the farmers have used some kind of fertilizer and the average quantity applied per acre as reported by them has amounted to 1.1 cwt per acre. Since 83% of paddy lands are mainly rainfed and as over 80% of the extents cultivated in rainfed areas were under old high yielding varieties and traditional varieties as was pointed out in Section 5.5, the overall average quantity of fertilizer applied per acre could be considered as satisfactory. With regard to use of different types of fertilizer it is seen that a higher proportion of farmers 88% in Maha and 84% in Yala have applied Urea. Only 61% have applied the basal mixture V_1/V_2 during the respective seasons, but considering the fact that mixed fertilizers were made available to farmers for the first time only during 1971/72 Maha season, the progress that has been made in popularising the mixed fertilizer could be considered very satisfactory.

The average quantity of basal mixture applied per acre during Maha and Yala seasons amounts to 86 and 80% of the Department of Agriculture recommendations. With regard to top dressing, there are two specific recommendations for the district. For the wet zone which constitutes 83% of the paddy area, Urea and TDM1 are recommended, whilst for the dry zone, Urea is the sole recommendation. *The data in Tables 5-XXI and 5-XXII shows that the average quantity of Urea applied per acre has been twice the recommended dosage for mid-country wet zone (56 pounds for OHYV [1]). The tendency to use considerably higher doses of Urea particularly in a district where OHYV predominates could be partly due to the reason that 40% of those in the sample have not used any mixed fertilizer as basal dressings and some may have substituted Urea in its place. Application of high doses of nitrogenous fertilizer especially to OHYV and TV would not be expected to bring commensurate returns to farmers particularly in the absence of basal fertilizers.* The average quantity of TDM_1 applied per acre has been equivalent to the recommended dosage of 1 cwt per acre.

5.12 Application of Fertilizer according to Supply of water

Data on fertilizer use during the two seasons was also classified on the basis of water supply.

Table 5-XXIII Application of Fertilizer according to Water Supply - Maha 1971/72

	Major irrigation	Minor irrigation	Rainfed	Major irrigation	Minor irrigation	Rainfed
No.of farmers reporting ..	20	56	68			
Type of fertilizer	% of farms reporting			Quantity per acre (cwts)		
Any type of fertilizer	95	93	96	1.3	1.1	1.0
Urea	95	86	87	1.3	0.9	1.0
V_1/V_2	95	59	53	1.2	1.4	1.3
TDM	5	45	32	1.0	1.1	1.1
Ammonium Sulphate ..	-	-	2	-	-	0.8
Pelleted fertilizer ..	-	2	4	-	0.7	0.4

1 76% of the cultivated acreage in Maha and 62% in Yala wereunder OHYV and traditional varieties during Maha and Yala seasons respectively.

Table 5-XXIV Application of Fertilizer according to Water Supply - Yala 1972

	Major irrigation	Minor irrigation	Rainfed	Major irrigation	Minor Irrigation	Rainfed
No.of farmers reporting	21	47	60			
Type of fertilizer	% of farms reporting			Quantity per acre (cwts)		
Any type of fertilizer	100	96	92	1.2	1.1	1.1
Urea	95	83	82	1.2	1.0	0.9
V_1/V_2	90	64	52	1.2	1.3	1.2
Ammonium Sulphate	-	4	-	-	1.8	-
TDM	5	36	45	1.0	0.9	1.1
Pelleted fertilizer	5	2	5	7.0	0.3	0.8

The proportion of farmers using fertilizer under different water supply conditions is generally uniform. Farmers in major schemes have used slightly higher quantities compared to those in rainfed areas and minor schemes. It is of interest to point out that a substantially greater proportion of farmers in major schemes, have used the newly introduced mixed fertilizer during both seasons compared to those in rainfed areas and in minor schemes, but the quantity of basal mixture applied per acre shows very little variation according to water supply conditions. With regard to top dressing with Urea, the percentage of farmers who adopted this practice shows a more uniform pattern under different water supply conditions. *Data in Table 5-XXIII shows that farmers in rainfed areas apply almost twice the recommended quantity of Urea as mentioned earlier. TDM_1 is a new recommendation for second top dressing in mid-country wet zone portions of the Kandy district and application of this mixture appears to be becoming popular in rainfed areas as well as under minor schemes. The number of farmers in these areas who have used TDM_1 which was introduced only in 1971/72 has ranged from 32 to 45% during the two seasons. Urea is the only fertilizer recommended for top dressing in the major schemes of Minipe and the quantity applied by farmers in the sample is equal to the recommended dosage of 1 cwt per acre. More extension programmes to correct the imbalanced use of nitrogenous fertilizer particularly in rainfed areas and in minor schemes could prove beneficial both to farmers as well as the country.*

5.13 Timeliness of Fertilizer Application

As response to fertilizer is closely related to proper timing of application an attempt was made to obtain data pertaining to this aspect in Maha 1971/72. The following numbers have reported as having applied fertilizer at the appropriate time.

Basal application	.. 88
First top dressing	.. 126
Second top dressing	.. 97
Other applications	.. 14

It is implied that all the farmers who have used basal fertilizer have applied this mixture at the correct time. However, with regard to top dressing, due to inadequate information on kinds of fertilizer applied at the different stages of growth, it is not possible to indicate with any degree of certainty the percentage of farmers who have top dressed their crops at the correct time.

5.14 Application of Fertilizer According to Tenurial Category and Size of Holding

The pattern of fertilizer use during Maha 1971/72 season was also examined in relation to tenancy conditions and size of holdings.

Table 5-XXV Pattern of Fertilizer Application according to Tenurial Categories - Maha 1971/72

Tenurial Category	No of Applications: At least once — Farmers No.	%	Extent Acres	%	Three Times — Farmers No.	%
Owners	53	95	126.62	95	24	43
Tenants	41	95	53.80	90	21	49
Owner-Tenants	10	83	23.38	84	6	50
Tenant-Owners	32	97	74.79	97	16	48
Total	136	94	278.59	95	67	46

Table 5-XXVI Pattern of Fertilizer Application according to Size of Holdings - Yala 1971/72

Size of Holdings (acres)	No of Applications: At least once — Farmers No.	%	Extent Acres	%	Three times — Farmers No.	%
Up to 2.00	97	99	106.43	94	40	41
2.00 - 4.00	24	92	71.16	91	15	58
4.00 - 6.00	11	100	56.00	100	8	73
Over 6.00	4	44	45.00	100	4	44
Total	136	94	278.59	95	67	46

The data in Table 5-XXV shows that a very high proportion of farmers have applied fertilizer at least once, the overall average being 94% for the major tenurial groups. The proportion of land that had received at least one application of fertilizer is not only extremely high but also relatively uniform in respect of all tenurial groups, the average being 95%

of the cultivated extent. However, the number who have made three fertilizer applications is comparatively small the overall average for all the four categories being only 46%. The data also shows that only half the number of farmers who had given a single application had made three applications. This tendency may point to the need for more farmer education on proper fertilizer use.

Classification of data on the pattern of fertilizer use in Maha 1971/72 according to holding size class (Table 5-XXVI) shows that all the operators in 4.0 - 6.0 acre size class have fertilized at least once the entire extent cultivated by them. Even in the smallest size holdings of less than 2.0 acres, 99% of the operators have used fertilizer in 93% of the cultivated extent. In contrast the data with regard to 3 applications of fertilizer shows variation on the basis of holding size. *A higher proportion of farmers in larger size holdings have made three applications of fertilizer compared to those in the smallest sized holdings, which indicates that farmers in larger size holdings appear to follow more closely the recommendations on proper timing of fertilizer applications. Since the number of farmers in holdings of over 4 acres is small, it is not attempted to draw any inferences with regard to fertilizer use based on holding size.*

5.15 Weed Control

A summary of the data on weed control methods adopted during Maha 1971/72 season is given in Table 5-XXVII.

Table 5-XXVII Percentage on Distribution of Farmers and Extent of Land according to Method of Weed Control Adopted - Maha 1971/72

Method of Weeding	Farmers		Extent	
	No.	%	Acres	%
Hand weeding only	100	*83*	179.58	*79*
Rotary weeding only	2	*2*	2.30	*1*
Chemical weeding only	3	*2*	8.50	*4*
Hand weeding and rotary weeding	5	*4*	6.50	*3*
Hand weeding and chemical weeding	7	*6*	19.25	*8*
Rotary weeding and chemical weeding	3	*2*	10.75	*5*
Total	120	*100*	226.88	*100*

These figures show that hand weeding is the most popular method of weed control adopted in the district. Of the 120 farmers who have adopted weed control measures 83% had utilized labour for hand weeding in 79% of the cultivated extent. *The number of farmers using chemicals for weed control is negligible. The percentage extent where weedicides have been used is only 4% indicating the insignificant role that chemicals play in weed control in paddy cultivation in this district.*

5.16 Tenurial and Management Practices

Kandy district shows some interesting characteristics when we examine the spread of certain management practices according to tenurial categories and sizes of holdings (Table 5-XXVIII and 5-XXIX). *When we examined the spread of NHYVs there was 100% adoption by all tenurial categories in major irrigation schemes except among owners; only 50% of the owners had adopted. The rate of adoption was considerably lower under minor irrigation and rainfed conditions.* Although there were variations among the tenurial groups, the numbers in the sub-groups were, however, too small to draw any inferences. In relation to the extent under NHYVs., tenants and owner-tenants had a much higher proportion of land under these varieties than owners and tenant-owners. *It is noteworthy that the rate of adoption was lowest among cultivators with 2.0 acres or less under all conditions of water supply.* The rate of adoption tended to be considerably higher for all sizes of holdings except 2.0 - 4.0 acres under rainfed and over 6.0 acres under major irrigation. A similar pattern can be seen in relation to the extent under NHYVs. It is difficult to explain why this should be so as the study did not seek specific information of this nature. We have seen, however, that extension contact is less for smaller farmers who were also placed less favourably in relation to receiving an assured supply of water. These factors, no doubt, play an important role in the adoption of NHYVs.

Table 5-XXVIII Relationship of Land Tenure to Management Practices

Practice	Tenurial Category	Major irrigation		Minor irrigation		Rainfed		Major Irrigation	Minor Irrigation		Rainfed	
		Cultivators						Extent cultivated				
		No.	%	No.	%	No.	%	acres	%	acres	%	Acres %
NHYV	Owners	6	*50*	6	*26*	2	*8*	19.00	*40*	5.25	*11*	4.45 *13*
	Tenants	3	*100*	2	*17*	6	*19*	7.75	*69*	6.25	*31*	6.50 *20*
	Owner-Tenants	4	*100*	1	*12*	1	*33*	8.50	*65*	0.13	*1*	1.00 *16*
	Tenant-Owners	2	*100*	6	*35*	3	*20*	2.50	*30*	10.41	*22*	3.00 *11*
Trans-planting	Owners	10	*83*	19	*83*	23	*92*	41.00	*85*	26.56	*54*	33.46 *94*
	Tenants	3	*100*	12	*100*	30	*94*	8.00	*71*	20.05	*100*	30.68 *96*
	Owner-Tenants	4	*100*	8	*100*	3	*100*	12.00	*92*	9.18	*82*	6.15 *100*
	Tenant-Owners	2	*100*	15	*88*	15	*100*	5.25	*64*	31.40	*68*	24.99 *90*
3 app. of Fertilizer	Owners	8	*67*	11	*48*	6	*24*					
	Tenants	3	*100*	6	*50*	15	*47*					
	Owner-Tenants	4	*100*	2	*25*	3	*100*	Not available				
	Tenant-Owners	-	-	12	*71*	5	*33*					

\- Indicates Nil.

Table 5-XXIX Relationship of Size of Holding with Management Practices

Practice	Size of Holding (acres)	Major Irrigation Cultivators No.	%	Minor irrigation Cultivators No.	%	Rainfed Cultivators No.	%	Major irrigation Extent cultivated Acres	%	Minor irrigation Extent cultivated Acres	%	Rainfed Extent cultivated Acres	%
NHYV	Upto 0.50	-	-	-	-	2	11	-	-	0.25	16	0.50	7
	0.50-1.00	-	-	2	15	1	5	-	-	1.25	11	0.95	6
	1.00-2.00	4	57	3	16	5	20	7.00	50	3.75	13	4.00	10
	Sub-total Upto 2.00	4	50	5	14	8	12	7.00	47	5.25	13	5.45	9
	2.00-4.00	4	80	4	29	1	14	8.50	63	5.79	16	3.50	19
	4.00-6.00	3	75	2	40	3	100	8.25	58	2.75	11	6.00	52
	Over 6.00	2	50	2	50	-	-	14.00	37	8.25	35	-	-
Transplanting	Upto 0.50	-	-	5	100	15	83	-	-	1.56	100	6.43	84
	0.50-1.00	1	100	13	100	21	100	1.00	100	10.60	95	16.65	98
	1.00-2.00	5	71	16	84	24	96	9.00	64	23.02	81	36.70	95
	Sub-total Upto 2.00	6	75	34	92	60	94	10.00	67	35.18	85	59.78	95
	2.00-4.00	5	100	12	86	7	100	11.50	85	23.51	65	16.00	86
	4.00-6.00	4	100	5	100	3	100	12.00	84	13.75	53	11.50	100
	Over 6.00	4	100	3	75	1	100	32.75	87	14.75	62	8.00	100
3 apps.of fertilizer	Upto 0.50	-	-	1	20	7	39						
	0.50-1.00	1	100	5	39	7	33						
	1.00-2.00	5	71	10	53	9	36						
	Sub-total Upto 2.00	6	75	16	43	23	36	Not available					
	2.00-4.00	4	80	9	64	4	57						
	4.00-6.00	3	75	3	60	2	67						
	Over 6.00	2	50	3	75	-	-						

- Indicates Nil.

Transplanting was prevalent among most cultivators; the proportion of the land transplanted was also very high. *It is interesting to note that except under rainfed conditions, the lowest rate of transplanting was among the owners.* Considerably larger proportions of the cultivated area was transplanted than was planted with NHYVs indicating that transplanting is practised with other varieties also. Although there were variations in the proportion of land transplanted by the different tenurial categories it is difficult to identify any clear pattern in them. *The proportion of cultivators transplanting was a little less in holdings of 2.0 acres or less than in holdings of over 2.0 acres.* In the smaller holdings, however, transplanting was more common among cultivators with 1.0 acres or less than among those with 1.0 - 2.0 acres. When we consider the proportion of the cultivated extent transplanted, 67% of the area in holdings of 2.0 acres or less under major irrigation was transplanted while 84 - 87% of the area in holdings of other sizes was transplanted. In extent the latter is much larger. Under minor irrigation, however, the proportion was highest (85%) in the 2.0 acre or less size class and lowest (53%) in the 4.0 - 6.0 acre size class.

Under rainfed conditions the proportion was lowest (86%) in holdings of 2.0 - 4.0 acres. *It is interesting to note that the proportion of land transplanted was highest for all sizes of holding under rainfed conditions. It is difficult to come to any definite conclusions from these figures. It should, however, be noted that there is no clear or marked preference for transplanting among owners or the smaller cultivators.* Transplanting appears to be influenced by the availability of assured water; hence its greater prevalence in areas with major irrigation and in rainfed areas. In the former, however, cultivators have larger holdings and depend on migrant labour which makes transplanting more costly than in the more densely populated rainfed areas which have smaller holdings and where attan labour is also available. This may account for the higher rate of transplanting in rainfed areas than in others.

Nearly all the cultivators applied some fertilizer (cf.5.11), but only 47% applied fertilizer at least three times. *The proportion of cultivators who applied fertilizer at least three times was markedly higher under major irrigation schemes and was generally higher under minor irrigation than under rainfed conditions.* This appears to reflect a response to more assured water supply as in Maha to which these figures refer, availability of water is more assured under irrigated conditions. When we consider this management practice according to tenurial categories, *the proportion is lowest among owners under major irrigation and rainfed conditions and is lower among them than among tenants and tenant-owners even under minor irrigation. This is difficult to explain as one would have expected the owners to take a greater interest in their cultivation.* In terms of the size of holding the proportion was lowest among cultivators with holdings of 2.0 acres or less both under minor irrigation (43%) and rainfed conditions (36%). Under major irrigation, it was lowest (50%) among cultivators with over 6.0 acres - there was little difference among the other categories. *The figures indicate a general tendency for the proportion to be lower among the smaller cultivators, but no tendency for the proportion to increase as the size of holdings becomes larger could be seen.* The smallest cultivators probably use less fertilizer due to less exposure to extension advice and difficulties of finding the required financial resources. *Taking the three practices together there is a tendency for the rates of adoption to be lower among owners as a tenurial category and smaller cultivators (2.0 acres or less) as a size class.* It was not possible to identify any tendency among the other tenurial categories or size classes.

Chapter 6

PRODUCTIVITY

In this chapter we shall examine the yields reported by the sample farmers in relation to their tenurial status, size of holding, water supply conditions and the varieties of paddy grown in Maha 1971/72 and Yala 1972. The weather conditions in the district had been about normal during Maha but crop failure reported by some farmers in Yala indicated that weather conditions were adverse during that season.

6.1 Land Tenure and Yields

The overall yield was 50.8 bushels/acre in Maha and 41.9 bushels/acre in Yala. As the yield in Yala was 18% less than in Maha and the extent cultivated was only 76% of the extent in Maha, the overall production in Yala was only 60% of Maha production. *It could be seen from Table 6-I and 6-II that yields[1] in Yala were lower than in Maha for all tenurial categories and sizes of holding.*

Table 6-I Paddy Yields according to Tenurial Category and Size of Holding - Maha 1971/72 (Bushels/Acre)

Tenurial Category	Size of Holding (Acres)							
	Upto 0.50*	0.50 to 1.00*	1.00 to 2.00	Upto 2.00	2.00 to 4.00	4.00 to 6.00	Over 6.00	Overall
Owners	66.3	49.2	53.0	53.2	36.6	51.0	43.3	46.4
Tenants	55.4	46.6	43.6	46.0	64.4	64.5	37.8	50.0
Owner-Tenants	-	48.1	51.6	50.2	47.7	23.3	95.0	53.6
Tenant-Owners	-	38.2	48.1	45.4	43.2	66.2	83.6	57.4
Overall	59.3	45.6	49.1	49.0	43.1	58.9	55.3	50.8

*Yield in respect of one operator was unreliable and therefore excluded.

The tenurial category reporting the highest yield in Maha (57.4) was the tenant-owners. The owners who constituted the largest proportion of the cultivators in the sample (38%) reported a yield of only 46.4 which was the lowest yield reported by any tenurial category. This was less than the yield obtained by the tenants (50.0). The difference was more marked

[1] In this section yield is expressed in bushels per acre although these words are not repeated after every figure.

in Yala when the owners reported a yield of only 36.9 compared to 44.3 by tenants -20% or less. *Owner-tenants reported the highest yield (47.8) for any tenurial category in Yala* (Figs.9(a) and 9(b)).

Table 6-II Paddy Yields according to Tenurial Category and Size of Holding - Yala 1972 (Bushels/Acre)

Tenurial Category	Size of Holding (Acres)							
	Upto 0.50	0.50 to 1.00	1.00 to 2.00	Upto 2.00	2.00 to 4.00	4.00 to 6.00	Over 6.00	Overall
Owners	38.3	38.8[1]	42.8[2]	41.8	40.4	26.4	31.6	36.9
Tenants	40.2	40.6	44.9	42.6	42.0	49.0	-[3]	44.3
Owner-Tenants	-	51.5	55.0	53.8	44.6	15.0	70.0	47.8
Tenant-Owners	19.0	46.9	41.3	42.7	34.6	44.4	69.5	46.3
Overall	38.9	42.5	43.7	42.9	40.1	39.6	43.8	41.9

[1] Information in respect of one operator was unreliable and crop failure was reported by another; the two operators were excluded.

[2] Information in respect of one operator who reported crop failure was excluded.

[3] Yield data was not reported by one operator.

The lower yields reported by owners particularly in Yala is difficult to explain without further investigation. Although the yield is influenced by the availability of water, owners do not appear to have any disadvantage in that respect compared to other tenurial categories; if at all, they are more advantageously placed (cf. 3.10). The yield could also be influenced by the management practices adopted such as the varieties of seed cultivated, methods of planting practised and the application of fertilizer. These practices themselves are influenced by the availability of water. Although the owners have a more favourable supply of water, their level of management has been poorer than other tenurial categories, especially under major irrigation (cf. 5.16). This is, however, not an explanation as explaining lower yields in terms of poorer management practices still does not tell us why owners adopt poorer practices which lead to lower yields.

Size of holding could have some influence on the attitude of tenants towards their cultivation. As we have already noted, most of them pay half-share of crop as land rent which would leave them only a little paddy because their size of holding is small. On the average yield obtained by the tenants in Maha and Yala, 50% of the harvest in both seasons would provide a tenant with 47 bushels with which he has to meet most of his cultivation expenses and consumption needs. Thus the amount of paddy available to him for his family consumption is small. The provision of this staple item of diet is probably the most important motivation for these cultivators.

PADDY YIELD OF DIFFERENT SIZE HOLDINGS ACCORDING TO TENURIAL CATEGORIES

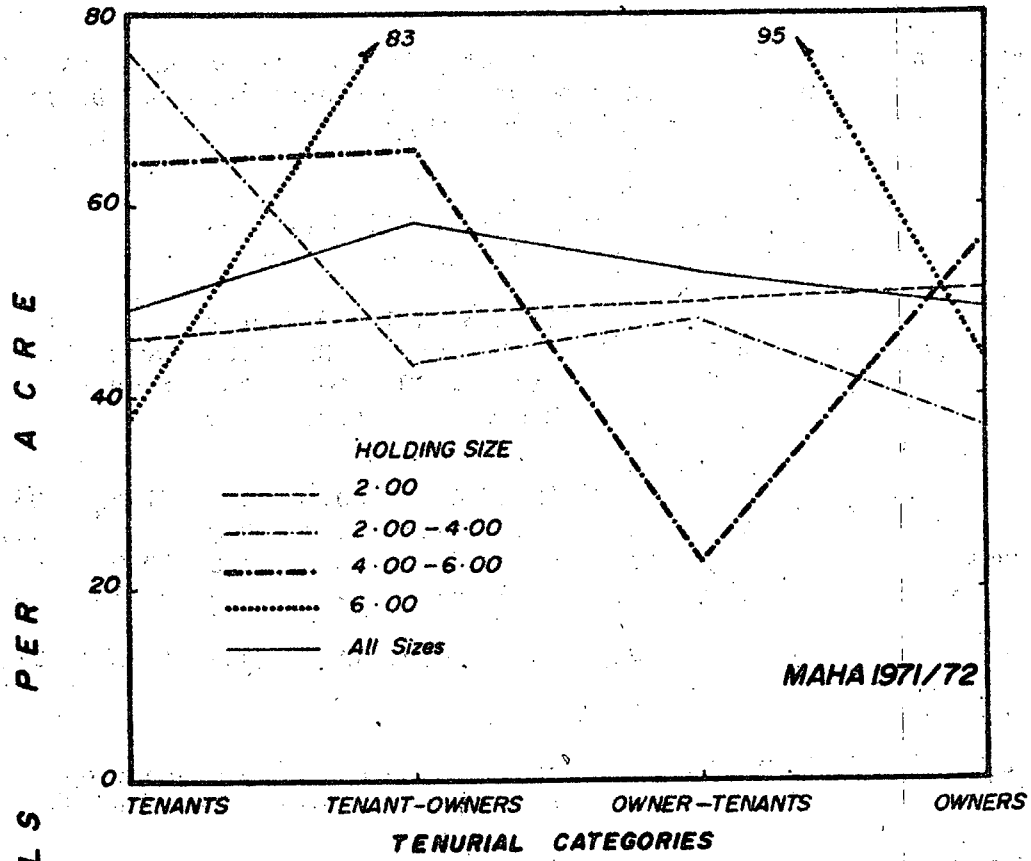

Fig. 9(a)

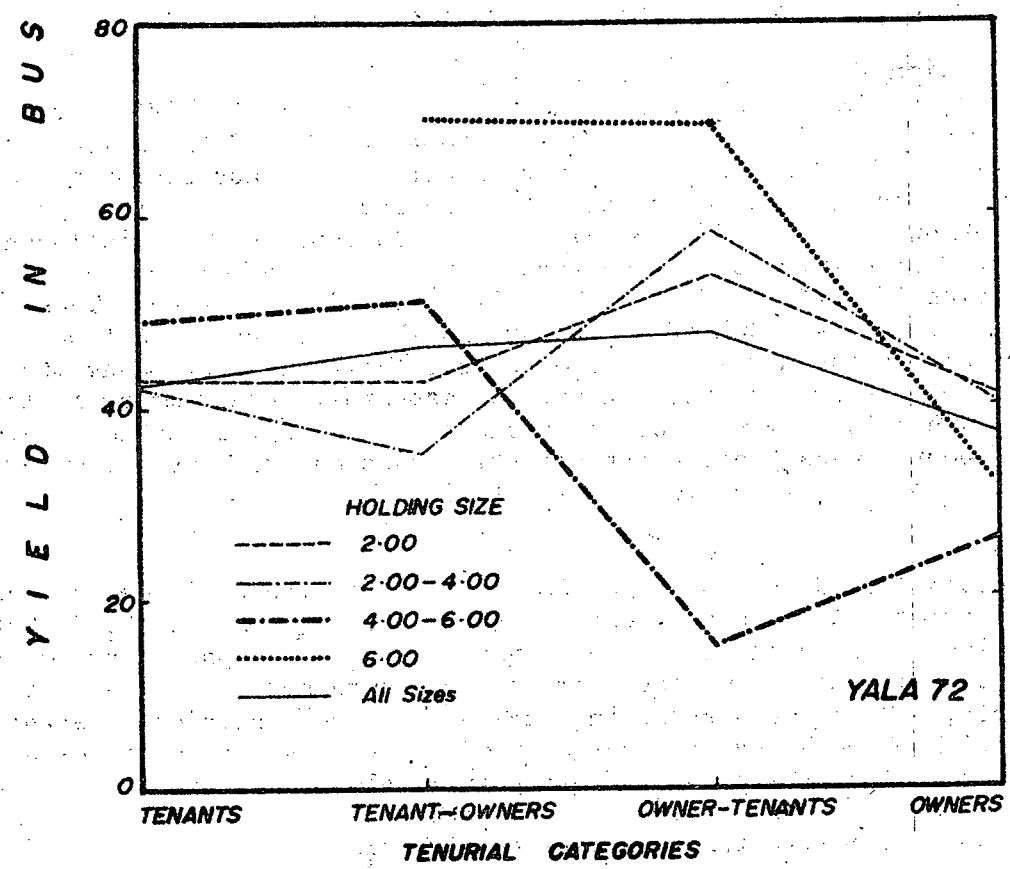

Fig. 9(b)

54% of the tenants operate 1.0 acre or less of paddy land. Thus the smallness of their holdings could be an inducement to adopt more productive methods of cultivation. At the same time, the smallness of size could be an advantage to them in the context of the resources of labour and capital available to them to work their land. The data on yields (Tables 6-I and II), however, does not indicate any clear relationship between size of holding and yields. The highest yields among tenants for Maha were reported by cultivators with 2.0 - 6.0 acres (approximately 64.0); the number of cultivators in this class, however, was only 5. The lowest yield among tenants for Maha was 37.8 reported by a single farmer with 6.25 acres. 88% of tenants had holdings of 2.0 acres or less; the average yield obtained by them in Maha (46.0) was less than the average obtained for tenants as a whole (50.0). Among those with 2.0 acres or less, the smallest cultivators (0.5 acre or less) had the highest yield in Maha (55.4) and lowest in Yala (40.2) and the largest cultivators (1.0 - 2.0 acres) had the highest yield in Yala (44.9) and lowest in Maha (43.6).

Given the number of cultivators who fall into the various sub-groups, it is difficult to see whether there is any statistically reliable relationship between size of holding and yield. *We could expect that the tenants would want to ensure an adequate amount of paddy for their consumption. Given the limited size of their operational holdings and the high land rent, they would attempt to achieve this by increasing productivity of land through better management practices where the conditions are favourable for an assured return on their investment of effort and capital.* Owners on the other hand do not feel the same degree of compulsion to try and maximise the productivity of land. Based on the average yield that they obtained for Maha and Yala, an owner operating 1.0 acre could expect 83 bushels; 62% of the owners operated 1.0 acre or more. *Ownership of the land instead of operating as an incentive to maximise the return on land itself may be operating as an incentive to maximise the return on the investment of effort and capital. Thus, even though we are not able to establish any statistical relationship between size of holding and yield among tenants, namely, an indication that as the size of holding decreases tenants would try to increase its productivity, the difference in yield between tenants and owners may be influenced by the quantum of paddy tenants can expect to retain for their consumption needs.* In the context of the almost uniform high land rent paid by tenants, this depends largely on the extent of land operated by any tenant.

Considering the variation in yields according to the size of the holding in general (Table 6-I) the highest yield in Maha (59.3) was reported by cultivators with holdings of 0.5 acre or less; this was 17% higher than the overall yield and 38% higher than the lowest for Maha (43.1). The lowest yield was reported by cultivators with 2.0 - 4.0 acres. Yields of 55.3 and 58.9 were reported by 9 cultivators with over 6.0 acres and 12 cultivators with 4.0 - 6.0 acres. *Thus there was no clear relationship between size of holding and yield in Maha* (Fig.10(a)). *The position was similar in Yala also* (Fig.10(b)). The highest yield (43.8) was reported by cultivators with over 6.0 acres; this was only 6% higher than the overall yield and 14% higher than lowest for Yala (38.9) which was reported by cultivators with holdings of 0.5 acre or less. A yield of 43.8 was reported by cultivators with holdings of over 6.0 acres.

PADDY YIELD OF TENURIAL CATEGORIES According to size of holding

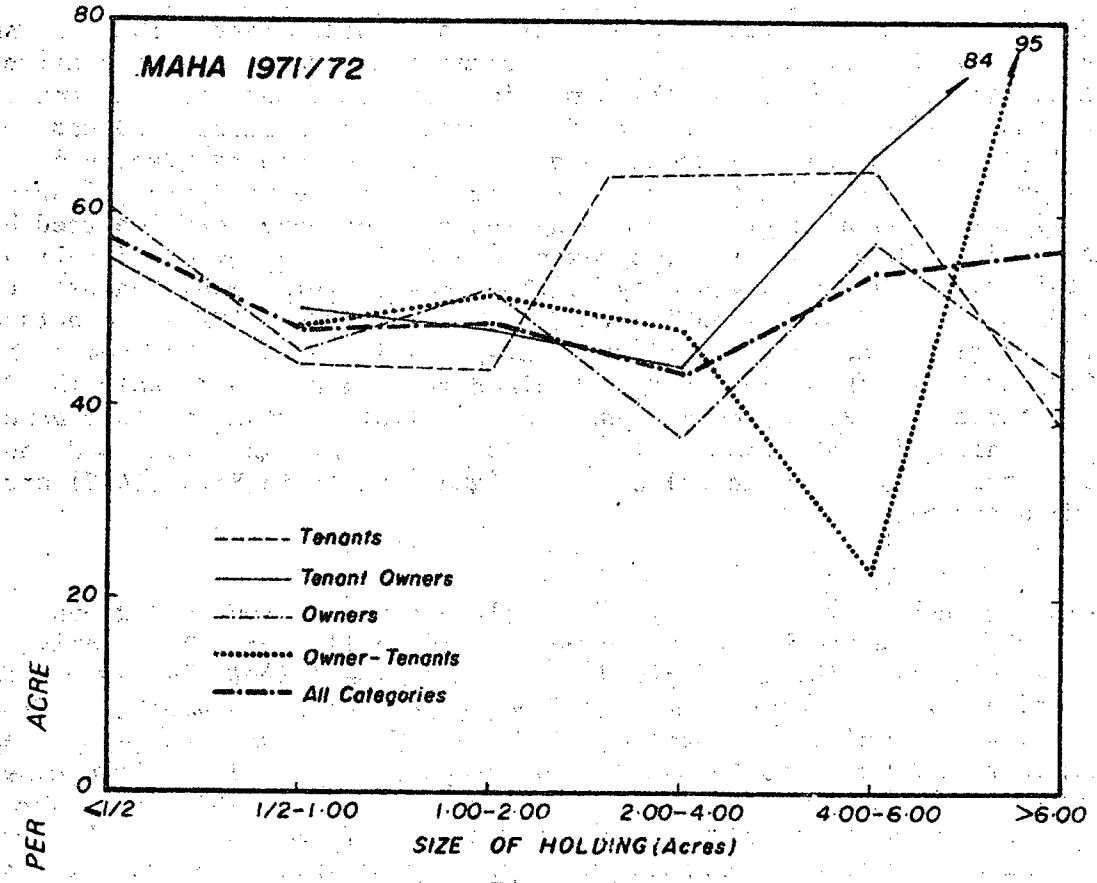

Fig.10 (a)

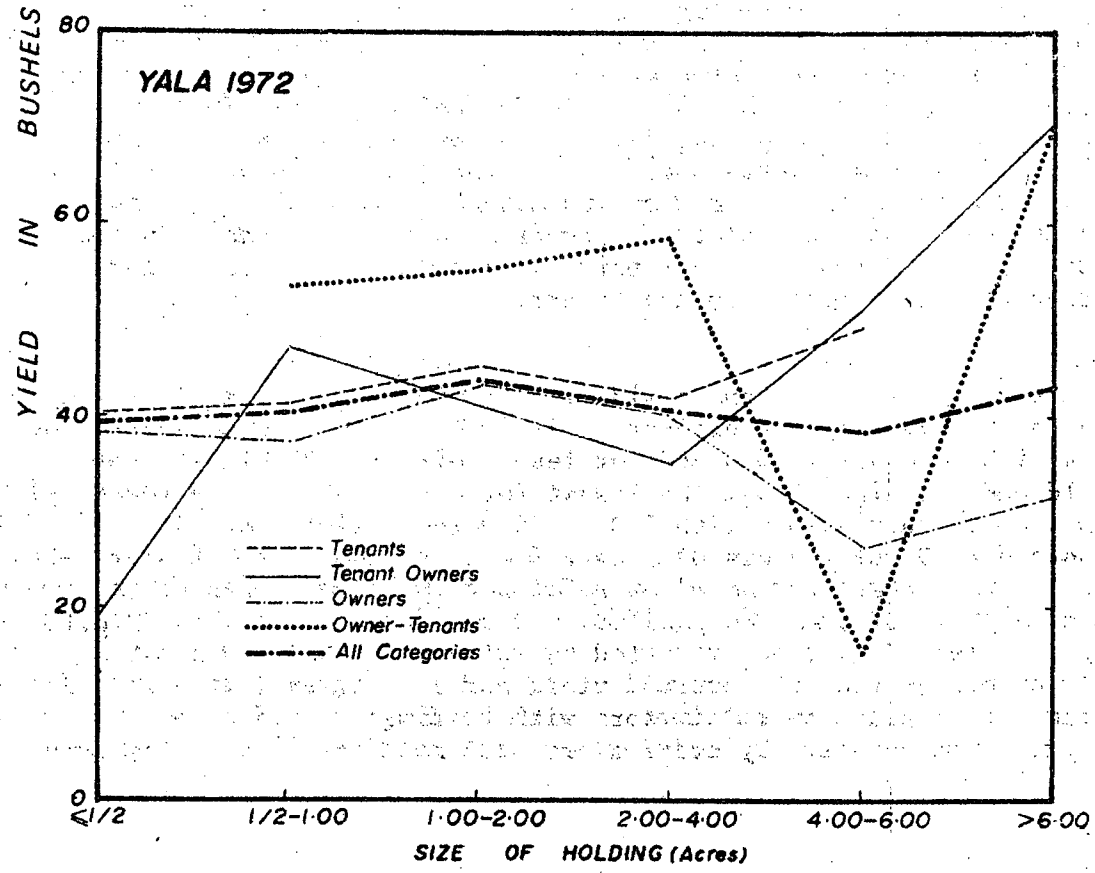

Fig.10 (b)

As the supply of water influences the productivity, we should consider the yields of cultivators operating under similar conditions of water supply. In this discussion we shall limit ourselves to owners and tenants who constitute the major tenurial categories. The overall yield obtained by 12 owners in Maha under major irrigation was 59.6 over 48 acres compared to 66.0 obtained by 3 tenants over 11 acres; in Yala the respective figures were 41.7 by 12 owners over 48 acres and 51.2 by 3 tenants over 11 acres. Although the yield obtained by tenants has been higher in both Maha (11%) and Yala (23%) the figures cannot be considered to show a conclusive tendency as the number of tenants in this sub group was too small. The tenants, however, had higher yields than owners even under major irrigation 46.8 compared to 33.8 in Maha and 42.4 compared to 33.9 in Yala. The Maha yield was for 23 owners cultivating 48 acres and 12 tenants cultivating 20 acres. Under rainfed conditions there is virtually no difference in yield in Maha but in Yala the tenants obtained 42.3 compared to 31.7 obtained by owners; the Yala figures refer to 23 owners cultivating 29 acres and 25 tenants cultivating 25 acres. *Thus the tenants have reported higher yields than owners in both seasons except under rainfed conditions in Maha. The figures indicate a markedly higher yield under major irrigation than under minor irrigation or rainfed conditions; the variation in yield between areas under minor irrigation and rainfed conditions were neither large nor consistent.*

6.2 Yields in Relation to Varieties Grown

Yield data classified on the basis of varieties, water supply conditions and size of holding are given in Tables 6-III and 6-IV. Only 118 farmers indicated the yields harvested during Maha 1971/72 season. As only 14 had grown NHYV compared to 85 who had cultivated OHYV, a yield comparison based on the varieties was not possible.

Striking differences in yields are observed where the farmers who cultivated OHYV are classified on the basis of water supply. Under major schemes yields of 75 bushels per acre have been reported with OHYV compared to 46 and 36 bushels in rainfed and minor schemes. In this instance too, as only a very small number of cultivators in major schemes furnished yield data, it is unrealistic to draw general conclusions on yield variations based purely on water supply conditions. Considering the fact that a very high proportion of farmers transplanted their fields in Maha (Table 5-XIX), the overall yields reported from rainfed areas as well as minor schemes cannot be considered as very satisfactory. *Relatively low yields reported from these areas may be partly due to imbalanced use of fertilizer. It was observed earlier in Chapter 5 that only a small proportion of farmers in rainfed areas and minor schemes had applied basal dressings of fertilizer, and also had used almost double the recommended dose of nitrogen for top dressing of OHYV. However, the low yields reported is not attributed solely either to pattern of fertilizer use or to problems connected with water supply. It is very likely that the low overall average yields indicated is partly due to under-reporting of yields by some of the farmers, particularly as these areas have an assured supply of water during Maha season and transplanting is widely adopted. It is also of interest to point out that the few farmers who have grown traditional varieties have reported comparatively good yields in Maha.*

Table 6-III Paddy Yields per acre according to Water Supply, Size of Holding, and Varieties of Paddy - Maha 1971/72

Water Supply	Size of Holding (acres)	New High Yielding Varieties		Old High Yielding Varieties		Traditional Varieties only	
		Yield Bushels /acre	No. of farmers reporting	Yield Bushels /acre	No. of farmers reporting	Yield Bushels /acre	No. of farmers reporting
Major Irrigation	Upto 0.50	-	-	-	-	-	-
	0.50-1.00	-	-	70.0	1	-	-
	1.00-2.00	49.2	3	78.3	3	-	-
	Upto 2.00	49.2	3	77.1	4	-	-
	2.00-4.00	74.0	1	70.8	1	-	-
	4.00-6.00	55.0	1	-	-	-	-
	Over 6.00	70.0	1	-	-	-	-
	Overall	62.6	6	75.5	5	-	-
Minor Irrigation	Upto 0.50	-	-	58.3	4	-	-
	0.50-1.00	92.0	1	47.3	10	24.0	1
	1.00-2.00	56.9	2	45.1	14	33.3	2
	Upto 2.00	67.7	3	46.2	28	31.0	3
	2.00-4.00	-	-	26.1	7	65.0	1
	4.00-6.00	-	-	40.9	2	-	-
	Over 6.00	-	-	16.7	1	60.0	1
	Overall	67.7	3	36.2	38	49.4	5
Rainfed	Upto 0.50	68.0	2	54.0	13[1]	42.0	2
	0.50-1.00	63.2	1	45.6	15	39.6	4
	1.00-2.00	42.8	1	46.9	11	41.6	7
	Upto 2.00	76.6	4	48.4	39	41.1	13
	2.00-4.00	45.6	1	35.8	3	49.1	2
	4.00-6.00	-	-	-	-	-	-
	Over 6.00	-	-	-	-	-	-
	Overall	50.4	5	46.1	42[1]	42.1	15

[1] Excludes one operator whose reported yield was unreliable.

Table 6-IV Paddy Yields per acre according to Water Supply, Size of Holding, and Varieties of Paddy - Yala 1972

Water Supply	Size of Holding (acres)	New High Yielding Varieties		Old High Yielding Varieties		Traditional Varieties only	
		Yield Bushels /acre	No. of farmers reporting	Yield Bushels /acre	No. of farmers reporting	Yield Bushels /acre	No. of farmers reporting
Major Irrigation	Upto 0.50	-	-	-	-	-	-
	0.50-1.00	-	-	-	-	70.0	1
	1.00-2.00	87.5	1	-	-	53.8	3
	Upto 2.00	87.5	1	-	-	56.3	4
	2.00-4.00	59.1	2	-	-	44.9	2
	4.00-6.00	50.0	1	-	-	-	-
	Over 6.00	30.0	1	-	-	-	-
	Overall	46.3	5	-	-	51.1	6
Minor Irrigation	Upto 0.50	73.1	1	52.8	3	31.4	1
	0.50-1.00	60.0	1	37.8	9	20.0	1
	1.00-2.00	51.1	4	52.1	5	50.5	3
	Upto 2.00	52.6	6	45.0	17	20.5	5
	2.00-4.00	35.9	6	41.0	6	14.7	1
	4.00-6.00	-	-	39.7	4	-	-
	Over 6.00	-	-	-	-	22.2	2[1]
	Overall	43.3	12	39.3	27	20.8	8
Rainfed	Upto 0.50	46.8	5	33.1	12	-	-
	0.50-1.00	42.8	2	37.2	12[2]	8.0	1
	1.00-2.00	45.5	3	46.4	10[3]	16.1	4
	Upto 2.00	45.3	10	36.1	34	14.8	5
	2.00-4.00	-	-	35.4	6	-	-
	4.00-6.00	-	-	35.0	2	-	-
	Over 6.00	-	-	-	-	-	-
	Overall	45.3	10	37.2	42	14.8	5

[1] Excluding one operator who reported crop failure.

[2] Excluding one operator who reported crop failure, and another whose reported yield was unreliable.

[3] Excluding one operator who did not furnish information on yields.

In general the yields obtained in Yala season have been lower than in Maha. Since improved cultural practices such as transplanting are adopted to a lesser degree during Yala and also as the water supply is less stable, the relatively lower yields recorded in Yala particularly in minor schemes and rainfed areas may be partly due to lower levels of management as well as problems connected with availability of water.

Yields reported in respect of OHYV, examined on the basis of holding size and water supply, show that in minor schemes and rainfed areas, the cultivators in holdings of less than 2 acres in extent have obtained relatively higher yields. Even in the case of NHYV, a similar tendency is observed, though the number of farmers is too small to draw conclusions. As transplanting was adopted on a very wide scale in holdings of less than 1.0 acre, higher yields reported from such holdings may be partly due to higher levels of management. In major schemes as only a very small number of farmers furnished yield data comparison of yields on the basis of holding size was not attempted.

6.3 Yields in Relation to Cultural Practices

It was observed in Chapter 5 that cultural practices such as transplanting and hand weeding are adopted on a very wide scale in this district. In Maha 81% and in Yala 66% of the extent cultivated was transplanted (Tables 5-XIX and 5-XX) indicating the general popularity of this method of planting throughout the district. Hand weeding too is practised on a very extensive scale (Table 5-XXVII) as 79% of the extent cultivated was found to be hand weeded. In view of the widespread adoption of improved cultural practices in this district, yield comparisons under different planting methods was not attempted. With regard to the pattern of fertilizer use, as considerable variations on the quantities, combinations and times of application of different kinds of fertilizer was observed, it was not possible to evaluate yield responses on the basis of fertilizer used.

6.4 Disposal of Paddy

Quantity of paddy that becomes available for disposal is governed by a number of factors such as holding size, acre yields, tenurial arrangements, and family size etc. Relevant data with regard to disposal of paddy during Maha 1971/72 and Yala 1972 seasons are presented in Tables 6-V to 6-VIII.

In both seasons, sales per acre sown, show a progressive increase with the increase in holding size. In Maha, the average quantity sold per acre in smaller size holdings of less than 2.0 acres was 12 bushels compared to 27 bushels in the larger sized holdings of over 2.0 acres. The overall average for all size categories was about 20 bushels per acre. Sales as a percentage of total production show a similar trend. In smaller holdings of less than 2.0 acres, it was 25% compared to 49% in holdings of over 2.0 acres. *Relatively smaller percentage of sales in smaller holdings is obviously due to the smaller surplus available for disposal particularly in holdings of less than one acre. On the other hand, the percentage of sales shows a marked increase in larger holdings particularly in those of over 6.0 acres in size.* Higher acre yields obtained in larger holdings have made it possible for the operators to sell a substantially higher proportion of their total produce.

Table 6-V Disposal of Paddy According to Size of Holding - Maha 1971/72

Size of Holding (acres)	No.of farms	Sales per acre sown (Bushels)	Sales as a % of total production	Sales to Co-op as a % of total sales	Yield Bushels /acre
Upto 0.50	22	12.2	20.4	100	59.8
0.50-1.00	30	6.7	15.2	100	44.1
1.00-2.00	46	14.1	29.1	90	48.4
Subtotal Upto 2.00	98	12.2	25.3	92	48.3
2.00-4.00	21	19.9	26.8	97	45.3
4.00-6.00	8	28.4	42.1	100	67.5
Over 6.00	5	32.3	58.8	96	54.9
Over 2.00	34	26.7	49.2	98	54.3
Overall	132	19.8	38.4	96	51.6

Table 6-VI Disposal of Paddy According to Size of Holding - Yala 1972

Size of Holding (acres)	No.of farms	Sales per acre sown (Bushels)	Sales as a % of total production	Sales to Co-op as a % of total sales	Yield Bushels /acre
Upto 0.50	22	2.7	6.9	100	39.3
0.50-1.00	23	4.6	10.5	100	44.4
1.00-2.00	37	14.3	32.6	90	43.7
Subtotal Upto 2.00	82	11.0	25.2	91	43.4
2.00-4.00	22	18.1	40.2	95	44.9
4.00-6.00	8	22.4	52.0	91	43.2
Over 6.00	4	24.5	51.4	87	47.8
Over 2.00	34	21.3	47.1	93	45.3
Overall	116	16.7	37.6	91	44.5

The proportion of sales made to co-operative societies was extremely high and do not appear to vary much on the basis of holding size. *The overall average was 96% of the total sales made during this season.*

During Yala season less paddy had been sold in all size groups. Lower sales in Yala are partly due to lower yields recorded during this season, compared to Maha. However, the overall sales as a percentage of the total production for all size groups was 38%. Relatively high percentage of sales despite lower yields recorded in Yala is an indication that less paddy has been retained for home consumption. With regard to sales made to cooperatives, operators in all size groups have sold a very high proportion of their surplus produce, the average being 91%. *It is of interest to point out that the operators in the smallest size group of less than 1.0 acre have sold their entire surplus to co-operatives during both seasons, which indicates that farmers in small holdings tend to sell their paddy more to the co-operatives in the district. This trend is contrary to the popular notion that small farmers avoid repayment of cultivation loans by not selling their paddy to co-operative societies.* Data on disposal of paddy was also arranged on the basis of water supply and tenancy conditions.

Table 6-VII Disposal of Paddy according to Water Supply and Tenurial Category - Maha 1971/72

Tenurial Category	Water Supply	No.of farms	Sales per Acre sown (Bushels)	Sales as a % of total production
Owners	Major Irrigation	11[1]	21.1	50
	Minor Irrigation	15[1]	5.2	30
	Rainfed	19[1]	13.7	41
Tenants	Major Irrigation	3	38.7	59
	Minor Irrigation	12	12.7	27
	Rainfed	32	6.6	14

[1] Farmers who were also landlords have been excluded. The numbers excluded were 1, 8 and 6 in major, minor and rainfed respectively.

In the major scheme of Minipe farmers have sold greater quantities of paddy during both seasons, compared to those in minor schemes and rainfed areas. Due to larger holding size and higher acre yields obtained, farmers in this scheme have been able to sell considerably larger quantities of paddy per acre. In both seasons over 50% of their total production has been sold.

With regard to sales made by owners and tenants, the differences are more striking in rainfed areas where in the Maha season, owners had sold over 27% more of their produce than the tenants. Even in Yala owners had sold 23% more of the total production than the tenants in rainfed areas. In minor schemes too, a similar trend is seen, particularly during Yala season. In these areas only a very small surplus becomes available for sale due to a number of reasons. As was observed in earlier discussions, holding size in these areas is very small and the yields too are relatively low. Thus the

Table 6-VIII Disposal of Paddy according to Water Supply and Tenurial Category - Yala 1972

Tenurial Category	Water Supply	No.of farms	Sales per acre sown (Bushels)	Sales as a % of total production
Owners	Major Irrigation	11[1]	23.8	53
	Minor Irrigation	12[1]	14.2	46
	Rainfed	16[1]	11.3	37
Tenants	Major Irrigation	3	34.7	68
	Minor Irrigation	10	6.0	14
	Rainfed	25	6.0	14

[1]Farmers who were landlords have been excluded. The numbers excluded were 1, 7 and 6 in major, minor and rainfed respectively.

total production per farm is relatively smaller. Since a substantially high proportion of operators in minor schemes and rainfed areas cultivate paddy on 'ande' basis and a majority of them (over 80%) pay as much as 50% of the harvested crop to land owners as rent, tenants are left with only a very small surplus for disposal. This situation is most prevalent outside the Minipe Irrigation Scheme where only those who cultivate temple land pay 'ande'. This number is very small.

Chapter 7

LABOUR UTILIZATION AND INCOME

This chapter will discuss principally the situation relating to labour use, off farm work and family farm earnings of the households surveyed. A brief discussion on family size and labour force is given at the beginning as background information. We have taken into consideration here the 158 families classified as owners, tenants, owner-tenants, and tenant-owners. The total number of persons in these families amounted to 1,195 of whom 724 were 14 years and above.

7.1 Family Size

The average family size of the sample is 7.6. *Of the total sample of farms belonging to the four major tenurial categories, about 33% have a family of 9 persons or more whereas only 15% have families of 4 members and less. A majority of farms 53% have families varying from 5 to 8 members. There is no clear-cut relationship between family size and tenurial status (Table 7-II).*

The position of households with 5 and more family members and 7 and more members in respect of farms of different size classes for all tenurial categories is given in Table 7-I.

Table 7-I Distribution of Family Size by Size of Holding

Size of Holding (acres)	5 and above %	7 and above %
Upto 1.00	*78*	*55*
1.00-2.00	*88*	*63*
2.00-4.00	*88*	*62*
4.00-6.00	*92*	*75*
Over 6.00	*89*	*67*

The above figures illustrate that the larger families are concentrated more in larger holding-size classes. Further, the share of larger families is relatively smaller for smaller size classes and is generally higher for the larger holdings.

Even though there is no wide variation in the family size between the owners and tenants, Table 7-III indicates that the owners generally have a relatively larger share of bigger families in the larger holding size classes than for tenants.

Table 7-II Distribution of Households by Size of Family, Tenurial Category and Size of Holding

Number of Family Members	For all Size Classes Tenurial Category										For all Tenurial Categories Size of Holdings (acres)													
	Owners		Tenants		Owner-Tenants		Tenant-Owners		Total		Upto 0.50		0.50 - 1.00		1.00 - 2.00		Sub-total upto 2.00		2.00 - 4.00		4.00 - 6.00		Above 6.00	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Less than 3	1	2	1	2	-	-	-	-	2	1	-	-	2	6	-	-	2	2	-	-	-	-	-	-
3 - 4	10	17	8	17	2	13	2	6	22	14	4	17	7	19	6	12	17	15	3	12	1	8	1	11
5 - 6	15	25	8	17	3	20	10	28	36	23	5	21	9	25	11	22	25	22	7	27	2	17	2	22
7 - 8	15	25	17	35	7	47	8	23	47	30	8	33	11	31	13	25	32	29	7	27	6	50	2	22
9 -10	9	15	11	23	3	20	8	23	31	20	4	17	4	11	16	31	24	22	3	12	3	25	1	11
More than 10	10	17	3	6	-	-	7	20	20	13	3	12	3	8	5	10	11	10	6	23	-	-	3	33
Total	60	100	48	100	15	100	35	100	158	100	24	100	36	100	51	100	111	100	26	100	12	100	9	100

Table 7-III Owners and Tenants by Size of Family and Size of Holding

No. of Family members		Owners Size of Holdings Upto 0.50	0.50 - 1.00	1.00 - 2.00	Sub-total Upto 2.00	2.00 - 4.00	4.00 - 6.00	Over 6.00	Total	%	Tenants Size of Holdings Upto 0.50	0.50 - 1.00	1.00 - 2.00	Sub-total Upto 2.00	2.00 - 4.00	4.00 - 6.00	Over 6.00	Total	%
4 and less	No.	2	3	4	9	1	0	1	11	18	2	5	1	8	0	1	0	9	19
	%	18	27	36	82	9	0	9	100	-	22	56	11	89	0	11	0	100	-
5-8	No.	6	6	8	20	6	3	1	30	50	7	8	7	22	1	1	1	25	52
	%	20	20	27	67	20	10	3	100	-	28	32	28	88	4	4	4	100	-
9 and above	No.	3	3	9	15	2	0	2	19	32	3	1	8	12	1	1	0	14	29
	%	16	16	47	79	10	0	11	100	-	21	7	57	86	7	7	0	100	-
Total		11	12	21	44	9	3	4	60	100	12	14	16	42	2	3	1	48	100

7.2 Family Labour Force

In measuring the size of the family[1] labour force available, we have assumed that persons of over 14 years are available for agricultural work.

For all tenure categories the average size of family labour force is 4.3 persons, the smallest being for owner-tenants (3.5) and the largest for owners (4.6). 55% of the total number of farms of all tenurial categories have 4 or less family members over 14 years of age (Table 7-IV). The percentage number of families with a family labour force of 5 or more is 45%. Both owners and tenant-owners have a larger percentage share of such families than the other 2 groups. Owners have the highest percentage of such families. *The table also shows that of all tenurial categories taken together, about 20% of farms have a family labour force of 2 and less, while 31% have a family labour force of 3 and less.* In both cases the owners account for a smaller percentage share of families with a smaller labour force than tenants.

Table 7-IV Distribution of Farms by Size of Family Labour Force and Tenurial Categories

Tenurial Category		No. of family members of 14 years and above					Average size of labour force
		2	3	4	5 and above	Total	
Owners	No.	7	3	18	32	60	*4.6*
	%	*12*	*5*	*30*	*53*	*100*	
Tenants	No.	11	10	8	19	48	*4.0*
	%	*23*	*21*	*17*	*40*	*100*	
Owner-Tenants	No.	4	3	5	3	15	*3.5*
	%	*27*	*20*	*33*	*20*	*100*	
Tenant-Owners	No.	9	2	7	17	35	*4.6*
	%	*26*	*6*	*20*	*49*	*100*	
Overall	No.	31	18	38	71	158	*4.3*
	%	*20*	*11*	*24*	*45*	*100*	

The size of family labour force does not show a regular relationship with the size of holdings (Table 7-V). Generally in each holding size class, there is an increase in the percentage of farms as the family labour force becomes larger.

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[1] "Family" as defined here, includes all persons belonging to the household.

Table 7-V Distribution of Farms by Size of Labour Force and Size of Holding

Size of Holding (acres)		No. of family members of 14 years and above 2	3	4	5 and above	Total
Upto 0.50	No.	4	4	5	11	24
	%	17	17	21	46	100
0.50-1.00	No.	9	5	10	12	36
	%	25	14	28	33	100
1.00-2.00	No.	7	7	11	26	51
	%	14	14	22	51	100
Sub total upto 2.00	No.	20	16	26	49	111
	%	18	14	23	44	100
2.00-4.00	No.	6	1	7	12	26
	%	23	4	27	46	100
4.00-6.00	No.	3	1	4	4	12
	%	25	8	33	33	100
Over 6.00	No.	2	-	1	6	9
	%	22	-	11	67	100
Overall	No.	31	18	38	71	158
	%	20	11	24	45	100

7.3 Pattern of Labour Use

The percentage distribution of farms according to pattern of labour use for different field operations during Maha 1971/72 is given in Table 7-VI.

Table 7-VI Pattern of Labour Use according to Field Operations - Maha 1971/72

Field Operations	Farms report-ing	(Percentage of Farmers using various types of labour) Family labour only	Hired labour only	Con-tract only	Family and hired	Hired and attan	Family and attan	Family hired and attan
Land Preparation	153	10	12	-	28	1	34	15
Transplanting	144	6	20	4	24	3	39	5
Weeding	116	40	19	-	19	2	17	3
Harvesting	156	6	15	2	12	-	56	10
Threshing	156	6	15	-	13	-	58	8

The above data indicates that relatively a high proportion of farmers depend on hired labour for different field operations. The percentage of farms that have used only hired labour varied from 12 for land preparation to as much as 20 for transplanting. In addition 28% of the farms have used hired labour together with family labour for land preparation and 24% for transplanting. *Due to the seasonal nature of paddy cultivation, employment of a certain amount of hired labour to complete field operations within a limited time period becomes necessary. This is a common feature in paddy cultivation.*

The proportion of farms that have used only family labour for different field operations is relatively small except in the case of weeding. *A considerably high proportion of farmers have used 'attan' labour, combined with family labour. Widescale use of 'attan' labour together with family labour indicates the importance of this arrangement of labour supply on 'exchange' basis, in this particular district. In this connection, it is relevant to mention that the cash operating expenses of the farmers who rely more on 'attan' and family labour is considerably lesser than those who use only hired labour.*

Pattern of labour use for different field operations was also examined in relation to holding size and the relevant data are presented in Table 7-VII.

Table 7-VII Pattern of Labour Use for Different Field Operations according to Size of Holding - Maha 1971/72

Size of Holding (acres)	Field Operation	Farms reporting	(Percentage of farmers using the various types of labour) Family labour only	Hired labour only	Contract only	Family and hired	Hired and attan	Family and attan	Family hired and attan
0 - 0.50	Land Prep.	22	41	9	-	27	-	18	4
	Transplant.	20	20	5	-	30	-	40	5
	Weeding	17	76	12	-	6	-	6	-
	Harvesting	24	21	8	-	8	-	58	4
	Threshing	24	21	8	-	8	-	58	4
0.50-1.00	Land Prep.	35	6	20	-	23	-	40	11
	Transplant.	35	6	17	6	20	-	48	3
	Weeding	25	36	28	-	12	-	20	4
	Harvesting	33	6	15	3	6	-	67	3
	Threshing	33	6	15	-	9	-	61	9
1.00-2.00	Land Prep.	50	4	16	-	24	2	34	20
	Transplant.	43	2	28	-	21	2	44	2
	Weeding	35	31	14	-	34	-	17	3
	Harvesting	51	-	18	2	18	-	57	6
	Threshing	51	-	20	-	15	-	61	4
2.00-4.00	Land Prep.	26	4	4	-	42	-	35	15
	Transplant.	26	4	27	4	23	8	31	4
	Weeding	23	30	26	-	17	9	17	-
	Harvesting	27	-	7	4	15	-	56	18
	Threshing	27	4	4	-	22	-	59	11
4.00-6.00	Land Prep.	12	8	-	-	25	-	42	25
	Transplant.	12	-	8	8	33	8	25	17
	Weeding	8	50	-	-	12	-	12	25
	Harvesting	11	-	9	-	18	-	36	36
	Threshing	11	-	18	-	9	-	55	18
Over 6.00	Land Prep.	8	-	12	-	25	12	38	12
	Transplant.	8	12	25	12	25	-	12	12
	Weeding	8	25	25	-	12	-	38	-
	Harvesting	10	20	40	-	-	-	30	10
	Threshing	10	20	40	-	-	-	30	10

It is observed that except in holdings of less than 0.5 acres a relatively high proportion of farmers depend rather heavily on hired labour for most of the field operations. Even in smallest holdings (0 - 0.5 acres), only 41% have prepared their land with family labour. In larger holdings of 1.0 - 4.0 acres about 4% and 30% respectively of the farms have used only family labour for land preparation and weeding. In the case of transplanting a similar trend is seen. In holdings of less than 0.5 acres, 20% of the operators have transplanted their fields exclusively with their own labour, but with increase in holding size (up to 4.0 acres) the proportion of farmers relying only on family labour for transplanting has declined to about 4%. Least amount of family labour appears to have been used particularly in holdings of 4.0 - 6.0 acres, most of which are also located under the major irrigation scheme in Minipe. Understandably the highest proportion of farms that uses only hired labour for all operations is found in holdings over 6.0 acres in size.

As was observed earlier, use of 'attan' labour in combination with family labour is widely prevalent in this district. This arrangement of labour use shows a fairly uniform pattern particularly in the case of transplanting, harvesting and threshing. It is more marked particularly in holdings of less than 4.0 acres where about 40% of the operators have transplanted and over 50% had processed their crops with 'attan' and family labour. In the larger holdings of over 6 acres, relatively less 'attan' labour and more hired labour had been used for these field operations. The number of farmers who have used only contract labour is negligible. For transplanting some contract labour has been used.

Looking at the overall position with regard to pattern of labour use in paddy cultivation in this district, it is observed that attan and family labour combined together form the most important source of labour supply for paddy cultivation. Since hired labour is an important component of total labour used in paddy cultivation, the number of man days of hired labour used during Yala 1972 arranged on the basis of tenurial conditions and water supply are given in Table 7-VIII.

This data clearly indicates that owners use considerably more hired labour per acre irrespective of water supply conditions. Generally owners have used about 15 more man-days of hired labour per acre compared to tenants. As the average size of holdings operated by owners is relatively larger (Table 2-V) than those worked by tenants, owner operators naturally have to depend more on hired labour, as the family labour is unlikely to be able to cope with peak labour demands particularly in larger size holdings. Even in the case of tenant owners as well as owner tenants, a similar tendency is seen with regard to the amount of hired labour used. However, larger holdings size alone is inadequate to explain the greater use of hired labour by owners, particularly as this category of operators have adopted labour intensive practices such as transplanting to a lesser degree (Table 5-XVIII).

When use of hired labour is examined in relation to water supply conditions, it is observed that operators in rainfed areas have used more hired labour compared to those in major and minor schemes. This data also indicates that owners in rainfed areas have used 22 more man-days of hired labour per acre compared to tenants, whereas in major schemes the difference was only 11 man-days.

Table 7-VIII Man-days per Acre of Hired Labour used in the Different Field Operations - Yala 1972

Tenurial Category	Major Irrigation					Minor Irrigation					Rainfed					All Sources				
	Land Preparation	Sowing or Transplanting	After care (weeding, top-dressing and irrigation)	Harvesting & Threshing	All Operations	Land Preparation	Sowing or Transplanting	After care (weeding, top-dressing and irrigation)	Harvesting & Threshing	All Operations	Land Preparation	Sowing or Transplanting	After care (weeding, top-dressing and irrigation)	Harvesting & Threshing	All Operations	Land Preparation	Sowing or Transplanting	After care (weeding, top-dressing and irrigation)	Harvesting & Threshing	All Operations
Owners	12.8	2.3	3.5	7.1	25.7	8.3	6.4	3.1	5.9	23.7	9.4	10.9	3.0	10.9	34.2	10.7	5.9	2.6	7.9	27.1
Tenants	2.8	0.6	3.1	3.7	10.2	3.9	4.9	1.2	2.1	12.1	3.5	3.8	0.7	4.0	12.0	3.5	3.4	1.4	3.4	11.7
Owner-tenants	2.7	3.8	0.8	3.4	10.7	8.4	1.2	3.8	9.2	22.6	8.9	8.3	-	-	17.2	5.2	3.7	1.5	4.6	15.0
Tenant-owners	2.0	1.1	1.3	2.0	6.4	4.0	5.8	1.5	3.7	15.0	7.8	9.1	2.1	3.1	22.1	5.1	6.3	1.7	3.3	16.4

Despite the smaller average size of holdings in rainfed areas, compared with major schemes, (Table 4-IV) use of more hired labour could be partly due to more intensive use of hired workers for field operations such as transplanting and weeding which are practised on a wider scale in rainfed areas. Use of family labour more frequently on highlands may also be a reason for employment of more of hired labour for paddy cultivation in rainfed areas, particularly as the average size of highland holdings in these areas is larger and are planted with varied types of crops that need regular care and attention.

7.4 Employment Situation

It was not intended in this survey to collect detailed information on the employment situation of the sample of households surveyed. What is presented below is only a general picture of the employment situation emerging from the data with reference to the extent and nature of off-farm work.

When all tenurial categories are taken together between 2 - 3 persons are engaged exclusively in family farm work, the owners reporting the largest number of persons (2.8) and the owner-tenants the lowest (2.3). Both owners and tenant-owners have almost an equal number of persons working only in the family farm (Table 7-X).

When employment both on the farm only as well as on the farm and outside is considered together, once again the owners and tenant-owners report the largest number of persons (3.3 in both cases) although the tenants too have almost an equal number of persons (3.2). Here again the owner-tenants report the smallest number. *When we consider the number of persons per acre employed on their own farm only as well as on own farm and outside, it is seen that the tenants account for the largest number of such persons per acre (2.3), the owners placed next with 1.5 and owner-tenants and tenant-owners reporting the lowest (Table 7-IX).* While the difference between the owners and tenants is fairly important, that between the tenants on the one hand and tenant-owners and owner-tenants on the other is very big.

Table 7-IX Farm Labour Force according to Tenurial Category

Tenurial Category	Average size of holding	Employed in own farm only and own farm and outside		No. per acre (on average holding)
		No.	Average per farm	
Owners	*2.23*	200	*3.3*	*1.5*
Tenants	*1.47*	155	*3.2*	*2.2*
Owner-tenants	*2.46*	40	*2.7*	*1.1*
Tenant-owners	*2.71*	117	*3.3*	*1.2*

All farm households do not have members engaged exclusively in farm work. A majority of households have one or more members working in the farm and at the same time engaged in some kind of off-farm work too. *However, only a few households have family members engaged exclusively in off-farm employment.*

Table 7-X Employment Situation among Family Members aged 14 Years and above according to Tenurial Category

Tenurial Category	Total No. of farms reporting	Employed in own farm only		Employed in own farm and outside only				Employed only outside			
		Total No.	Average per farm reporting	Total No.	No. of farms reporting	(5) as a % of total No. of farms reporting	Average per farm reporting	Total No.	No. of farms reporting	(9) as a % of total No. of farms reporting	Average per farm reporting
	1	2	3	4	5	6	7	8	9	10	11
Owners	60	166	2.8	34	24	40	1.4	20	15	25	1.3
Tenants	48	114	2.4	41	29	60	1.4	7	7	15	1.0
Owner-tenants	15	35	2.3	5	4	27	1.3	2	2	13	1.0
Tenant-owners	35	95	2.7	22	13	37	1.7	10	7	20	1.4
All tenurial categories	158	410	2.6	102	70	44	1.5	39	31	28	1.3

Table 7-X indicates that 44% of farm households have at least one family farm worker with off-farm employment. The average number of such persons per farm is 1.5 for all tenurial categories. The tenants and tenant-owners account for a larger percentage (60%) of the families with at least one family member with off-farm employment. *As much as 60% of tenant families have such workers, indicating that the tenants, in order to supplement their inadequate farm incomes, have to rely more on work outside their farms than the owner cultivators.* Both owners and owner-tenants account for a lower percentage (40%) of such families with off-farm work.

The average number of persons per farm engaged in such work does not, however, conform to the above pattern. The largest number of such persons per farm is reported by the tenant-owners (1.7) and the lowest by the owner-tenants (1.3). Both owners and tenants reported an equal number.

Only 28% of farms of all tenurial categories reported one or more family members working entirely outside the farm (Table 7-X). The average number of such persons per reporting farm is only 1.3. Both the percentage number of such farms and the per farm number of persons engaged exclusively in outside work are lower for the tenants and owner-tenants, and higher for the owners and tenant-owners. What is significant here is that the owners have a larger percentage number of farms with some family members having only outside work as well as a larger number of such persons per farm compared to the tenants.

Table 7-XI gives a detailed break-down of the different types of off-farm employment in which the family members from farms of different tenurial categories are engaged in. This table points to certain important characteristics of the pattern of rural employment in the Kandyan areas.

In a district like Kandy where the agricultural landscape is largely dominated by plantations and where the villages suffer from the burden of a heavy agricultural population on limited land resources, one expects the plantation sector to be an important source of off-farm employment for the rural population. The data, however, brings out an entirely different picture. Only 3% of those engaged in off-farm work find employment as agricultural labourers in both the estate and non-estate sectors.

The two major sources of off-farm work in the district are skilled work (31% of the total number of persons with off-farm work) and white collar employment (28%). While trade and commerce account for 14% of all off-farm employment, the percentage of those working as non-agricultural labourers is 17%.

Tenurewise distribution of off-farm work makes the picture of the employment situation among different types of households clearer. Both tenant and tenant-owners are engaged in a wide variety of outside jobs compared with the other two categories. *42% of the tenants engaged in off-farm work are mostly unskilled labourers - the highest for any tenurial category.* The percentage number of such workers is lower for the other categories, the owners in particular reporting only 2%.

Table 7-XI Nature of Outside Employment*

Employment	Tenurial Category: Owners		Tenants		Owner-Tenants		Tenant-Owners		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Salaried or white collar employment[1]	21	39	8	17	4	57	7	22	40	28
Non-salaried employment[2]	5	9	-	-	-	-	2	6	7	5
Trade/Commerce[3]	9	17	7	15	-	-	3	9	19	14
Skilled Workers[4]	18	33	11	23	2	29	13	41	44	31
Agricultural Labourers[5]	-	-	1	2	-	-	3	9	4	3
Non-agricultural Labourers[6]	1	2	20	42	1	14	2	6	24	17
Others	-	-	1	2	-	-	2	6	3	2
Total	54	100	48	100	7	100	32	100	141	100

*Excludes full-time students

1. Employees of Government, State Corporations, or non-Government institutions working for monthly payment - Teachers, clerks, Grama Sevakas, Co-operative Managers etc.

2. Mostly self-employed, not drawing fixed salaries - Proctors, Ayurvedic Physicians (Native Doctors), etc.

3. Those engaged in buying and selling of goods.

4. Those who possess a mechanical or manual skill in the work they perform - Mechanics, Carpenters, Drivers, etc.

5. Agricultural Labourers -

   (5a) Plantation - refers to estate labour
   (5b) Others - include all agricultural work other than estate work.

6. Refers mostly to unskilled labour outside agriculture.

The owner and owner-tenant farms have more salaried or white collar workers than for tenants and tenant-owners. Even in trade and commerce, the owners have a larger percentage number of persons than the tenants. Skilled work - the most important source of off-farm work for all tenurial categories taken together, is significant for all tenurial categories though tenant-owners and owners have relatively larger numbers engaged in such work.

Table 7-XII Pattern of Outside Employment according to Tenurial Category and Size of Holding

Tenurial Category	Size of Holding (acres)	Total farms reporting	Employed in own farm and outside		Employed only outside	
			Total No.	No.per farm	Total No.	No.per farm
Owners	Upto 0.50	11	10	0.9	1	0.1
	0.50-1.00	12	7	0.6	5	0.4
	1.00-2.00	21	8	0.4	6	0.3
	2.00-4.00	9	9	1.0	7	0.8
	4.00-6.00	3	-	-	1	0.3
	Over 6.00	4	-	-	-	-
	Total	60	34	0.6	20	0.3
Tenants	Upto 0.50	12	16	1.3	4	0.3
	0.50-1.00	14	13	0.9	2	0.1
	1.00-2.00	16	9	0.6	1	0.1
	2.00-4.00	2	2	1.0	-	-
	4.00-6.00	3	1	0.3	-	-
	Over 6.00	1	-	-	-	-
	Total	48	41	0.9	7	0.2
Owner-tenants	Upto 0.50	-	-	-	-	-
	0.50-1.00	3	1	0.3	-	-
	1.00-2.00	3	1	0.3	-	-
	2.00-4.00	7	1	0.1	2	0.3
	4.00-6.00	1	-	-	-	-
	Over 6.00	1	2	2.0	-	-
	Total	15	5	0.3	2	0.1
Tenant-owners	Upto 0.50	1	2	2.0	-	-
	0.50-1.00	7	4	0.6	2	0.3
	1.00-2.00	11	8	0.7	8	0.7
	2.00-4.00	8	4	0.5	-	-
	4.00-6.00	5	3	0.6	-	-
	Over 6.00	3	1	0.3	-	-
	Total	35	22	0.6	10	0.3

The majority of those engaged in skilled work are mostly those in self employment; this is shown by the figures given below:

50% - Carpentry, masonary, lumber sawing
24% - Weaving, beedi manufacture
10% - Metal work, lime burning
12% - Mechanics - Drivers
3% - Barbers

Much of this work cannot be considered as continuous employment giving steady incomes to the families.

It becomes clear from the above discussion that the tenants with less highland at their disposal and obtaining lower incomes (see below) compared to owners, are forced to augment their earnings from more off-farm work. However, because of their lower economic status and consequent lower educational standards the majority of them can at best secure only unskilled work, or often skilled work (eg. traditional jobs) to which a lower social status is attached. Such employment in most cases assures them neither continuous work nor an adequate income.

The smaller the size of holding, and larger the size of family (as in the case of many families in the sample), the greater is the necessity to supplement family earnings from off-farm work. It was shown earlier that there is a greater desire to cultivate more land especially by farmers with smaller holdings, particularly the tenants, in order to satisfy family subsistence needs and to increase incomes. *Table 7-XII shows that in all tenurial categories, the smaller land size classes have in general more family members engaged both in farm work as well as in off-farm employment.*

In all tenurial categories, the average number of family workers per farm engaged in off-farm work is generally higher for smaller holdings than for larger ones. The Table also shows that in both tenant and tenant-owner categories the number of such family farm workers with off-farm work is higher for smaller holdings than for the other two categories. Thus, for example, the average number of such persons per farm reporting for the holdings below 2 acres stands at 0.9 for tenants, 0.8 for tenant-owners, 0.6 for owners and 0.3 for owner tenants. *Thus, the search for outside work especially as labourers appears to be made necessary by the fact that the agricultural holding is incapable of adequately supporting the family. This seems to be a consequence, on the one hand, of the smallness of the holding and on the other, the high land rents paid by tenants under the existing tenancy arrangements.*

The situation is somewhat different for those engaged only in outside work. The relationship is, however, not very clear. The larger holding size classes, both in terms of the number of households and the number of family members with only off-farm work, report fewer numbers, and there is a marked difference between owners and the other tenurial categories. For the size classes above 4 acres none of the tenant, tenant-owner and owner-tenant households have any family members with off-farm work only.

7.5 Income Distribution according to Tenurial Status

Land tenure arrangements determine to a large extent the pattern of income distribution in the farm sector for they determine the ability of the individual to gain access to production opportunities on the land as well as work opportunities elsewhere.

We are not in a position to work out the net farm family incomes from the data collected as figures for expenditure were collected only in relation to paddy cultivation in Yala 1972. We have, however, figures for gross receipts for farm families based on gross value of the amount of paddy produced in Maha and Yala, cash proceeds from the sale of highland and livestock produce and earnings from off-farm employment. These figures are a crude measure of the levels of income. We shall discuss these as indicators of the income levels in the rural sector. In considering these figures we must remember:

1. that the figures are only crudely indicative of the income position in the rural area;

2. that in comparing rural income with urban income, persons in rural areas enjoy benefits such as rent-free housing, home produce or cheap agricultural products cultivated locally, negligible cost of travel to work, etc., and

3. that expenses connected with the production of paddy, highland, and livestock produce have not been deducted.

7.6 Gross Farm Family Receipts

8% of the total number of households in the sample obtained Rs.1,000/- or less as gross receipts from all sources for 1971/72 (Table 7-XII). This works out to less than Rs.90/- per family for a month. 22% of the households accounted for receipts ranging between Rs.1,000/- and Rs.2,000/- while 35% obtained between Rs.2,000/- and Rs.4,000/-. 35% of the farms had receipts over Rs.4,000/- for the period. *Thus, 65% of the families received Rs.4,000/- or less for the year which is equivalent to monthly gross receipts of less than Rs.335/-.* When the family receipts are examined on the basis of holding size, the percentage of families obtaining over Rs.4,000/- increases as the size of holding gets larger, whereas the percentage of those earning below Rs.2,000/- decreases with the increasing size of holding:

Gross Family Receipts	Size of Holding (acres)			
	Upto 1.00	1.00-2.00	2.00-4.00	Over 4.00
More than Rs.4,000/-	10	31	69	75
Less than Rs.2,000/-	52	21	19	

In all the tenurial categories except tenant-owners the percentage of farms was largest for gross receipts of Rs.2,000/- to Rs.4,000/-. A larger percentage of tenants (40%) compared to other groups (owners (30%), owner-tenants (27%) and tenant-owners (17%)) obtained less than Rs.2,000/- as their gross family

Table 7-XIII Distribution of Farms According to Total Family Distribucion according to Size of Holdings (Acres)

Receipts in Rupees	Up to 0.50		0.50-1.00		1.00-2.00		Sub-Total Up to 2.00		2.00-4.00		4.00-6.00	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0- 500	2	8	1	3	-	-	3	3	-	-	-	-
501-1000	3	12	2	6	4	8	9	8	-	-	-	-
1001-2000	6	25	17	49	7	14	30	27	5	19	-	-
2001-4000	10	42	12	34	25	48	47	42	3	12	2	18
4001-8000	3	12	3	9	12	23	18	16	14	54	5	46
More than 8000	-	-	-	-	4	8	4	4	4	15	4	36
Total	24	100	35	100	52	100	111	100	26	100	11	100

Table 7-XIV Distribution of Farms According to Receipts

Receipts in Rupees	Up to 0.50		0.50-1.00		1.00-2.00		Sub-Total Up to 2.00		2.00-4.00		4.00-6.00	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0- 500	2	9	10	31	21	44	33	32	6	25	3	33
501-1000	6	27	7	22	8	17	21	21	4	17	1	11
1001-2000	3	14	6	19	5	10	14	14	3	12	3	33
2001-4000	9	41	6	19	7	15	22	22	4	17	1	11
4001-8000	2	9	3	9	5	10	10	10	6	25	1	11
More than 8000	-	-	-	-	2	4	2	2	1	4	-	-
Total	22	100	32	100	48	100	102	100	24	100	9	100

Receipts for 1971/72 (Maha and Yala)

Over 6.00		Distribution according to Tenurial Category											
		Total		Owners		Tenants		Owner Tenants		Tenant Owners		Total	
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
–	–	3	2	2	3	1	2	–	–	–	–	3	2
–	–	9	6	3	5	5	11	1	7	–	–	9	6
–	–	35	22	13	22	13	28	3	20	6	17	35	22
3	33	55	35	18	30	18	38	7	47	12	34	55	35
–	–	37	24	15	25	7	15	2	13	13	37	37	24
6	67	18	12	9	15	3	6	2	13	4	11	18	11
9	100	157	100	60	100	47	100	15	100	35	100	157	100

from Sources other than Paddy during 1971/72 (Maha and Yala)

Over 6.00													
		Total		Owners		Tenants		Owner Tenants		Tenant Owners		Total	
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
3	43	45	32	15	27	18	43	2	15	10	31	45	32
–	–	26	18	10	18	6	14	4	31	6	19	26	18
1	14	21	15	7	13	4	10	4	31	6	19	21	15
1	14	28	20	10	18	10	24	1	8	7	22	28	20
2	29	19	13	11	20	3	7	2	15	3	9	19	13
–	–	3	2	2	4	1	2	–	–	–	–	3	2
7	100	142	100	55	100	42	100	13	100	32	100	142	100

receipts, showing that the tenants have the lowest economic status among all tenurial categories.

7.7 Receipts from Sources Other Than Paddy

The data presented in Table 7-XIII when compared with those of Table 7-XIV point out that earnings from sources other than paddy form a substantial part of the total receipts of the families. The percentage of families of all tenurial categories whose receipts from such sources is Rs.500/- or less is 32% while the percentage of families with receipts of Rs.1,000/- or less is 50%. *It is noteworthy that about 35% of families obtain over Rs.2,000/- as receipts from sources other than paddy.*

Such receipts do not, however, show a regular pattern in relation to the size of holding. But an interesting feature which emerges from the Table is that over 40% of the families in each of the holding size classes (except the size class 0.5 acre or less which accounted for 30%) obtained less than Rs.1,000/- per family from such sources. *Thus the farms in the smaller holding size classes seem generally to depend more on earnings from off-farm work to supplement their incomes from paddy whereas in families with larger paddy holdings fewer persons are engaged in such outside work. Such families depend mostly on their highland for additional income.*

The tenurewise distribution of farms with receipts from sources other than paddy indicates a clearer picture of the difference between the tenant and the owner cultivators. *The owners are relatively better off in respect of such receipts than the tenants.* This is indicated by the fact that 13% of tenants as against 8% of owners earned Rs.1,000/- or less from such sources, whereas only 21% of tenants as against 40% of owners earned Rs.4,000/- or more. Both owner-tenants and tenant-owners are placed in a more favourable situation than the tenants.

The relative poverty of the tenants of all categories is also indicated by the lower average receipts per farm from sources other than paddy as shown in Table 7-XV.

Table 7-XV *Average Receipts from Sources other than Paddy Produced by the Operators

Tenurial Category	Total No.of farms	Farms reporting outside earnings		Average receipts per farm	
		No.	%	Farms reporting outside earnings Rs.	All farms Rs.
Owners	60	55	*92*	2,549	2,337
Tenants	47	42	*89*	1,625	1,452
Owner-tenants	15	13	*87*	1,897	1,644
Tenant-owners	35	32	*91*	1,502	1,373

*Paddy received by landlords from tenants has been considered as land rent and included in the receipts from other sources.

The average receipts of the owners are much higher than for tenants. The lower level of receipts among tenants of all categories is due to:

1. the tenant has less highland than the owner and therefore obtains lower receipts from highland crops and livestock, and

2. his lower social and educational status which in most cases tie him to lower paid employment when he is engaged in off-farm work.

7.8 Gross Value of Paddy Production

It was shown in an earlier section that paddy yields have a close relationship to the supply of water, areas under major schemes having relatively higher yields. *Value of paddy for both seasons (Maha 1971/72 and Yala 1972) also indicates that the estimated value of paddy produced per farm is highest (Rs.6,000/-) under major schemes and lowest (Rs.1,074/-) in rainfed areas (Table 7-XVI).*

Table 7-XVI Value of Paddy Produced by Operators after deducting Land Rent for Tenanted Land according to Supply of Water - 1971/72 (Maha and Yala)

Water Supply	Average size of holding[1] acres		Average value of paddy produced per family[2]
	Owners	Tenants	
Major Irrigation	4.0	4.8	6,000
Minor Irrigation	2.1	2.0	1,559
Rainfed	1.5	1.0	1,074

[1] Average size of holding under different conditions of water supply for owner-tenants, tenant-owners and overall sample could not be worked out due to variation in the supply of water to owned and rented portions of the holding.

[2] Refers to value of paddy produced by all operators under each water supply condition.

The relatively less favourable economic situation of the tenant is shown by a comparison of the estimated value of paddy produced by farms with different tenurial status (Table 7-XVII). The per farm gross value of paddy does not differ much between owners, owner-tenants and tenant-owners, although it is the lowest for tenants. *However, if the per acre gross value of paddy produced is considered, the difference between owners and tenants is reversed, tenants accounting for a higher value than owners. In fact, among all tenurial categories, owners obtain the lowest value of paddy per acre. But once the land rent is deducted, the value for tenants and also tenant-owners is reduced very considerably, reflecting the high land rent paid by tenants.*

Table 7-XVII Value of Paddy Produced by Farms according to Tenurial Categories - 1971/72 (Maha and Yala)

Tenurial Category	Average size of holding (acres)	Average Gross Value		Average value after deducting land rent	
		Per Family Rs.	Per Acre Rs.	Per Family Rs.	Per Acre Rs.
Owners	2.23	2,328	1,042	2,328	1,042
Tenants	1.49	1,586	1,067	1,067	710
Owner-tenants	2.46	2,799	1,140	2,467	1,005
Tenant-owners	2.71	2,932	1,082	2,137	789

The difference in the gross value of paddy produced by owners and tenants is 32%, but after deduction of land rent the difference works out to 54%. As pointed out earlier, the per acre gross value of paddy is slightly lower for owners compared to other categories. *Thus, in spite of the fact that the tenant obtains a higher yield per acre, the value of paddy he retains is much lower. This is a consequence of the high rent he has to pay.*

In Table 7-XVIII we have compared the value of paddy produced by owners and tenants under different conditions of water supply.

Table 7-XVIII Value of Paddy Produced by Operators according to Tenurial Category and Water Supply - 1971/72 (Maha and Yala)

Water Supply		Owners				Tenants			
		Average size of holding (acres)	Average per farm Rs.	Average per acre Rs.	Average per head* Rs.	Average size of holding (acres)	Average per farm Rs.	Average per acre Rs.	Average per head Rs.
Major Irrigation	A	4.0	5,650	1,413	2,712	4.8	6,034	1,248	1,509
	B		5,650	1,413	2,712		5,922	1,225	1,481
Minor Irrigation	A	2.1	1,539	721	277	2.0	1,703	868	335
	B		1,539	721	277		1,002	511	197
Rainfed	A	1.5	1,459	987	312	1.0	1,125	1,105	267
	B		1,459	987	312		637	625	151

Notes: A - Gross value of paddy produced.

B - Value of paddy produced after deducting land rent for tenanted lands.

* - Average per head of members of 14 years and above.

The data for major schemes is not strictly comparable as there were only 3 tenants and the rent paid by one was not properly recorded.

In both minor and rainfed areas the value of paddy produced by tenants is higher than for owners in spite of the fact that the tenants cultivate a smaller acreage in both cases (cf.6.1). However, the value after deducting land rent is lower in both cases for tenants due to the payment of half-share of crop as land rent. Both per acre value of paddy and the per head value for family members of over 14 years are also lower for tenants.

Table 7-XIX Gross Value of Paddy Produced by Owners and Tenants according to Size of Holding - 1971/72 (Maha and Yala)

Size of Holding (acres)	Owners		Tenants	
	Per family Rs.	Per head* Rs.	Per family Rs.	Per head* Rs.
Upto 0.50	446	107	592	137
0.50-1.00	817	166	936	234
1.00-2.00	2,131	574	1,622	342
Upto 2.00	1,351	325	1,103	251
2.00-4.00	2,835	473	3,500	636
Over 4.00	7,816	1,658	5,579	1,313

*Average per head has been calculated taking into account only persons of 14 years and above.

Table 7-XIX shows the average gross value of paddy produced by owners and tenants according to their size of holding. *It can be seen from these figures that there is a general tendency for the value to increase as the size of holding increases.* This increase in value, however, is not always commensurate with the increase in the size of holding due to differences in productivity which have been examined in other sections of this report.

7.9 Production Expenses and Income from Paddy - Yala 1972

Detailed information on cash operating expenses incurred in Yala 1972 as indicated by 138 farmers is presented in Appendices III-V. Based on this data a summary of the average cash outlay per acre is given below:

Table 7-XX Cash Expenses for Paddy Production - Yala 1972 Average Cash Outlay per Acre

Items of Expenditure	Amount Rs.	%
Draught power	62	*16*
Hired labour	110	*28*
Food bought for hired labour	62	*16*
Purchased inputs	56	*14*
Land rented, acreage tax and ande	100	*25*
Transport	3	*1*
Total	393	*100*

The average cash outlay per acre has amounted to Rs.393/-. *It is observed that payment to hired labour is the major component of cash expenses incurred by farmers in paddy cultivation. Expenses on this item inclusive of the value of food supplied has added up to Rs.172/- per acre which amounts to 44% of the total cash outlay. During the same season cost data collected from 24 farmers in Kandy district have shown that the average expenses on hired labour have amounted to 47% of the total cultivation costs per acre*[1]. *Considering the fact that 67% of the farmers in the sample have cultivated small sized holdings of two acres or less in extent, this data indicates that even in small sized holdings farmers are heavily dependent on hired labour for cultivation purposes.* This is mainly due to the seasonal nature of paddy cultivation and limited time available to complete certain field operations. A high component of hired labour used is also due to the relatively low wage rates that prevail in rural areas. Employment of more hired labour also means reduced family farm earnings to individual farmers. The expenses on hired labour used by the operators in different tenurial categories show considerable variation as indicated below:

	Owners		Tenants		Owner-Tenants		Tenant-Owners	
No. of farmers	54		37		13		32	
	Rs.	%	Rs.	%	Rs.	%	Rs.	%
Expenses on hired labour	227	*61*	117	*26*	182	*47*	106	*29*

It is observed that both owners as well as owner-tenants have incurred substantially higher expenses on hired labour when compared to tenants and tenant-owners. Owner operators generally being in a better economic position also operate larger sized holdings; consequently this group has incurred almost double the expenses on hired labour when compared to tenants.

Expenses in respect of buffalo here do not show a marked variation among the different tenurial groups, and ranged from 9 to 13% of the total cash operating expenses. However, in respect of tractors, the owners have spent Rs.31/- per acre compared to Rs.12/- by the tenants (Appendix IV). The total cash expenses on field operations show a substantial variation between the two main tenurial groups which have ranged from Rs.185/- to as much as Rs.300/- per acre in respect of tenants and owners respectively (Appendix IV). Scrutiny of this data shows that extra expenses of Rs.115/- per acre incurred by owners in field preparation are primarily due to their heavy dependence on hired labour.

The average expenses on purchased inputs had been only Rs.56/- per acre (14%) of the total cash outlay. Of this amount Rs.43/- have been spent on fertilizer and only Rs.6/- for agro-chemicals (Appendix III)

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[1] Cost of Production of Paddy - Yala 1972. A study based on Record Keeping Farmers in Five Districts - K. Izumi and A.S. Ranatunga, p. 4

Another major item of expense incurred is for payment of land rent, acreage tax and 'ande' which has averaged Rs.100/- per acre and constituted 25% of the total cash outlay (Table 7-XX). Since payment of rent for land in very many instances has been made with paddy, expenses for this item were competed at the guaranteed price of paddy[1]. Relative importance of this item of expense in the total cash outlay is observed clearly, when farmers are classified on the basis of tenurial patterns (Table 7-XXI).

Table 7-XXI Summary of Cash Outlay per acre for Paddy Production Classified according to Tenurial Category - Yala 1972

Item of Expenditure	Tenurial Category							
	Owners		Tenants		Owner-Tenants		Tenant-Owners	
	Rs.	%	Rs.	%	Rs.	%	Rs.	%
Field Operations	300	*81*	185	*40*	231	*60*	148	*40*
Inputs	64	*17*	56	*12*	49	*13*	46	*12*
Ande, acreage tax and land rental	4	*1*	210	*46*	103	*27*	179	*48*
Transport	4	*1*	6	*1*	2	*1*	1	-
Total	372	*100*	457	*100*	385	*100*	374	*100*

- Indicates less than 1%

Table XXI highlights the very heavy burden that the tenants have to bear in rental payments for land. For both tenants as well as tenant-owners the expenses on this account have amounted to 46-48% of the cash outlay incurred per acre. In contrast for owners, the expenses on this account had been a meagre 1% of the total cash outlay, presumably for payment of acreage tax. The magnitude of rental payments is illustrated in Fig.11 (page 127). Comparison of the total cash expenses incurred by owners and tenants indicates that tenants have recorded Rs.85/- more as expenses per acre. Higher expenses reported by tenants are primarily due to high rental payments made in respect of land.

Cash expenses per acre summarised on the basis of water supply are given in Table 7-XXII.

Total cash expenses incurred per acre under different water supply conditions hardly show any variations between major schemes and rainfed areas, but under minor schemes expenses have been Rs.70/- to 80/- less per acre compared to the other areas. *The breakdown of expenses (Appendix V) shows that in major schemes cost of hired labour is the most important item amounting to Rs.211/- per acre or 51% of the total cash outlay.* On the other hand, in minor schemes and in rainfed areas cash expenses incurred on this item had been relatively less. This is despite the fact that farmers in rainfed areas have used more

[1] Guaranteed price of paddy at the time of Yala 1972 crops were harvested was Rs.14/- per bushel.

Table 7-XXII Summary of Cash Outlay per Acre for Paddy Production according to Water Supply - Yala 1972

	Water Supply					
	Major Irrigation		Minor Irrigation		Rainfed	
No. of farmers	20		50		66	
Extent cultivated (acres)	79		71		81	
Item of Expenditure	Expenses					
	Rs.	%	Rs.	%	Rs.	%
Field Operations	297	*72*	172	*51*	222	*53*
Inputs	66	*16*	51	*15*	53	*13*
'Ande', acreage tax and land rent	41	*10*	115	*34*	143	*34*
Transport	6	*2*	2	*1*	2	..
Total	410	*100*	340	*100*	420	*100*

.. Indicates less than 1%

hired labour per acre (cf. 7.3), compared to major schemes. *A possible reason for this apparent contradiction is the variation in wage rates in the respective areas. In the major scheme of Minipe wage rates paid to migrant labour are considerably higher than the wages paid in densely populated traditional Kandyan villages. Besides in rainfed areas, the hired labour employed is mostly women for operations such as transplanting who are normally paid relatively lower wages.*

With regard to expenses on draught power, in major schemes tractor charges are also an important item which had amounted to Rs.46/- or 11% of the cash expenses. In the other areas hardly any expenses have been incurred for use of machinery. Cash expenses on buffaloes show a very uniform pattern in all areas and had ranged around 11% of the total cash expenses. Similarly, expenses incurred by farmers on purchased inputs show very little variation on the basis of water supply conditions.

Very striking differences are observed with regard to rental payments when relevant data is examined on the basis of water supply (Fig. 11). In major schemes the expenses on this item had been only Rs.41/- whilst in minor schemes and rainfed areas rental payments amounted to Rs.115/- and Rs.143/- per acre respectively. A substantially high proportion of paddy lands in the Minipe major irrigation scheme falls within the colonisation scheme and only a small fraction belongs to the Mahiyangana Temple. Of the 20 farmers from the major scheme, only 3 of them had paid 'ande'. Only those who cultivated temple lands in major schemes had paid 'ande', as land rent, unlike their counterparts in rainfed areas and minor schemes. Consequently, the relatively low expenses incurred on land rent in major schemes are due to the fact that these settlers have to pay only 'acreage tax' to Cultivation Committees and annual payments to the Land Commissioner's Department which are invariably in default.

PERCENTAGE CASH-OUTLAY PER ACRE FOR PADDY CULTIVATION BY ITEMS OF EXPENDITURE

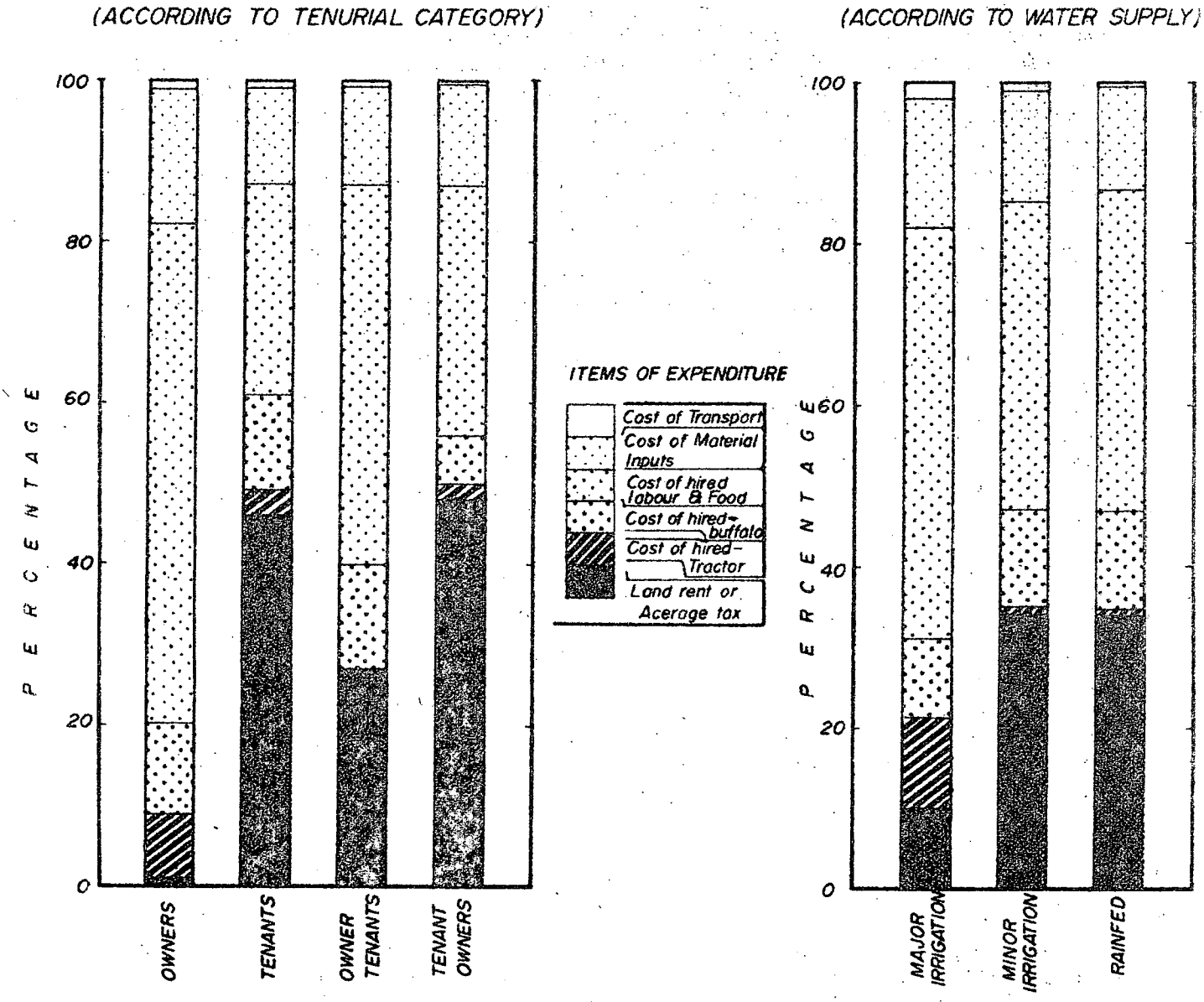

Fig.11

Percentage expenses on purchased inputs show very little variation when farmers are classified on the basis of water supply and tenurial patterns. However, in absolute terms, the owner operators and those in major schemes have incurred higher cash expenses on this item.

The general pattern of cash expenses as reported by the farmers raises two important aspects with regard to paddy cultivation in this district, viz. (a) high proportion of hired labour used for cultivation (b) Heavy expenses on payment of land rent by tenants as well as tenant-owners. Even in rainfed areas where the average size of holdings in the same sample was 1.4 acres, 40% of the cash expenses (Appendix V) had been utilised to meet commitments pertaining to hired labour. This tendency makes us suggest that a relatively smaller proportion of family labour is devoted full time for paddy cultivation operations even in rainfed areas where the population density is extremely high. This confirms the observations made in the discussion in section 7.3 with regard to use of hired labour under different water supply conditions. Heavy dependence on hired labour for cultivation even in small sized holdings in rainfed areas as well as in minor schemes which constitute 83% of the paddy acreage in this district, is very likely to have an adverse impact on the family farm economy. This pattern of labour use reduces family farm earnings by raising the cash costs of production even in small sized holdings. The other important aspect that is of relevance to tenants and tenant-owners is the very high proportion of expenses that is incurred for payment of 'ande'. Of the 138 farmers in respect of whom cash expenses were available, 50% belonged to the category of either tenants or tenant-owners. This group has spent as much as 46-48% of their total cash outlay for payment of land rental (Appendix IV). In view of the extremely high proportion of expenses borne by tenants for use of paddy lands in this district, their plight with regard to payment of rent deserves earnest consideration of those charged with the responsibility of drawing up policy measures for increasing productivity and better income distribution. Some relief to this economically under-privileged group of cultivators could be afforded under the provisions of the Agricultural Lands Law No.42 of 1973, if the Agricultural Productivity Committees actively interest themselves in the question of rents.

7.10 Income from Paddy - Yala 1972

Income from paddy includes both the gross value of paddy that was sold for cash as well as that of paddy retained on the farm for consumption. The 138 farmers who provided information on cash expenses incurred for cultivation during Yala 1972 had reported an average yield of 41.6 bushels per acre.

The average income and cash expenses per acre of paddy during Yala 1972 computed on the basis of information provided by the farmers in the sample are given below.

Gross value of paddy produced per acre[1]	Rs.582
Cash operating expenses per acre[2]	Rs.393
Net farm operating income per acre[3]	Rs.189

[1] Equals cash farm incomes from sales and value of home retained paddy.

[2] Cash operating expenses includes food provided for hired labour.

[3] Equals gross value of paddy minus cash operating expenses.

Gross income from paddy and cash expenses incurred classified according to tenurial pattern of cultivators are given in Table 7-XXIII.

Table 7-XXIII Net Farm Operating Income per Acre from Paddy according to Tenurial Category - Yala 1972

		Tenurial Category			
		Owners	Tenants	Owner-Tenants	Tenant-Owners
Gross value of paddy produced per acre	Rs.	505	621	669	649
Cash operating expenses per acre	Rs.	372	457	385	374
Net farm operating income/acre	Rs.	133	164	284	275

Net farm operating income realised by the two main tenurial groups, viz. owners and tenants shows little variation. Though the tenants have realised Rs.116/- more as income from paddy due to higher yields obtained, the net farm operating income obtained by them had been only Rs.31/- more per acre due to the higher cash operating expenses incurred by tenants. Both owner-tenants and tenant-owners have recorded relatively higher net farm operating incomes mainly due to higher yields obtained as well as lower cash operating expenses incurred.

Information on income and cash expenses on paddy cultivation during Yala 1972 was also classified on the basis of water supply conditions.

Table 7-XXIV Net Farm Operating Income per Acre from Paddy according to Water Supply Conditions - Yala 1972

	Water Supply		
	Major Irrigation	Minor Irrigation	Rainfed
Gross value of paddy produced per acre	694	533	515
Cash operating expenses per acre	410	340	420
Net farm operating income per acre	284	193	95

Due to the relatively higher yields recorded in major schemes, the net farm operating income realised from an acre of paddy had been thrice that earned by farmers in rainfed areas. The relatively high cash operating expenses incurred in rainfed areas combined with lower yields recorded have reduced the net farm operating income to a meagre Rs.95/- per acre. *Tenant farmers operate mostly in rainfed areas and under minor schemes in this district, thus the lower net farm operating incomes realised per acre in these areas are partly due to excessive rentals for land which have been included in compiling the cash operating expenses reported in this discussion.*

SUMMARY AND CONCLUSIONS

A The Land and Land Use

A-1 There were 48,425 acres of paddy in Kandy district in Maha 1971/72 cultivated by 70,372 farmers; of this extent 8,317 (17%) came under major irrigation, 21,102 (44%) under minor irrigation and 19,006 (39%) under rainfed conditions. The extent of land operated by the sample of 158 operators was 735,29 acres of which 336.24 acres (46%) were lowland and the remaining 399.05 acres were highland. 26% of the lowland was under major irrigation, mainly under the Minipe Scheme in Uda Dumbara. 42% of the lowland was under minor irrigation and the remaining 31% was rainfed. Minor irrigation in this district represents mostly diversion of small streams through anicuts: as the streams themselves are not perennial, supply of water under major irrigation is not assured.

A-2 The sample of 158 operators comprised 60 owner cultivators (38%), 48 tenant cultivators (30%), 15 owner-tenant cultivators (10%) and 35 tenant-owner cultivators(22%). 23 owner-cultivators rented out a portion of their holdings. While 44% of the lowland was operated under tenancy, only 4% of the highland was operated under those conditions. *Tenancy, therefore, was a problem connected mainly with lowland cultivation.*

A-3 The land operated was unevenly distributed among the different tenurial categories and sizes of holding. 40% of the lowland and 64% of the highland was operated by owner cultivators. Tenants operated 21% of the lowland and 11% of the highland while owner-tenants and tenant-owners together operated 39% of the lowland, and 25% of the highland. The average extent of land per operator was 4.63 acres of which 2.13 was lowland, 2.09 was highland and 0.41 was chena and encroachment. The median size was 1.50 acres. Lowland holdings ranged in size from 0.13 to 16.00 acres. A standard deviation of 2.18 and a coefficient of variation of 101% indicated considerable variation in the size of holding. The average size for holdings smaller than the median size was 0.82 acres while for those larger than the median size was 3.44 acres. The larger 50% of the holdings were on an average more than four times bigger than the smaller 50%. The average extent operated by the different tenurial groups was: Owners - 5.76 acres, owner-tenants - 4.85 acres, tenant-owners - 4.00 acres and tenants - 2.23 acres. This was made up of 2.23 and 3.53 acres, 2.46 and 2.39 acres, 2.71 and 1.29 acres, and 1.47 and 0.76 acres of lowland and highland respectively.

A-4 While all 48 tenants did not own any lowland, 9 of them reported not owning any land whatsoever. Altogether 60 operators (38%) owned 1.0 acre or less taking both lowland and highland together, of whom 41 (25% of total sample) had only 0.5 acre or less. *Scarcity of land was most acute among the tenants, 92% of whom owned 1.0 acre or less.* Only 10% of the owners were in that position. While 29% of the tenant-owners were similarly

placed all the owner-tenants owned over 1.0 acre of land. Of the cultivators 70% operated lowland holdings of 2.0 acres or less; the extent of the lowland operated by them amounted to only 36% of the cultivated lowland. They also operated 41% of the highland. About a third of the lowland cultivators (38%) operated 1.0 acre or less of paddy land. The land cultivated by them amounted to only 12% of the lowland extent. Although the proportion of operators with holdings of over 4.0 acres was only 14% the extent of lowland cultivated by them amounted to 42% of the total operated lowland. Most of these were under the Minipe Scheme.These operators with large lowland holdings operated 34% of the highland also. *The problem of land in this district appeared to be more an inequitable distribution of land than complete landlessness or absolute shortage of land. The average size of the holding can be considered reasonable in view of the fact that much of the lowland can be cultivated during both seasons and the highland can support permanent cultivation. There is, however, a considerable inequity in the distribution of this land with the tenants and smallest farmers operating a disproportionately small share of the land. The tenants are very often the smallest farmers. The problem of land shortage is most acute for them. It is difficult to consider that a redistribution of the operated land could solve this problem as the larger operators themselves rarely operate more than 4.0 - 6.0 acres. A solution, therefore, depends on more land being made available and more intensive farming systems being developed for better utilization of the available land.*

A-5 Irrigation facilities are very unevenly distributed in the district and among the operators. 41% of the land operated by owner-tenants come under major irrigation. The respective figures for owners and tenants are 36% and 21%. Tenants benefit least from major irrigation, - 67% of tenants cultivated under rainfed conditions, the amount of land they cultivated under such conditions being 46% of the land cultivated by all the tenants. Most of the tenant-owners (51%) cultivated under minor irrigation; 59% of the land cultivated by them fall into that category. Only 12% of the land in holdings of 2.0 acres or less was under major irrigation, 52% being rainfed. On the other hand 50% of the land in holdings of over 6.0 acres was under major irrigation and only 10% was rainfed. The larger holdings tended to be under major irrigation because most of them came under the Minipe Colonization Scheme.

A-6 *It is clear that the provisions for rent regulation under the Paddy Lands Act were not operative in this district. Most of the tenants (approximately 83%) paid half-share of the crop as land rent.* Only 7% paid one-fourth share and 10% paid fixed rent as provided for under the Paddy Lands Act. *82% of the tenants reported that their landlords were friends, relatives or neighbours, and the tenancy arrangements appeared to be of an informal nature and based on long standing social obligations.* None of the tenants who paid less than half-share received any collateral help. Even among those who paid half-share almost 50% did not receive any collateral help. Fertilizers and/or seed paddy were the inputs normally provided as collateral help; such help was most frequently provided by landlords who were described as relatives and friends. *Although most tenants pay half-share of the crop as land rent, 59% of the tenants felt that it was excessive which indicates that they pay this rent because they have no alternative.* This attitude was more prevalent among tenants who did not receive any collateral help. *Most tenants, however, felt that they had security of tenure.*

A-7 42% of the landlords were described as landowners of whom nearly half were themselves cultivators who had rented out a part of their land. Many of them were reported to be small landowners not significantly different economically and socially from the tenants. While the proportion of the tenanted land controlled by these landowners was 33%, temples controlled 27% of the tenanted land. 11% of the landlords were reported to be traders and a further 18% as persons in salaried employment. Most of the landlords (87%) were from the same district and as many as 55% from the same village.

A-8 Many tenants, especially those cultivating 2.0 acres or less, said that they would like to cultivate more land as the income from the holdings they now cultivate is insufficient for their living. *They also had the capacity to cultivate more land because their labour was under-utilized.* 40% of the tenants (including tenant-owners and owner-tenants), however, did not want to cultivate more land as they lacked capital and did not have the physical capacity to undertake extra work. *Over half the tenants saw no possiblity of becoming owner-cultivators themselves because they were too poor.* Many among the remainder felt that they would own land only if ande land or crown land was given to them.

B Institutions

B-1 *Over one-fifth of the farmers (22%) were not members of a co-operative.* 31% of them stated that they did not know about the service they can obtain from the co-operatives. *It is noteworthy that 16% preferred the private traders and 14% complained of mismanagement as the reason for not belonging to a co-operative. Most of those who were not members were poor, small tenants.*

B-2 The service utilised by most farmers was the supply of fertilizers; 90% of the farmers obtained their requirements from co-operatives. This organization was used by 80% of the farmers for marketing and 73% for purchase of agro-chemicals. However, only 45% of the farmers made use of co-operatives for loans and 41% for seed paddy. In the case of seed paddy, as the extension services of the Department of Agriculture also makes seed paddy available, farmers depend less on the co-operatives for their requirements.

B-3 *Smaller farmers were making less use of co-operative services than the larger farmers.* While 89% of the farmers with holdings of over 6.0 acres made use of co-operative loans, only 31% of the farmers with holdings of 2.0 acres or less made such use. Similarly, while 67% of the former obtained seed paddy from co-operatives, only 38% of the latter did so.

B-4 *The proportion of operators who did not borrow from the co-operatives in Maha 1971/72 was as high as 76%. This, however, cannot be attributed to deficiencies on the part of the co-operatives. As many as 47% reported that they did not need a loan.* The need for credit in this district could be less because of the collateral help provided by many landlords and the smaller amount of cash expenses due to greater use of buffaloes, as well as family and attan labour for cultivation work. *20% of the operators did, however, state that loan facilities were not available.* It should also be noted that 22% of the operators were not members of the co-operatives.

B-5 Only 16% reported non-repayment of loans taken from co-operatives during Maha 1971/72. Some farmers stated that they have not been able to repay loans taken from friends and relatives. Loans obtained from other private sources, however, were reported to have been repaid fully. The loans taken from the co-operatives prior to Maha 1971/72 which were reported outstanding amounted to Rs.5,593.00.

B-6 The gross amount borrowed in Maha 1971/72 was reported to be Rs.22,607.00. Of this, 64% was borrowed from co-operatives. The loans taken worked out to Rs.377.00 per borrower. The average amount per borrower ranged from Rs.85/- in the smallest landholding size class (0.50 acres) to Rs.626/- in the largest holding size (over 6.00 acres) and from Rs.133.00 for tenant owners to Rs.199.00 for owners. Owners met a greater proportion of their credit requirements from co-operatives (74%) compared to tenants (48%) owner-tenants (59%) and tenant-owners (58%). The rates of interest varied from 7½ - 9% for loans from institutional sources to 20 - 120% for loans from private sources. Most farmers paid between 40 - 60%. A higher proportion of loans from friends and relatives were completely free of interest.

B-7 *Most of the surplus paddy was sold through the co-operatives.* The proportion of sales to the co-operatives was 96% in Maha and 91% in Yala. *The smaller farmers tended to sell more of their paddy to the co-operatives, the proportion being 100% in both seasons for farmers with 1.0 acre or less.* The proportion was lowest in Maha (90%) for 1.0 - 2.0 acre farmers and in Yala (87%) for farmers with over 6.0 acres. These variations were, however, small.

B-8 The intensity of extension services of the Department of Agriculture varied from 104 acres paddy per KVS in Kandy Gravets A.I. range to 1,017 acres paddy per KVS in the Uda Dumbara A.I. range. It is, however, not correct to measure the intensity in the district in terms of paddy acreage only as, in this district, highland cultivation and livestock rearing are also important agricultural activities served by the extension services. *In areas where paddy was the dominant activity, each KVS served about 800 acres of paddy. Extension services for the Minipe Special Project area were organised separately; in that area there was a KVS for approximately 400 acres.*

B-9 Extension services formed the predominant source of information for farmers in this district. Most farmers had contact with several types of extension media (cf.4.2). While 74% obtained general agricultural information from extension personnel who visited them, 39% had obtained such information by visiting the extension centres. Advisory leaflets and demonstration plots were also important sources of such information. 37% reported receiving such information from neighbouring farmers. The pattern was similar for information regarding NHYVs and fertilizer recommendations for NHYVs; the influence of neighbouring farmers was less with regard to these. Of the 48 farmers who had adopted NHYVs, 63% had been influenced by extension personnel who visited them; 80% of them learnt about the fertilizer recommendation in the same way. *Mass media such as radio programmes and newspaper articles did not appear to play an important role, 28% of the farmers obtained general agricultural information from radio programmes and 29% read about NHYVs in newspaper articles. It is important to note that farmer training classes had played only a minor role in disseminating information.* Most farmers (70%), who did not attend, had not heard about them and several (15%) could not attend because of domestic problems.

This points out the need both for greater publicity for these classes as well as the need to take into consideration the difficulties experienced by farmers in attending them. Most of the farmers who had attended farmer classes, seen demonstration plots or read advisory leaflets stated they found them useful.

B-10 63% of the farmers reported that extension personnel had visited them during Yala 1972. This had been done very largely on the initiative of the extension personnel themselves. While 49% knew the location of the extension centre, 41% had visited it in Yala. The main reason for doing so was to obtain general advice. Equally important was the purchase of various inputs such as paddy and other planting material, fertilizer, weedicides and pesticides, and to hire sprayers. *This suggests that farmers could be encouraged to visit the centre by supplying various services. Such visits could then be utilized for providing agricultural advice also.* This points to the need for concentrating these services in *one place.* Among the methods of impersonal contact, 66% had seen demonstration plots and more than half had access to radio programmes and advisory leaflets. Only 9% reported no contact whatsoever in Yala 1972.

B-11 The average contact score for the sample was between 3 and 4. However, 48% of the farmers had a low level of contact with an average of only 1 to 2, while 32% reported a high level of contact with an average of between 5 and 6. *The adoption of NHYVs showed a tendency to increase as the contact score increased.* The rate of adoption was only 8% among farmers with a contact score of 0 but it was 57% among farmers with a contact score of 7. *There was a similar tendency in the yield obtained by farmers although the relationship was not clear or straightforward.* While farmers with a contact score of 0 obtained only 30 bushels/acre, those with a contact score of 7 obtained 54.7 bushels/acre. This relationship was, however, not linear but the intervening contact scores.

B-12 *Farmers in areas with major irrigation had better contact with extension services.* While 81% of the farmers in such areas had been visited by extension personnel only 60% of the farmers in minor irrigation and rainfed areas had been visited. The proportion of farmers who knew how to contact the KVS was 91% in major irrigation areas, 73% in minor irrigation areas and 66% in rainfed areas. Attendance at farmer training classes was 29% in areas under major irrigation and 8% in rainfed areas. *Similarly, extension services had greater contact with larger farmers (over 5.0 acres) than with smaller farmers (5.0 acres or less).* However, there was no noticeable difference in the degree of contact between farmers with 2.0 acres or less and those with 2.0 - 5.0 acres. *The greater attention paid by extension services to farmers in major irrigation areas and larger farmers is interconnected as the larger farmers are in the areas with major irrigation.* In this district the major irrigation area falls within the Minipe special project which by definition has a greater extension effort concentrated within it. The figures may also tend to exaggerate the position as only a small proportion of the sample farmers fell into these categories. There was no observable pattern of association between extension services and farmers which varied according to tenurial status.

C Labour and Employment

C-1 Altogether there were 1,195 persons in the 158 households sampled. There were 4 or less members in 14% of the households while 32% had 9 or more. *The average number of persons per household was 7.6.* The number per household tended to be a little larger among owner-tenants and tenant-owners than among others. *There was a similar tendency among operators with larger holdings, but there was no noteworthy tendency for the size of family to vary with the size of holdings.*

C-2 724 among the sample population were 14 years of age or over. *Taking them to represent the family labour available for farm work, the average family work force was 4.6.* There was a noticeable difference among the tenurial categories: it was lowest among owner-tenants (3.7) and highest among owners (5.1). 55% of the households had 4 or more persons available for work; 45% had 5 or more. Owners had a greater proportion of families with a work-force of 4 or more than others. 31% of all the households had 3 or less, and 20% had 2 or less. *There was no observable relationship between the size of the family labour force and size of holding.*

C-3 683 persons were reported as employed, - 410 employed only on the farm, 208 both on the farm and off-farm, 65 only off-farm. The first two categories represents 3.9 persons per household employed in cultivation work. *This is equivalent to 1.8 persons per acre on the average lowland holding and 2.6 on the median lowland holding. If we exclude the persons who are in part-time employment, the figures are 2.6, 1.2 and 1.7 respectively. This indicates that a considerable amount of family labour is available for cultivation purposes especially in the holdings of average or median size and below.*

C-4 *Although family labour is important for certain field operations, there is much dependence on hired and attan labour.* About 40% of the operators reported that they depend entirely on family labour for hand weeding which is widely practised in this district. In all other field operations the proportion of operators using only family labour was less than 10%. For most field operations family labour was supplemented by attan: this was the most common combination. The proportion of operators who reported using this combination for harvesting and threshing was 56% and 58% respectively. Hired labour was also commonly used, sometimes by itself but more often in combination with family labour and/or attan labour. The importance of hired labour could be seen also from the proportion of the cash outlay (44%) for paddy production accounted for by the cost of hired labour (cf.E-2).

C-5 *There were no noteworthy variations in the pattern of labour use in different size holdings. A substantial proportion of operators with holdings of 0.5 acre or less also used hired and attan labour. It was among these operators, however, that the proportion using family labour was highest. Surprisingly the proportion was also high among operators with holdings of over 6.0 acres.* In the intermediate sizes of holding most operators use hired and attan labour to supplement family labour: the proportion of operators depending only on family labour was small. It is interesting to note that most operators, even with holdings of 0.5 acre or less, used hired and attan labour for transplanting which is practised by most farmers in this district. Contract labour which was generally uncommon was used most frequently for transplanting.

C-6 *Figures indicate that owners used more hired labour than tenants, - 27.0 and 12.5 man-days per acre respectively (cf 1-2).* This is not adequately explained by differences in size of holdings as owner-tenants and tenant-owners who operate larger lowland holdings than owners used only 15.0 and 16.4 man-days per acre respectively. It should also be noted that owners had more family labour per household than the others although they used more hired labour. Surprisingly all operators used more hired labour under minor irrigation and in rainfed areas than under major irrigation although the size of holdings was smaller under the first two, probably because of the more intensive cultivation practised there and the larger size of the highland holdings.

C-7 *Off-farm employment played an important role. 273 persons from 67% of the households had either full-time or part-time off farm employment.* The average per household worked out to 2.0. Of them 65 persons were in full-time off-farm employment. 28% of the households had at least one person with such employment. The proportion of households with such persons was highest among owners (37%) and lowest (15%) among tenants. These persons were mainly self-employed in skilled work or in white collar employment. The main forms of skilled employment for them were carpentry, masonry, lumbering, timber sawing, weaving and beedi manufacture. Members of tenant households were employed more in non-agricultural unskilled labour and agricultural work. While 45% of the tenant households reported persons employed in such occupations only 2% of the owner households reported employment in them. Among those employed in off-farm work the proportion employed in agricultural work was small despite the importance of plantation agriculture in this district and the widespread use of hired labour in paddy cultivation.

D Management Practices and Productivity

D-1 The Index of Cropping Intensity was 162%. While 92% of the lowland was cultivated in Maha 1971/72, 70% was cultivated in Yala 1972. It varied according to the supply of water, - 182% under major irrigation, 174% in rainfed areas and 140% under minor irrigation. The intensity is low under minor irrigation because in this district minor irrigation represents diversion of water from small streams which tend to run dry in Yala. *There was evidence that indiscriminate clearing of vegetation on slopes has affected ground water resources adversely. Several farmers stated that natural springs ran dry in Yala. Unless remedial action is taken early, this would lead to loss of production.*

D-2 Most of the farmers had cultivated for Maha 1971/72 in October-November. Of the 136 farmers who could state when they cultivated, 54% had cultivated during that period. Altogether 85% had cultivated in the period September to December. There were, however, a few farmers who had cultivated as early as August or as late as January.

D-3 Most common method of field preparation was with buffalo and mammoty, especially in rainfed areas and areas with minor irrigation where the holdings tended to be relatively small (2.3 and 1.4 acres respectively). The proportions of operators using these methods were 85% and 75% respectively. Few farmers in these areas used tractors for ploughing but even they were not dependent exclusively on tractors. *Tractors were used*

mainly in the Minipe area where under major irrigation the average size of the holding was 4.2 acres. But even there many farmers either combined tractor ploughing with buffalo and mammoty or used only buffalo and mammoty. Although only 24% of the operators under major irrigation depended entirely on tractors 44% of the land was prepared using only tractors.

D-4 *The evidence available suggests that this district experiences difficulties in obtaining the draught power required for field preparation. The buffaloes owned by the sample farmers worked out to one buffalo for 2.5 acres. Only 50% of the farmers who ploughed with buffaloes owned any.* Other farmers had to hire buffaloes. Most farmers preferred to use buffaloes, however,because liaddas were small, soils were boggy or because buffaloes were either owned by them or were easier to get and cheaper to use. 15% of the farmers felt that the quality of field preparation was better with buffaloes. *In the context of these conditions, if efforts are made to increase the availability of buffaloes, farmers in this district are unlikely to turn to tractors for draught power.*

D-5 At the time of the survey a few farmers in this district had adopted NHYV seed which had been released to the farmers only the previous year. The proportion of farmers cultivating these varieties was 9% in Maha and 20% in Yala. The increase of adoption in Yala is deceptive as it is due mainly to the lower acreage cultivated in that season. The OHYVs were the most popular varieties, the proportion cultivating them being 55% in Maha and 52% in Yala. It is noteworthy that the proportion who cultivated traditional varieties in Maha and Yala was 13% and 14% respectively.

D-6 *Figures indicated that adoption of NHYVs was more rapid among the larger farmers.* The proportion of extent under NHYVs was highest in holdings of over 6.0 acres, - 32% (Maha) and 62% (Yala). It was lowest in Maha in holdings of 0.5 acre or less (8%) and in Yala, in holdings of 0.5 - 1.0 acres (12%). There was a general tendency for the proportion of extent under NHYVs to increase as the size of holding increased. While in holdings of 2.0 acres and less the extent under OHYVs exceeded that under NHYVs, the proportion was reversed for holdings of over 2.0 acres. *This may be a reflection of the closer contact between extension services and larger farmers. We have observed that there is a positive correlation between adoption and extension contact.* This may also reflect the ability of larger farmers to invest resources required by NHYVs and their willingness to take the risk of trying out something new. It is interesting to note, however, that the proportion of land under traditional varieties did not vary much for holdings over and below 2.0 acres. This may indicate that the NHYVs have replaced OHYVs rather than traditional varieties in the larger holdings.

D-7 *There were some variations in the rates of adoption of HYVs according to tenurial status.* With regard to operators the proportion was lowest among tenant-owners (82%) and highest among owner-tenants (100%). Owners had a higher rate than tenants. A similar pattern was seen with regard to the extent under HYVs. *This may indicate a greater willingness by owner cultivators but the differences are too small for any firm conclusions.* The adoption rate for NHYVs was also highest among owner-tenants and lowest among tenants, - 40% and 20% of the operators respectively. There was

little difference, however, between owners and tenants. With regard to extent, the proportion was highest among tenants and owner-tenants (32%) and lowest among tenant-owners. *Although such variations exist it is difficult to establish any pattern associated with tenurial status in the absence of consistent or noteworthy trends.*

D-8 *It is significant that the proportion under NHYVs was considerably higher under major irrigation.* It was 47% in(Maha)compared to 17% and 15% under minor irrigation and rainfed conditions respectively. For Yala the respective figures were 66%,26% and 20%. This is not surprising in view of the greater concentration of extension effort as well as of larger farmers in the Minipe special project area. The availability of an assured supply of water probably plays an important role in farmers' decisions as it minimises risk.It is,however,noteworthy that in Yala under major irrigation, 30% of the extent cultivated was under traditional varieties. This perhaps reflects a preference by farmers for such varieties for their own consumption.

D-9 *Among the farmers who did not grow NHYVs, 39% stated that they lacked information about these varieties, while 24% said that it was difficult to get seed paddy. Considering that these varieties had been introduced only in Maha 1970/71,problems of this nature are to be expected. Several farmers expressed their preference for other varieties either because they felt that these varieties were more palatable or because they were still not convinced about the benefits of the new varieties.* Not many complained of water problems or high costs as reasons for not adopting NHYVs.

D-10 *Transplanting was practised widely. It was more common in Maha (79%) than in Yala (59%). This was so even under major irrigation,* - 82% (Maha) and 66% (Yala). A further 14% in Maha and 10% in Yala transplanted at least a part of their holdings. *Surprisingly, it was practised most under rainfed conditions - (94% in Maha and 70% in Yala) - and least under minor irrigation - (69% in Maha and 60% in Yala). While the proportion is lower under major irrigation probably because of larger holdings, it is lower under minor irrigation because the supply of water is not assured.*

D-11 *There was a greater tendency for farmers with 2.0 acres or less to transplant than for farmers with bigger holdings,* - 88% and 76% respectively. It was most common among farmers with 0.5 - 1.0 acre. These variations were more marked in Maha than in Yala. *Both in terms of the proportion of farmers transplanting and the proportion of extents transplanted, it was practiced more by tenants than by owners.* It was, in fact,least practised by owners, - 83% (Maha), 56% (Yala). The proportion was highest in Maha among owner-tenants (100%) and in Yala among tenant-owners (81%).

D-12 *94% of the farmers reported that they used some fertilizer in both Maha and Yala. The average quantity applied was 1.1 cwts. Although the recommended amount of fertilizer varies with the variety grown, the amount applied is considerably below what is recommended for most varieties.* The amount of fertilizer applied was generally about 40% of the amount recommended. *Although farmers had used certain types of fertilizer*

in excess of recommended amounts, many had not used the different types of fertilizer as recommended. Only 47% of the farmers reported applying fertilizer at least three times. It is noteworthy that many farmers had used the basal mixture, - 61% in Maha and 62% in Yala. Urea had been applied by many more, - 88% in Maha and 84% in Yala. *Special mention should be made that the amount of urea used by the farmers was almost double the amount recommended. Much of this excess application would have provided no return particularly for farmers who had not applied the basal mixture.* Most of the farmers who had applied basal mixture and first top dressing had done so in time.

D-13 *Farmers under major irrigation showed a greater tendency not only to apply fertilizer but also to apply more of it.* More than 90% of them had applied the basal mixture. There was little difference between rainfed areas and areas under minor irrigation with regard to the application of fertilizer.

D-14 With regard to the proportion of farmers who had applied fertilizer at least once, there was no noteworthy variation among different tenurial categories. *Among the different size classes, however, the proportion was only 44% for holdings over 6.0 acres; it was over 92% for other size classes.* There were only minor variations among tenurial categories in relation to the proportion of farmers who had applied fertilizer at least three times. Variations were more marked among different size classes, - 41% (2.0 acres or less), 44% (over 6.0 acres), 58% (2.0 - 4.0 acres), and 73% (4.0 - 6.0 acres).

D-15 Very few farmers in this district depended entirely on chemicals for weed control. *83% of the farmers controlled weeds by hand weeding using mainly family and attan labour.* 79% of the cultivated extent was entirely hand weeded.

D-16 The yield was 51.2 bushels/acre in Maha and 41.3 bushels/acre in Yala. The yield in Yala was lower for all tenurial categories as well as for all sizes of holding.

D-17 *Surprisingly, the lowest yields in both seasons were reported by owners, - 46.4 bushels/acre in Maha and 36.9 bushels/acre in Yala.* The difference in yield between tenants and owners was 3.6 bushels/acre in Maha but in Yala it was twice as much. In both seasons the tenants had a higher yield. *There is no evidence to attribute this yield difference to any ecological variations and the available evidence suggests that tenants have paid more attention and invested more labour, especially more family labour, to cultivate their holdings more intensively. The smallness of their holdings and the high land rents they have to pay appear to make it necessary for tenants to get as much out of their holdings. At the same time the high land rents leave less for cash inputs (cf.E-3), and the tenants seem to be making up for that shortage by investing more of their labour.* Highest yields were reported by tenant-owners in Maha (57.4 bushels/acre) and by owner-tenants in Yala (47.8 bushels/acre).

D-18 *There was no clear indication that yields varied with the size of holding.* The yield was highest in Maha (59.3 bushels/acre) for farmers with 0.5 acre or less and in Yala (43.7 and 43.8 bushels/acre) for farmers with 1.0 - 2.0 and over 6.0 acre holdings. However, in Maha the difference in yield between the largest and smallest farmers was small. Similarly in Yala the difference was small for farmers with 0.5 - 1.0 acre and for those with over 6.0 acres.

D-19 *The yields obtained with different varieties varied according to the supply of water.* They were generally higher under major irrigation for OHYVs and traditional varieties. The highest yield for NHYVs in Maha was under minor irrigation; in Yala there was little difference, - 46.3, 45.3 and 43.3 bushels/acre under major irrigation, rainfed conditions and minor irrigation respectively. It is interesting to note that under major irrigation in Maha, OHYVs had a higher yield (75.5 bushels/acre) than NHYVs (62.6 bushels/acre); in Yala the traditional varieties had a higher yield (51.1 bushels/acre) than NHYVs (46.3 bushels/acre). Under minor irrigation and rainfed conditions, however, NHYVs had the highest yields in both seasons: OHYVs had a higher yield than traditional varieties except under minor irrigation in Maha. It is interesting to note that in Yala the yield from traditional varieties varied considerably according to supply of water, - 51.1, 20.8 and 14.8 bushels/acre under major irrigation, minor irrigation and rainfed conditions. *Although these varieties are noteworthy it is difficult to establish any particular pattern of advantage. This is probably because availability of water is fairly adequate in this district except in areas under minor irrigation in Yala. Although we have included the NHYVs in this comparison it is not possible to draw inferences about them from this as the number of persons who cultivated NHYVs during these seasons was very small.*

E Sales and Income

E-1 138 operators were able to provide information on their cash expenses for Yala 1972. *The average cash outlay for paddy production was Rs.393/- per acre. On the average yield obtained for that season, this worked out at approximately Rs.9.40 per bushel.* The per acre cash outlay for the tenurial categories varied: owners - Rs.372/- (Rs.10.10 per bushel), tenants - Rs.457/- (Rs.10.30 per bushel), owner-tenants Rs.385/- (Rs.8.05 per bushel) and tenant-owners Rs.374/- (Rs.8.10 per bushel).

E-2 *Although the average size of the lowland holding was only 2.13 acres and 70% of the operators had holdings of 2.0 acres or less, the major component of the cash outlay (44%) was for hired labour. Even in very small holdings hired labour was used for most of the field operations (cf. Table 7-VII).* The proportion of cash outlay spent on hired labour varied according to tenurial status; owners - 61%, owner-tenants - 47%, tenant-owners - 29% and tenants - 26%. *This shows that owners and owner-tenants, especially the owners, had spent a considerable proportion of their cash outlay on hired labour.* The variations in the extent operated in Yala do not adequately explain this very heavy dependence of owners on hired labour. The average extents were: Owners - 1.90 acres, owner-tenants - 1.92 acres, tenant-owners - 1.72 acres and tenants - 1.30 acres. The owners were also using tractors to a greater extent. Rs.31/- per acre spent by them compared to Rs.13/-and Rs.9/- per acre by tenants and tenant-owners respectively and nothing by owner-tenants. *This suggests a preference pattern by owners to substitute hired labour and machine power for their own family labour. We are not in a position to explain why this should be so but their larger highland holdings, off-farm employment, and other social and economic factors probably play an important role.* This is an area that needs further study.

E-3 *Expenditure on cash inputs was disproportionately low when compared to the expenditure on other items, as well as to what should have been spent if the recommendation on the application of fertilizer and pesticides had been rigorously carried out.* Out of Rs.393/- spent per acre Rs.56/- was spent on cash inputs; of this Rs.43/- had been spent for fertilizer and Rs.6/- for agro-chemicals, mainly pesticides. The fertilizer should have cost almost double if the recommended amounts were used. When the reported cost is compared with the amount of fertilizer reported to have been applied it appears a little excessive. This may be due to the cost of transport and, where fertilizer had been obtained on credit from landlords, the rate of interest being included in this figure. Owners had spent most on cash inputs (Rs.64/-) and tenant-owners least (Rs.46/-). Although the amount tenants had spent (Rs.56/-) was less than what the owners spent, it was more than what had been spent by the other categories. It is surprising that tenants were able to spend even that much because of the high land rent they pay. *It should be noted, however, that although tenants had spent less than owners on cash inputs, they obtained higher yields.*

E-4 46% of the cash outlay of the tenants amounting to Rs.201/- was for land rent. This item of expenditure is responsible very largely for the high cash outlay of Rs.457/- per acre which has to be borne by the tenants. The cost per acre would have been much higher if not for the fact that, unlike the owners, the tenants utilize their family labour to a much greater extent than others. *That together with more intensive cultivation had enabled the tenants to obtain a net farm operating income of Rs.164/- per acre in Yala 1972. The very high land rent paid by tenants reduce the return on their effort. Although the level of management and productivity of land itself does not appear to be adversely affected by this, it deprives the tenants of a reasonable return. This situation requires very urgent attention.* The highest net farm operating income was obtained by owner-tenants - (Rs.284/- per acre); their return was higher due partly to higher yields obtained by them and partly to lower cost especially for field operations and land rent. The tenant-owners made Rs.275/- per acre. *The lowest returns were made by the owners - only Rs.133/-; this was because of their high operating cost and their low yields.* The operating costs were high due primarily to the cost of hiring labour. Despite the high cost of field operations the owners practised less transplanting and despite the higher level of cash inputs they obtained lower yields. The average net farm operating income was Rs.189/- per acre. *This suggests that the owners were not utilizing their resources to maximise the return from their land.*

E-5 The cash outlay per acre under major irrigation and rainfed conditions was similar, - Rs.410/- and Rs.420/- respectively. It was less under minor irrigation (Rs.340/-). While the cost of field operations was higher in areas under major irrigation than in rainfed areas, land rent was much higher in the latter. The cost of field operations was lowest under minor irrigation. The outlay on cash inputs was lowest (Rs.51/-) also in areas under minor irrigation. It was highest (Rs.66/-) under major irrigation. *The high cash outlay under major irrigation appears to be justified when we consider the net farm operating income. It was Rs.284/- per acre compared to Rs.193/- and Rs.95/- per acre in areas under minor irrigation and in rainfed areas respectively. The higher income under major irrigation was due largely to higher yield, -*

approximately 50.0 bushels/acre compared to 37.0 bushels/acre in the other areas. It was also due to the comparatively low land rent included in cash outlay because there were few tenants in areas under major irrigation and the rents paid by them were lower. The decision of the farmers in areas under minor irrigation to keep costs of field operations and cash inputs low, Rs.172/- and Rs.51/- respectively, is understandable because under the less assured conditions of water supply in those areas, they cannot expect high yields. The returns in these areas would have been higher, if not for the fairly high land rent included in the cash outlay. It is important to note that farmers in rainfed areas spend more than in areas under minor irrigation for field operations and cash inputs (Rs.222/- and Rs.53/- respectively), but obtain about the same yield as under minor irrigation. Yala 1972 was probably unusual in that the weather conditions experienced in that district during that season were adverse. This would have reduced the yield in these areas which are dependent entirely on rainfall. It is very unlikely that farmers would have undertaken heavier expenditure without the expectation of higher yields. The low returns were due mainly to these adverse conditions. They were also due to the high land rent paid by tenants; most of the tenants in this district were in rainfed areas and they generally paid half-share of the crop as land rent.

E-6 About one-third the paddy harvested was sold in both seasons, - 38% in Maha and 37% in Yala. Although proportions sold in Maha and Yala were about the same, the production was less in Yala because both the yields as well as the extent cultivated in that season were less than in Maha. The actual amounts sold reflect this lower production, - 20.0 bushels/acre and 16.2 bushels/acre in Maha and Yala respectively. Most of the paddy had been sold to the co-operative (cf.B-7).

E-7 The amount sold tended to increase as the size of the holdings increased. While farmers with holdings of 2.0 acres or less had sold 12.2 bushels/acre in Maha and 11.0 bushels/acre in Yala, those with over 2.0 acres had sold 26.7 bushels/acre in Maha and 21.3 bushels/acre in Yala. As could be expected from the higher yields under major irrigation, farmers in those areas had sold most. In Maha for example, owner cultivators in those areas had sold 21.1 bushels/acre compared to 13.7 and 5.2 bushels/acre under rainfed conditions and minor irrigation respectively. This shows how important areas under major irrigation are with regard to producing a surplus for sale. It is interesting to note that under major irrigation in both Maha and Yala, tenants had sold more than owners, - 38.7 and 34.7 bushels/acre sold by the tenants compared to 21.1 and 23.8 bushels/acre sold by the owners. While under rainfed conditions owners sold more than tenants in both seasons, under minor irrigation in Maha the tenants sold more and in Yala the owners sold more. The amounts sold by the tenants in rainfed areas in both seasons was small, - 6.6 and 6.0 bushels/acre in Maha and Yala respectively. The high land rent and lower yield would account for their small surplus.

E-8 71% of the families earned gross receipts of over Rs.2,000/- for the year 1971/72. Among them were 12% who earned over Rs.8,000/-. On the other hand, among the 30% who earned less than Rs.2,000/-, 8% had gross receipts of less than Rs.1,000/- which meant that their monthly receipts were less than Rs.90/- from all sources. The gross receipts were higher among operators with larger holdings. Most of those who earned less than

Rs.2,000/- had holdings of 1.0 acre or less. Most of them were also tenants, showing the economically weak position of the tenant cultivators.

E-9 *The sample households obtained a substantial proportion of their earnings from sources other than paddy production.* A considerable proportion of the land holdings in this district is highland and 67% of the families had at least one member employed in off-farm work even on a part-time basis. *Although these sources provided supplementary earnings, it amounted to less than Rs.1,000/- in 50% of the families, and less than Rs.500/- in 32% of the families.* 35% of the families earned over Rs.2,000/- from such sources. While 53% of the families with 2.0 acres or less earned less than Rs.1,000/-, 34% of such families earned over Rs.2,000/-. While 43% of the families with over 6.00 acres earned less than Rs.1,000/-, 43% of them earned over Rs.2,000/-. *This indicates that the families with larger holdings have higher earnings from sources other than paddy production also although this relationship is not very marked.* 45% of the families that earned over Rs.4,000/- from such sources had over 2.0 acres.

E-10 The average gross receipts from sources other than paddy production varied according to tenurial status: owners - Rs.2,549/-, owner-tenants Rs.1,897/-, tenants - Rs.1,625/- and tenant-owners - Rs.1,502/-. While 45% of the owner families earned less than Rs.1,000/- from such sources, the proportion among tenants was 57%. The figures indicate that the owners had higher earnings from such sources than the others. The variation among tenurial categories was not very marked, particularly in relation to the proportion of families earning more than Rs.2,000/-. The lowest was for owner-tenants (23%) and highest for owners (38%).

E-11 The value of paddy produced for Maha and Yala was highest for tenant-owners (Rs.2,932/-), and lowest for tenants (Rs.1,586/-). This was due partly to the difference in extent operated and partly to differences in productivity. The figures for owner and owner-tenants were Rs.2,328/- and Rs.2,799/- respectively. While the value of paddy produced by tenants was 54% that of owners before deducting land rent, it was only 36% after deducting it. The per acre value was highest for owner-tenants (Rs.1,140/-), and lowest for owners (Rs.1,042/-). There was little difference between owners and tenants in the gross value per acre but after deducting land rent, it was Rs.1,042/- for owners and Rs.710/- for tenants. *The earnings from paddy were lower for tenants not because of lower productivity but because of the payment of land rent. As the size of holding operated by tenants is smaller, the earnings of tenant families from paddy amounted to about one-third of what owner families get from that source.*

A P P E N D I C E S

APPENDIX I

Borrowers from Co-operative according to Size of Holding

Size of Holding (acres)		Total No.of operators	Borrowers who obtained Co-op. loans during Maha 1971/72	Borrowers who had an outstanding loan and did not obtain Co-op. loans during Maha 1971/72	Borrowers who had an Outstanding loan and obtained Co-op.loans during Maha 1971/72	Total
Up to 0.50	No.	22	-	1	-	1
	%	*100*	-	*5*	-	*5*
0.50 - 1.00	No.	36	-	1	2	3
	%	*100*	-	*3*	*6*	*8*
1.00 - 2.00	No	51	11	3	2	16
	%	*100*	*22*	*6*	*4*	*31*
2.00 - 4.00	No.	26	7	4	-	11
	%	*100*	*27*	*15*	-	*42*
4.00 - 6.00	No.	12	8	1	1(1)	10(1)
	%	*100*	*67*	*8*	*8*	*83*
O v e r 6.00	No.	9	5	-	1	6
	%	*100*	*56*	-	*11*	*67*
Total	No.	156	31	10	6	47
	%	*100*	*20*	*6*	*4*	*30*

(1) One operator had an outstanding loan of Rs.3,000/- borrowed to purchase a tractor.

APPENDIX II

Reasons for not obtaining loans from Co-operative according to Tenurial Categories - Maha 1971/72

Tenurial Categories		Obtained	Not Obtained	Reasons for not obtaining Co-operative loans: No Organization for loan	No knowledge about the credit scheme	Too difficult procedure	Not applied in time	Outstanding loans to Co-op.	Not interested in HYV etc.	Loans not needed	Inability to repay loans	Not a member of Co-op	Others
Owners	No.	14	46	9	5	5	1	1	-	29	4	4	2
	%	*23*	*77*	*15*	*8*	*8*	*2*	*2*	-	*48*	*7*	*7*	*3*
Tenants	No.	9	38	10	2	2	-	1	1	22	5	4	1
	%	*19*	*81*	*21*	*4*	*4*	-	*2*	*2*	*46*	*10*	*8*	*2*
Owner-Tenants	No.	5	10	2	1	-	-	1	-	7	-	2	1
	%	*33*	*67*	*14*	*7*	-	-	*7*	-	*50*	-	*14*	*7*
Tenant-Owners	No.	9	24	10	1	1	-	3	-	25	-	1	1
	%	*27*	*73*	*31*	*3*	*3*	-	*9*	-	*47*	-	*3*	*3*
All Tenurial Categories	No.	37	119	31	9	8	1	6	1	83	9	11	5
	%	*24*	*76*	*20*	*6*	*5*	*1*	*4*	*1*	*47*	*6*	*7*	*3*

- Indicates nil.

APPENDIX III

Cash Outlay per acre for Paddy Cultivation - Yala 1972*

No. of farmers	136
Sown area (acres)	231

Field Operators	Cost of Hiring			
	Tractor Rs.	Buffalo Rs.	Labour Rs.	Total Rs.
I. Field Operations				
1. Land Preparation	11	34	33	78
2. Planting and Sowing	-	-	29	29
3. Weeding	-	-	7	7
4. Irrigation and Top Dressing	-	-	2	2
5. Harvesting	-	-	23	23
6. Threshing	6	9	16	31
Sub total	17	43	110	170
7. Fuel (for Tractor)	2	-	-	2
8. Food for Hired Labourers	-	-	62	62
Sub total	19	43	172	234
II. Material Inputs				
1. Seed	-	-	-	7
2. Fertilizer	-	-	-	43
3. Agro-chemicals	-	-	-	6
Sub total	-	-	-	56
III. Transport (Paddy)				3
IV. Land Rent				
1. Land Rent	-	-	-	2
2. Ande Cultivation	-	-	-	94
3. Acreage Tax	-	-	-	4
Sub total	-	-	-	100
Total Expenditure				393

*Excludes particulars of 2 farmers, one of whom had not furnished information relating to expenses on cash outlay, and another who had reported complete crop failure.

APPENDIX IV

Cash Outlay per Acre for Paddy Cultivation according to Tenurial Category - Yala 1972

	Owners[1]		Tenants[2]		Owner-Tenants		Tenant-Owners	
No. of farmers	54		37		13		32	
Extent cultivated (acres)	102		48		25		55	
	Expenses							
	Rs.	%	Rs.	%	Rs.	%	Rs.	%
1. Field Operations	300	*81*	185	*40*	231	*60*	148	*40*
i. Tractor (inc.fuel cost)	31	*8*	13	*3*	-	-	9	*2*
ii. Buffalo	42	*11*	55	*12*	49	*13*	33	*9*
iii. Hired labour								
(a) Wages	159	*43*	55	*12*	123	*32*	55	*15*
(b) Food	68	*18*	62	*14*	59	*15*	51	*14*
2. Material Inputs	64	*17*	56	*12*	49	*13*	46	*12*
3. Miscellaneous								
i. Ande, Acreage Tax, Land Rent	4	*1*	210	*46*	103	*27*	179	*48*
ii. Transport	4	*1*	6	*1*	2	*1*	1	..
Total	372	*100*	457	*100*	385	*100*	374	*100*

[1]Excludes particulars of one farmer who had not furnished information relating to expenses on cash outlay.

[2]Excludes particulars of one farmer who had reported complete crop failure.

- Indicates Nil.

.. Indicates less than 1%

APPENDIX V

Cash Outlay per Acre for Paddy Cultivation according to Water Supply - Yala 19

	Major Irrigation[1]		Minor Irrigation[2]		Rainfed	
No. of farmers	20		50		66	
Extent cultivated (acres)	79		71		81	
Expenses						
Items of Expenditure	**Amount**	**%**	**Amount**	**%**	**Amount**	**%**
I. Field Operations	297	*72*	172	*51*	222	*53*
i. Tractor (inc.fuel cost)	46	*11*	3	*1*	5	*1*
ii. Buffalo	40	*10*	39	*11*	50	*12*
iii. Hired Labour						
(a) Wages	160	*39*	65	*19*	97	*23*
(b) Food	51	*12*	65	*19*	70	*17*
II. Material Inputs	66	*16*	51	*15*	53	*13*
III. Miscellaneous						
i. Ande, Acreage Tax, Land Rent	41	*10*	115	*34*	143	*34*
ii. Transport	6	*2*	2	*1*	2	..
Total	410	*100*	340	*100*	420	*100*

[1]Excludes particulars of one farmer who had not furnished information on cash outlay.

[2]Excludes particulars of one farmer who reported complete crop failure.

..Indicates less than 1%