

SOCIO ECONOMIC AND AGRICULTURAL BENCHMARK SURVEY
UNIT 2(WEWMEDAGAMA) AND UNIT 3(DIYAWIDDAGAMA)
BLOCK 302, ZONE 3, SYSTEM 'C'
IN THE ACCELERATED MAHAWELI PROGRAMME

May, 1987

JAPAN INTERNATIONAL COOPERATION AGENCY

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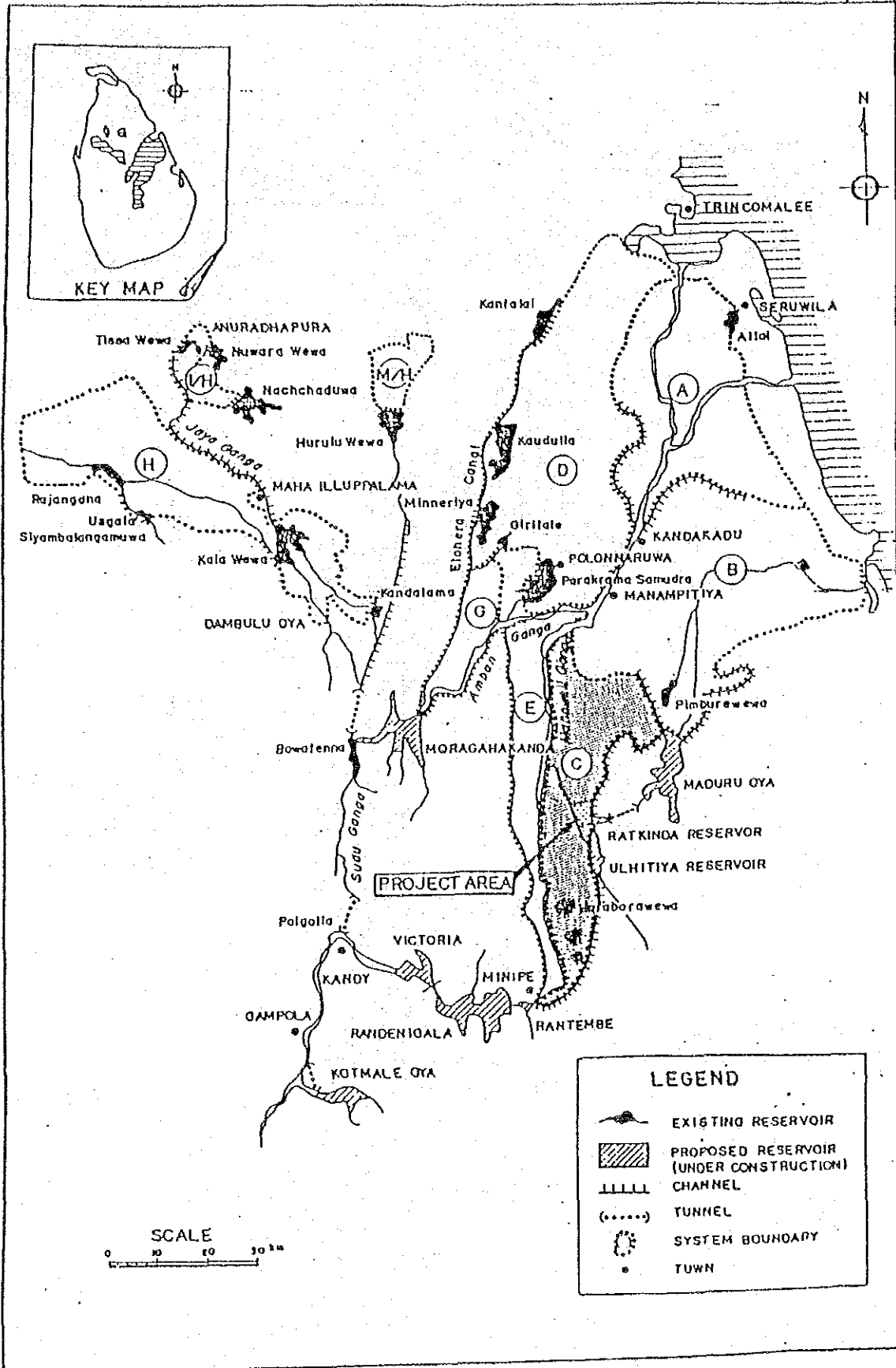


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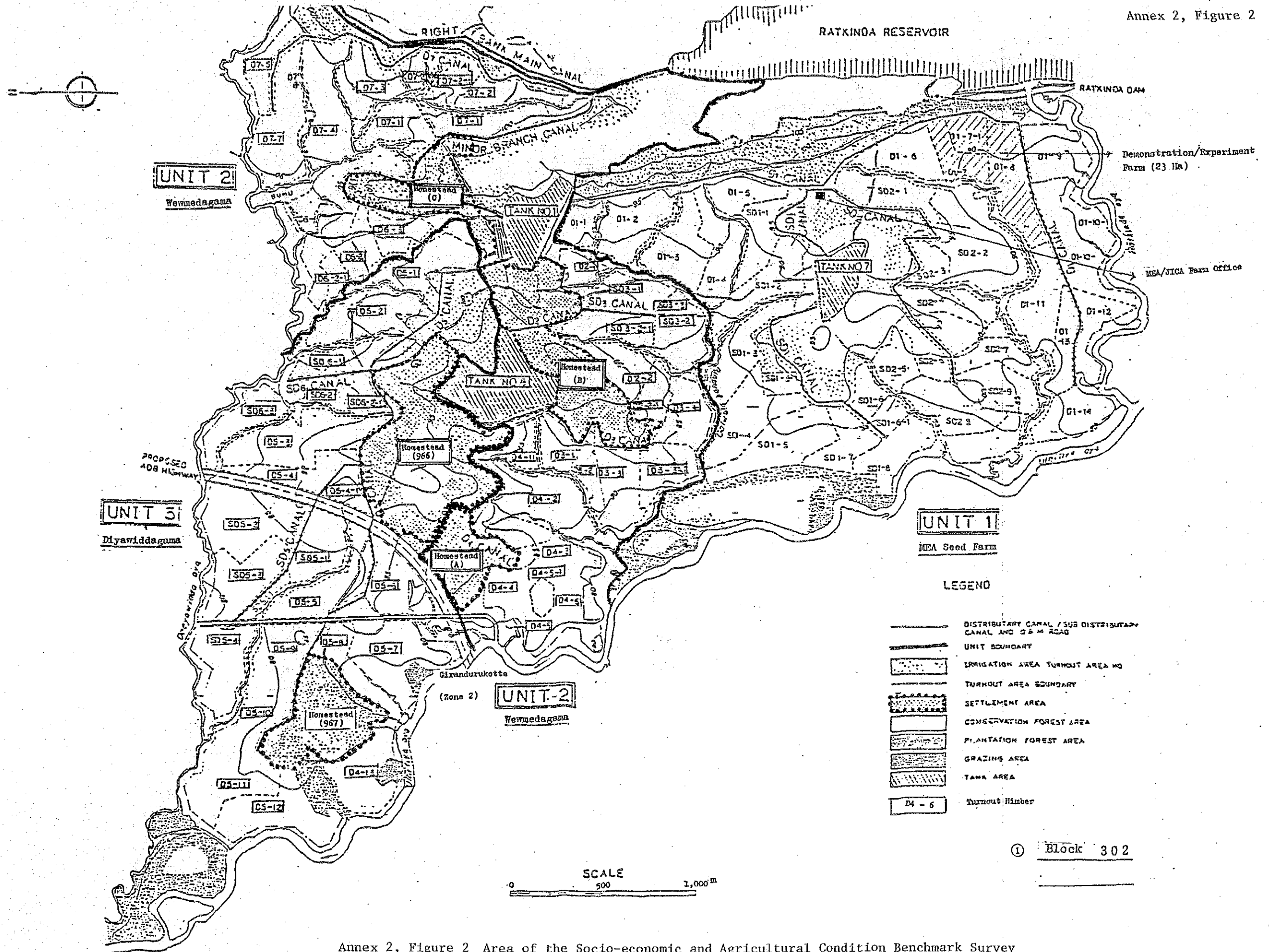
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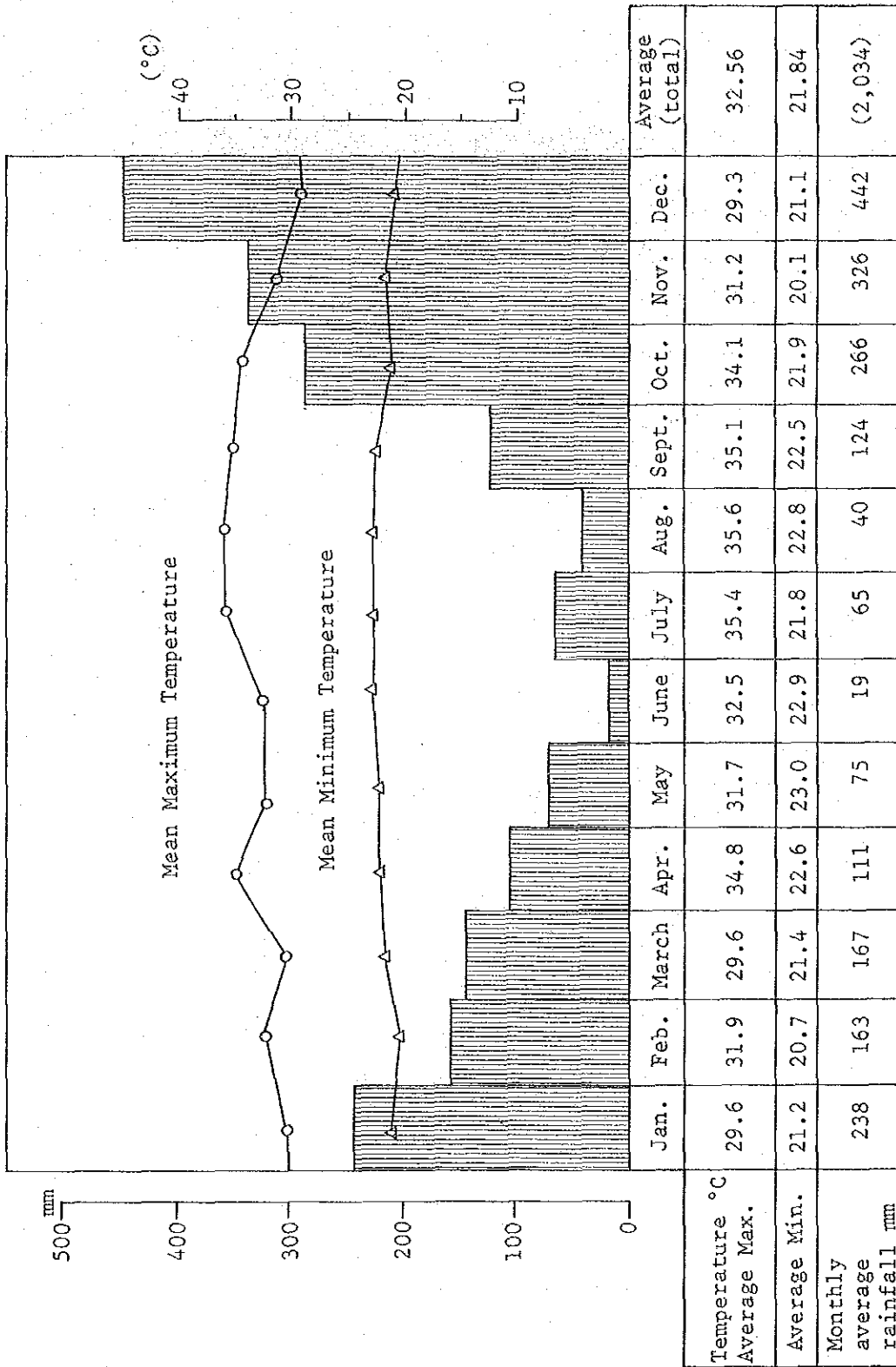
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Annex 1, Figure 1 Area under the Accelerated Mahaweli Programme



Annex 2, Figure 2 Area of the Socio-economic and Agricultural Condition Benchmark Survey in Unit 2 and Unit 3, Block 302, Zone 3, Mahaweli System 'C'



Annex 3, Figure 3 Temperature & Rainfall at Girandurukotte

Note: Jan. 1976 - Apr. 1981: Alutharam Research Centre

Sept. 1981 - June 1986: Agricultural Research Centre, Girandurukotte

Source: Agricultural Research Centre, Girandurukotte

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BLOCK 302, ZONE 3, SYSTEM 'C'

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FEBRUARY, 1987

TAKAO SATO

EXPERT ON AGRONOMY

JAPAN INTERNATIONAL COOPERATION AGENCY

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February 1987



TAKAO SATO

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Chapter I INTRODUCTION

1-1 The Survey Area

The Socio Economic and Agricultural Benchmark Survey was directed by me in Unit 2 (Nuwmedagama) and Unit 3 (Diyawiddagama), Block 302, Zone 3, System 'C' of the Accelerated Mahaweli Development Area, conducted from February to July, 1986.

Block 302 was established as a 'Pilot Farm' through grants from the Government of Japan received in March 1983 and October, 1984. The net irrigable area of the project is 673 hectares of which 277 hectares (Unit 1) come under a government seed farm managed by the MEA. Unit 2 and 3 comprise of 202 hectares and 194 hectares respectively. This pilot farm in System 'C' also serves the purpose of a demonstration farm, where new techniques of land consolidation with 6-8 liyaddas per hectare and concrete lining of distributory and field channels are displayed.

Farmers were settled in Unit 2 and Unit 3 under the Mahaweli Programme. Each family has been given 1 ha of paddy land 0.2 ha of highland for home-stead.

A 23 ha Demonstration and Experiment Farm was established in the MEA Seed Production Farm in Unit 1 under the Sri Lanka - Japan collaboration funding in February 1985. The purpose of this farm is to demonstrate

- (i) new techniques of irrigated farm management with a better combination of high yielding varieties to produce high quality rice for consumption.
- (ii) Cultivation of other appropriate crops which contribute to further farmers' income in the project area.
- (iii) better on farm water management techniques for (i) and (ii) above.

The techniques developed and tried out in the Experimental Farm are to be demonstrated and proved in the Demonstration Farm. These developments are to be extended to the farmers in Unit 2 and 3 through the extension arm of the MEA.

The survey area is located on the boundary of the dry zone and intermediate zone (semi dry zone). According to the rainfall records from 1976 to 1986 at the Agricultural Research Station, Girandurukotte maintained annual precipitation varies from 1,517 mm to 2,987 mm with an average of 2,034 mm, 75% of the rain falls during the Maha season and the balance 25% in Yala season. Therefore it has a resemblance to the typical dry zone rain fall pattern. Yala cultivation is restricted to a very small area due to nonavailability of irrigation water. (see Annex 3)

1-2 The Study

This study was undertaken to establish a bench mark, pertaining to the socio economic and agricultural situation at the inception of Unit 2 (Wewmedagama) and Unit 3 (Diyawiddagama) with a view of future comparison to determine the effects of the development programmes undertaken in the Project area.

1-3 Sampling Procedure and Data Collection

The Socio Economic study was based on a census covering the total members of farmers in the area i.e. 396 farmers, 202 from Unit 2 and 194 farmers from Unit 3.

The study on agricultural situation was based on a sample survey covering 1/3 of the total number of farmers. i.e. 65 farmers from each Unit selected at random from each turn out group.

The Water Management Survey was conducted by interviewing 45 leaders of turn out groups.

The method employed was the filling up of a 'Questionnaire' by an interviewer, on the answers obtained from farmers to the questions directed at them. 4 trained interviewers were employed on casual bases in each Unit, they were further guided by the questionnaire and the supervising officers.

The Socio Economic Survey was conducted in March and April 1986 and Agricultural and Water Management Survey in May 1986.

Chapter II SOCIO ECONOMIC SURVEY

2. General Characteristics of the Survey Area

2-1 Previous Conditions of the Settlers

2-1-1 Origin

198 out of 202 farmers settled in Unit 2 are evacuees from the 17 villages under the Kotmale dam and all the 194 farmers in Unit 3 come from 42 villages and a town in Amparai district. They have been settled through the Land Kachcheri. (Table 2-1-1(1), Table 2-1-1(2))

2-1-2 Previous occupation

The percentages of settlers who were occupied in farming prior to their arrival in Unit 2 and Unit 3 are 51.5% and 79.4% respectively.

This difference has been due to the fact that Unit 2 comprised of evacuees from villages submerged under Kotmale reservoir who have been engaged in different trades before arrival and Unit 3 comprised of settlers selected from among applicants. (Table 2-1-2)

2-1-3 Annual household income before settling down in Mahaweli System 'C' area

Table 2-1-3 indicates in Unit 2 the annual household income before settling down ranges from Rs.3,000/= to Rs.45,000/= with average Rs.9,131/= per household. In Unit 3 corresponding figures were Rs.2,000/= to Rs.36,000/= and average of Rs.9,430/=. There were 39 (20.1%) households in Unit 2 and 11 (5.8%) in Unit 3 generating an annual income less than Rs.3,600/=. Families earning less than Rs.300/= a month were entitled to get the food stamps issued by the government of Sri Lanka at the time of settling down in 1984.

Table 2-1-1(1) Names of villages and the number of families from each village settled down in Unit 2

No.	Name of village	No. of settlers
	<u>Kotmale</u>	
1	Ambahela	01
2	Ambathalawa	02
3	Galwalakadura	01
4	Cankewala	24
5	Handapangama	02
6	Handunuwewa	33
7	Kalapitiya	10
8	Keridiwela	09
9	Maddegoda	13
10	Meddatana	01
11	Niyamgamdara	08
12	Otalawa	41
13	Paladoraella	01
14	Rategammedda	06
15	Sangilipalama	37
16	Toysi colony	02
17	Wathalawa	04
	Not available	03
	<u>Ampara District</u>	
18	Ambagahawella	02
19	Uhana	01
20	Colombo	01
	Total	202

Table 2-1-1(2) Names of villages and the number of families
from each village settled down in Unit 3

No.	Name of village	No. of settlers	No.	Name of village	No. of settlers
1	Amparai Town	21	21	Nawagiriyama	01
2	Ambagahawella	02	22	Namaloya	06
3	Central Camp	03	23	Nugelanda	03
4	Chadayangala	01	24	Palankaduwa	02
5	Chadayantalawa	02	25	Parakahakelle	03
6	Colony	01	26	Polwatte	05
7	Dematemal Pellawa	05	27	Rajagalatenne	06
8	Galhitiyagoda	09	28	Rajagama	04
9	Galhitiyagala	02	29	Rukunagama	01
10	Galapitagala	03	30	Senagama	03
11	Gemunupara	01	31	Siyabalawewa	02
12	Gonagala	05	32	Suduwella	01
13	Gonagolla	13	33	Subadagama	02
14	Heranla	01	34	Tissapura	05
15	Hemedurawa	01	35	Udayagiriya	01
16	Inginiyagala	02	36	Udayapura	01
17	Kohombana	03	37	Uhana	17
18	Kumaragama	05	38	Walagampura	13
19	Maluwatte	03	39	Wavinna	02
20	Mayadunna	06	40	Weeragoda	13
			41	Weerankatagoda	09
			42	Weheragala	03
			43	Wijayapura	04
				Total	194

Table 2-1-2 Occupation pattern of settlers prior to their arrival in Unit 2 and Unit 3

Kind of occupation	Unit 2	Unit 3
Agriculture	104 (51.5)	154 (79.4)
Nonagriculture	98 (48.5)	40 (20.6)
Laboures	47	16
Mechanics	09	06
Drivers	01	06
Watchers	04	03
Carpenters	02	01
Masons	08	01
Lorry cleaner	01	-
Sawman	01	-
Native physician	01	-
Village merchant	03	01
Traders	16	04
Managers, Clerks	04	02
Total	202 (100)	194 (100)

Note: Figures in parenthesis are percentages

Table 2-1-3 Annual household income before settling down in Mahaweli System 'C' aera

(Rs.)

Income class		Less than 3,600		3,601 - 8,400		8,401 - 10,000		10,001 - 15,000		15,001 - 20,000	
		No.	%	No.	%	No.	%	No.	%	No.	%
No. of household holds	Unit 2	39	20.1	80	41.2	13	6.7	35	18.1	13	6.7
	Unit 3	11	5.8	102	54.0	34	18.0	22	11.6	12	6.4

Income class		20,001 - 30,000		Over 30,001		Total		Maximum	Minimum	Average
		No.	%	No.	%	No.	%	Amount	Amount	Amount
No. of household holds	Unit 2	11	5.7	3	1.5	194	100	45,000	3,000	9,131
	Unit 3	5	2.6	3	1.6	189	100	36,000	2,000	9,430

2-2 General Household Information

2-2-1 Number of family members

80.4% of the farm families in Unit 2 had 3-6 members per family and 84.5% of the farm families in Unit 3 had 5-9 members per family. Unit 3 farm families are generally much larger than that of Unit 2.

Table 2-2-1 Number of family members

No. of family members		01	02	03	04	05	06	07	08
No. of families	Unit 2	02	09	21	58	41	36	12	08
	Unit 3	0	02	04	12	30	39	48	27
No. of family members		09	10	11	12	Total of families	Total of members	Average of members	
No. of families	Unit 2	05	02	02	01	194	986	5.1	
	Unit 3	20	05	05	02	194	1,322	6.8	

2-2-2 Age structure of family members

Average age of Unit 2 and Unit 3 25.0 years and 21.5 years respectively with Unit 2 having more senior family. 37.1% of the population in Unit 2 was under 14 years of age and the corresponding figure for Unit 3 was 42.4%. The fact that there were more children in Unit 3 contributed to the largeness of its families over that Unit 2.

Unit 2 has 28 persons (2.8%) who are over 65 years of age. On the corresponding figure for Unit 3 is 5 persons (0.4%). (Table 2-2-2, Figure 2-2-2)

Table 2-2-2 Age structure of family members in Unit 2 and Unit 3

Age	Unit 2				Unit 3			
	Male		Female		Male		Female	
	No.	%	No.	%	No.	%	No.	%
0 - 04	57	11.3	56	11.6	66	9.3	52	8.5
05 - 09	70	13.9	67	13.9	107	15.1	120	19.6
10 - 14	60	11.9	56	11.6	146	20.6	119	19.4
15 - 19	51	10.1	46	9.5	104	14.6	87	14.2
20 - 24	45	8.9	47	9.7	62	8.7	32	5.2
25 - 29	39	7.8	52	10.8	20	2.8	18	2.9
30 - 34	38	7.6	45	9.3	7	1.0	61	10.0
35 - 39	38	7.6	29	6.0	52	7.3	85	13.9
40 - 44	18	3.6	19	3.9	76	10.7	21	3.4
45 - 49	24	4.8	16	3.3	49	6.9	13	2.1
50 - 54	21	4.2	16	3.3	10	1.4	1	0.2
55 - 59	11	2.2	17	3.5	7	1.0	0	0
60 - 64	14	2.8	6	1.2	2	0.3	0	0
65 - 69	4	0.8	5	1.0	1	0.1	1	0.2
70 - 74	7	1.4	2	0.4	1	0.1	1	0.2
75 - 79	2	0.4	2	0.4	0	0	1	0.2
Over 80	4	0.8	2	0.4	0	0	0	0
Total	503	100	483	100	710	100	612	100

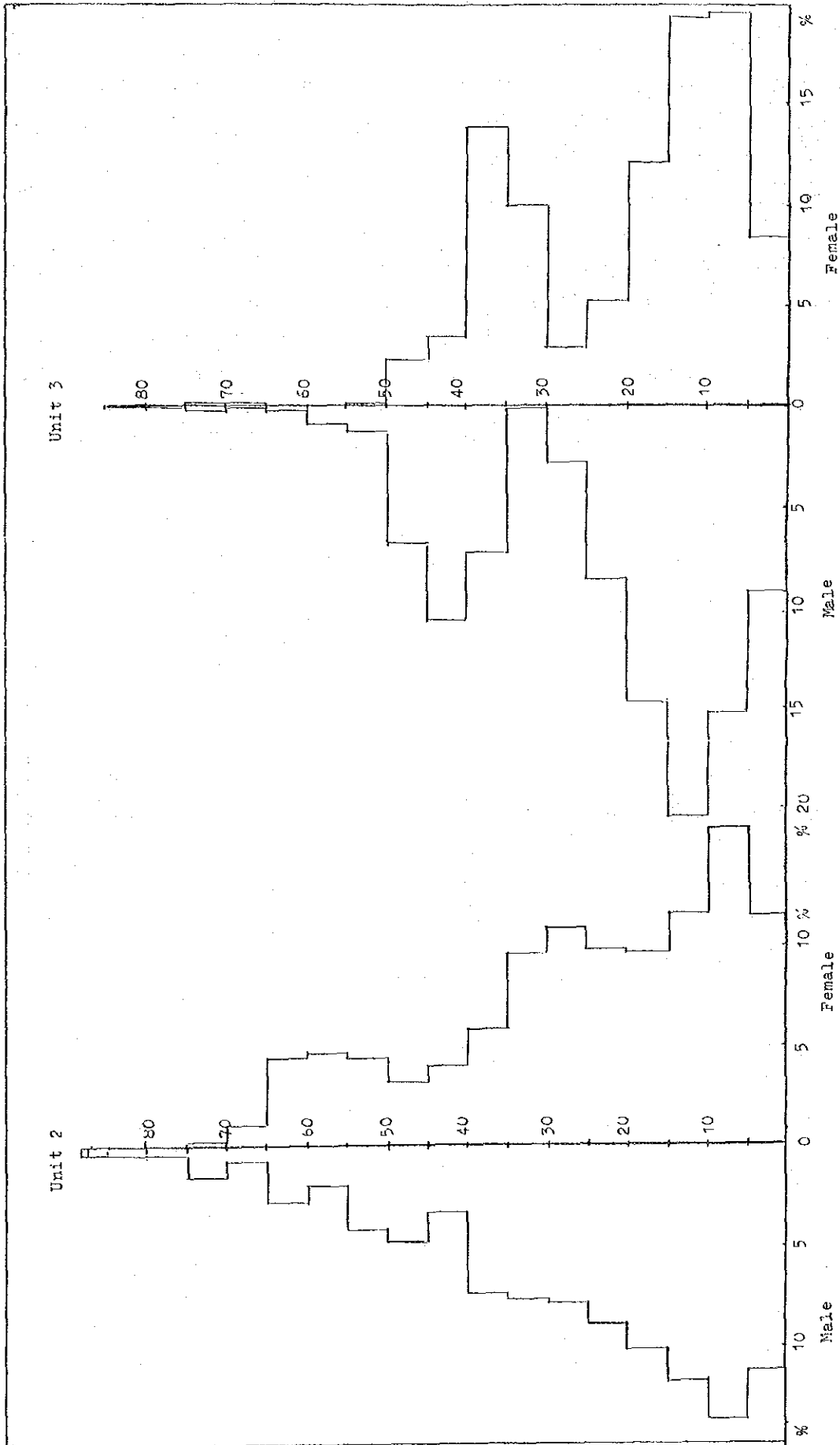


Figure 2-2-2. Age structure of family members in Unit 2 and Unit 3

2-2-3 Masculinity ratio

Masculinity ratio in Unit 2 is 104.1 and it is almost the same as the 1984 National average (104). The ratio for Unit 3 is a higher 116. (Table 2-2-3-1)

Young people of marriageable age from 15 to 29 years is observable in Table 2-2-3-2 and Figure 2-2-3. The masculinity ratios for this age group in Unit 2 and Unit 3 are 157.7 and 151.3, and indicates a wider disparity compared to the national average of 133.6 for this age group. As a result of this situation the young men will experience a dearth of brides from the locality, since there are two young men competing to hold the hand of each young maiden in Unit 2 and Unit 3.

Table 2-2-3-1 Masculinity ratio

		Unit 2	Unit 3	* Sri Lanka Census of population 1981
Population	M	503	710	7,568 (Thousands)
	F	483	612	7,280
	Total	986	1,322	14,848
Masculinity ratio		104.1	116.0	104.0

Note: *Source (Statistical Pocket Book, 1985)

Table 2-2-3-2 Number of unmarried males and females in marriageable (from 15 years to 29 years)

Age groups		15 - 19	20 - 24	25 - 29	Total
Unit 2	Male	51	39	22	112
	Female	43	25	3	71
	Masculinity ratio	118.6	156.0	733.3	157.7
Unit 3	Male	97	60	14	171
	Female	83	24	6	113
	Masculinity ratio	116.9	250.0	233.3	151.3
Sri Lanka (Consus 1981)		(Thousand)			
	Male	807.4	630.1	325.8	1,763.3
	Female	710.3	418.0	191.4	1,319.7
	Masculinity ratio	113.7	150.7	170.2	133.6

Table 2-2-4 Age of husbands and wives

(1) Husbands

Age groups		21-25	26-30	31-35	36-40	41-45	46-50
No. of families	Unit 2	2	17	28	29	18	25
	Unit 3	0	1	7	68	65	39

Age groups		51-55	56-60	over 61	Total	Average
No. of families	Unit 2	17	10	18	166	43.9
	Unit 3	9	0	0	188	42.5

(2) Wives

Age groups		21-25	26-30	31-35	36-40	41-45	46-50
No. of families	Unit 2	16	43	30	21	19	11
	Unit 3	5	20	72	70	17	10

Age groups		51-55	56-60	over 60	Total	Average
No. of families	Unit 2	44	14	13	181	39.0
	Unit 3	0	0	0	194	35.6

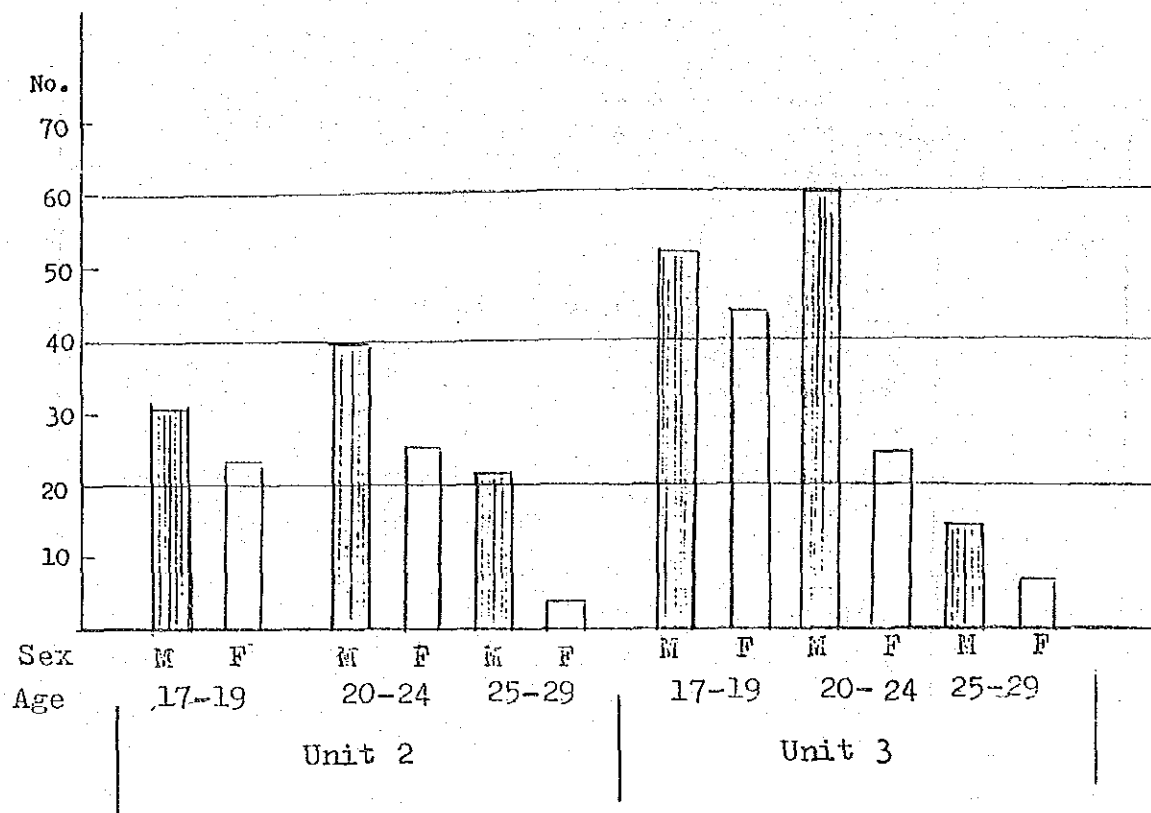


Figure 2-2-3 Number of unmarried males and females in marriageable age (from 15 to 29 years)

2-2-4 Age of husbands and wives

In Unit 2 husbands under each age group between 25-55 years are evenly distributed. 10% of the husbands are above 61 years of age. The average age in Unit 2 is 43.9 years. In Unit 3 most of the husbands were in the middle age of 36-55 years and there was none under 25 and above 56 years of age. The average age of the husbands in Unit 3 is 42.5 years indicating a similarity to that of Unit 2.

There were young wives in both Units who are in their twenties. However there are 71 (41%) wives in Unit 2 who are over 51 years of age and in contrary to this all the wives in Unit 3 were under 51 years of age. (Table 2-2-4)

2-2-5 Educational status of husbands and wives

Educational status of husbands and wives is shown in Table 2-2-5. Nonschooling among wives were more than among the husbands in both Units. In case of nonschooling husbands, Unit 3 exceeded Unit 2 by only 3 persons. Unit 2 had 10 wives more than Unit 3 who had not been to school. Nonschooling was observed mostly in the senior age groups of husbands and wives. In Unit 2 all husbands who have not been to school were over 40 years of age. In Unit 3, 90% of the husbands who have not been to school were aged over 40 years. In case of nonschooling wives, in Unit 2 there were wives who have not been to school even in the age group of 20 - 30 years, 82% of the nonschooling wives were above 40 years. In Unit 3, 96% of them were in the age group of 30 - 40 years.

There were more wives who have passed to General Certificate of Education (Ordinary Level examination) than the husbands in both Units. There were one or two who have passed the General Certificate of Education (Advance Level examination) but none who were graduates.

Table 2-2-5-1 Educational status of husbands and wives

(1) Husbands

Education	No schooling	Primary school					Secondary school					G C E (O.L.)	G C E (A.L.)	Total	Average (grade)
		1	2	3	4	5	6	7	8	9	10				
	0														
No.	07	0	16	09	16	31	31	11	19	03	04	16	02	165	5.7
Unit 2	(%)	72					68					(9.7)	(1.2)	(100)	
		(43.6)					(41.2)								
No.	10	02	14	21	18	32	21	14	36	02	04	13	01	188	5.5
Unit 3	(%)	87					77					(6.9)	(0.5)	(100)	
		(46.3)					(41.0)								

(2) Wives

Education	No schooling	Primary school					Secondary school					G C E (O.L.)	G C E (A.L.)	Total	Average (grade)
		1	2	3	4	5	6	7	8	9	10				
	0														
No.	33	0	17	15	17	30	20	08	08	06	10	24	01	189	5.3
Unit 2	(%)	79					52					(12.7)	(0.5)	(100)	
		(41.8)					(27.5)								
No.	23	0	13	17	17	29	14	12	25	08	12	23	01	194	5.7
Unit 3	(%)	76					71					(11.8)	(0.5)	(100)	
		(39.2)					(36.6)								

Table 2-2-5-2 Distribution of non schooling husbands and wives by age

Age groups			25-29	30-39	40-49	50-59	Over 60	Total
Husband	Unit 2	No.	0	0	02	03	02	07
	Unit 3	No.	0	0	09	01	0	10
Wives	Unit 2	No.	03	03	05	11	11	33
	Unit 3	No.	01	19	03	0	0	23

Table 2-2-6 Number of children per family

No. of Children of per family	0		01		02		03		04		05		06		07		08		09		10		11		12	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Unit 2	No.	11	29	55	40	30	20	06	03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	(%)	(5.7)	(14.9)	(28.4)	(20.6)	(15.5)	(10.3)	(3.7)	(1.5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Unit 3	No.	01	05	15	34	50	42	26	11	05	03	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01
	(%)	(0.5)	(2.6)	(7.7)	(17.5)	(25.8)	(21.6)	(13.4)	(5.7)	(2.6)	(1.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)

No. of Children of per family	Total of children		Average per family	Total no. of families	
	No.	% of population			
Unit 2	No.	536	54.4	2.8	194
	(%)	(100)			(100)
Unit 3	No.	869	65.7	4.5	194
	(%)	(100)			(100)

2-2-6 Number of children under 14 years of age per family

In Unit 2, 11 families had no children under 14 years of age, while there were 3 families having 7 such children per family. 7 is the largest number of children under 14 years any family had in Unit 2. Average number of children under 14 years per family was 2.8. These children composed 54.4% of the total population in Unit 2.

In Unit 3, one family had no children under 14 years of age. One family had 12 of them and the average number of children under 14 years per family was 4.5. They composed 67.5% of total population in Unit 3. (Table 2-2-6, Fig. 2-2-1)

2-2-7 Family labour force

Since all farmers were new settlers, there was a dearth of family labour for the intensive management of the 1 ha paddy cultivation. Average family labour in Unit 2 and Unit 3 were 2.46 and 2.07 persons respectively. (Table 2-2-7)

Table 2-2-7 Availability of family labour

No. of family labour		01	02	03	04	05	06	Average
No. of families	Unit 2	01	124	37	13	02	04	2.46
	Unit 3	01	170	18	03	0	0	2.07

2-2-8 Relatives

79% of the farmers in Unit 2 were inter-related and 40% of these were connected as parents' and children's families. In Unit 3 there were only 9 inter-related families. Out of which only 2 families were connected as parents' and children's families. (Table 2-2-8)

Table 2-2-8 Relatives living with settler families

No. of relatives		0	01	02	03	04	Total
Unit 2	No. of families	41	103	33	15	02	194
	Percentage	(21.1)	(53.1)	(17.0)	(7.8)	(1.0)	(100)
Unit 3	No. of families	185	08	01	0	0	194
	Percentage	(95.4)	(4.1)	(0.5)	0	0	(100)

2-3 Housing

2-3-1 Floor area and number of rooms

The survey area is characterised by the presence of a large number of small houses. Distribution of houses according to the floor area and the number of rooms is shown in Table 2-3-1-1 and Table 2-3-1-2. The proportion of houses with floor area less than 39.9 sq. meters is 66.8% in Unit 2 and 85.0% in Unit 3. There were 20 houses with a floor area of over 60 sq. meters in Unit 2, but only one such house in Unit 3. Average size of house is 37.8 sq. meters in Unit 2 and 28.9 sq. meters in Unit 3.

Table 2-3-1-3 shows quantity of money brought in at the time of settlement, in Unit 2 ranges from Rs.250/= to Rs.75,000/= with average Rs.12,286/= and in Unit 3 the corresponding figures were Rs.250/= to Rs.35,000/= average of Rs.6,448/=. 112 (58.0%) households in Unit 2 and 158 (84.0%) in Unit 3 quantity of brought in at the time of settlement less than Rs.10,000/=.

Relationship between the size of house and the amount of money brought in at the time of settlement is indicated in Figure 2-3-1 (1) and 2-3-1 (2). A positive relationship seems to occur between the size of house and the amount of money brought in at the time of settlement. The correlation coefficient r for Unit 2 and Unit 3 were 0.473 and 0.627 respectively. Unit 2 settlers are evacuees from submerged villages who have been compensated for the houses lost under water. It

could be thought that this compensation money along with the money realized through sale of realized items was used as the construction capital for houses in the settlement.

Average number of rooms per house in Unit 2 as well as in Unit 3 is 2.8. However the number of occupants to per room was 1.8 and 2.5 for Unit 2 and Unit 3 respectively.

Table 2-3-1-1 Distribution of the houses by floor area

Floor area (sq. m)	Less than 19.9		20 - 29.9		30 - 39.9		40 - 49.9		50 - 59.9		60 - 69.9		Over 70.0		Total No. of households	Average area sq. m
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)		
Unit 2	No.	0.9	77	43	25	19	14	06	193						193	37.5
	(%)	(4.7)	(39.9)	(22.2)	(8.8)	(7.3)	(3.1)	(100)								
Unit 3	No.	33	91	41	18	10	0	01	194					194		28.9
	(%)	(17.0)	(46.9)	(21.1)	(9.3)	(5.2)	0	(0.5)	(100)					(100)		

Table 2-3-1-2 Distribution of houses according to the number of rooms

	No. of rooms											Total No. of households	Average of rooms	No. of occupants per room			
	1	2	3	4	5	6	7	8	9	10	11						
Unit 2	No.	78	60	30	11	01	01	193						193			1.82
	(%)	(40.4)	(31.1)	(15.6)	(5.7)	(0.5)	(0.5)	(100)						(100)			2.78
Unit 3	No.	83	68	34	02	02	0	194						194			2.48
	(%)	(42.8)	(35.1)	(17.5)	(4.0)	(1.0)	0	(100)						(100)			2.75
														527			2.78
														534			2.75

Table 2-3-1-3 Quantity of money brought in at the time
of settlement

(Rs.)

Brought money class		Less than 1,000		1,001-5,000		5,001 - 10,000		10,001 - 15,000		15,001 - 20,000	
		No.	%	No.	%	No.	%	No.	%	No.	%
No. of house-holds	Unit 2	18	9.3	49	25.4	45	23.3	30	15.6	17	8.8
	Unit 3	23	12.2	92	48.9	43	22.9	19	10.1	1	0.5

Brought money class		20,001 - 30,000		Over 30,001		Total		Maximum	Minimum	Average
		No.	%	No.	%	No.	%	Amount	Amount	Amount
No. of house-holds	Unit 2	23	11.9	11	5.7	193	100	75,000	250	12,286
	Unit 3	9	4.8	1	0.5	188	100	35,000	250	6,488

2-3-2 Building materials

Floor: In both Units most of the houses have floors applied with cow dung. A good number of houses in Units 2 have cement floors.

Walls: 90% of the houses in both Units have clay walls (wattle and daub).

Roof : Cadjan, grass, straws, metal sheets, asbestos and tiles etc. have been used as roof material. Quantity of roofing material used in Unit 2 is superior to that of Unit 3. These are more houses with metal sheets in Unit 2 followed by Cadjan, grass and straw. There were 4 houses covered with tiles and asbestos. 72.7% of the houses in Unit 3 are covered with cadjan, grass or straw. The roof of these houses in the process of getting replaced by metal sheets.

Wells: In contrast to roofing, Unit 2 did not have as many wells as in Unit 3. The percentage of permanent well owners in Unit 2 and Unit 3 were 23.3% and 21.1% respectively not indicating a big difference. However when it comes to households not having wells the figures stood at 34 in Unit 2 against 1 in Unit 3. There were some temporary wells dug in both Units.

(Table 2-3-2)

Table 2-3-2 Distribution of houses according to the building materials and wells

Building materials		Floor			Walls				
		Cement	Cement and mud	Mud	Clay	Clay & briks	Briks	Woods	Woods & clay
Unit 2	No.	16	41	136	174	7	1	4	7
	(%)	(8.3)	(21.2)	(70.5)	(90.3)	(3.6)	(0.5)	(2.0)	(3.6)
Unit 3	No.	18	3	173	177	9	8	0	0
	(%)	(9.3)	(1.5)	(89.2)	(91.2)	(4.6)	(4.1)	0	0

Building materials		Roof					Total
		Tile, asbesto	Tile or asbesto & metal sheets	Metal sheets	Metal sheets & cajan, grass or straw	Cajan, grass or straw	
Unit 2	No.	1	3	81	54	54	193
	(%)	(0.5)	(1.5)	(42.0)	(28.0)	(28.0)	(100)
Unit 3	No.	6	1	29	17	141	194
	(%)	(3.1)	(0.5)	(14.9)	(8.8)	(72.7)	(100)

Conditions		Wells			Total
		Permanent	Temporary	Nothing	
Unit 2	No.	45	114	34	193
	(%)	(23.3)	(59.1)	(17.6)	(100)
Unit 3	No.	41	152	1	194
	(%)	(21.1)	(78.4)	(0.5)	100

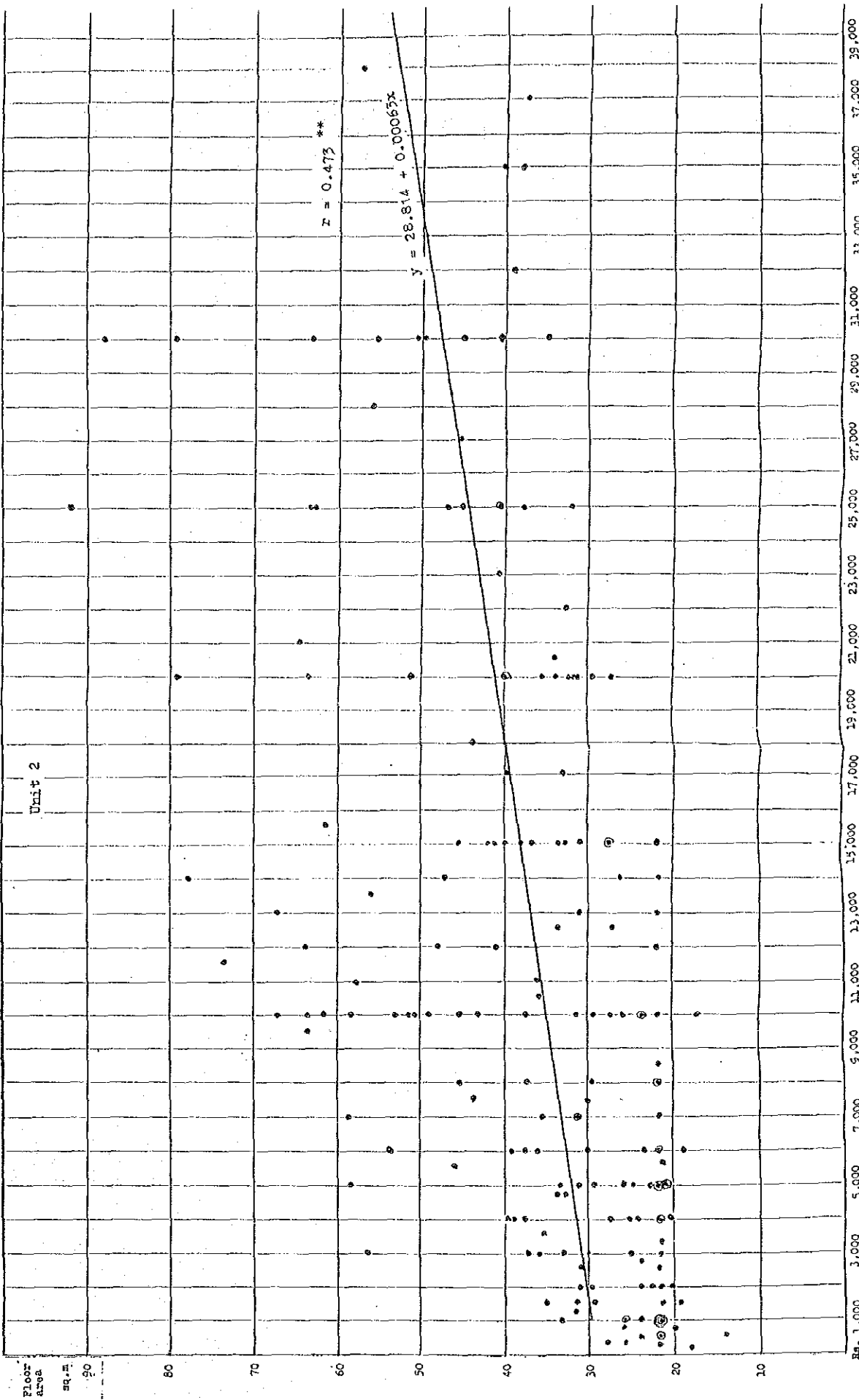


Figure 2-3-1 (1) Correlation of floor area and amount of the money brought in at the time of settlement (Unit 2)

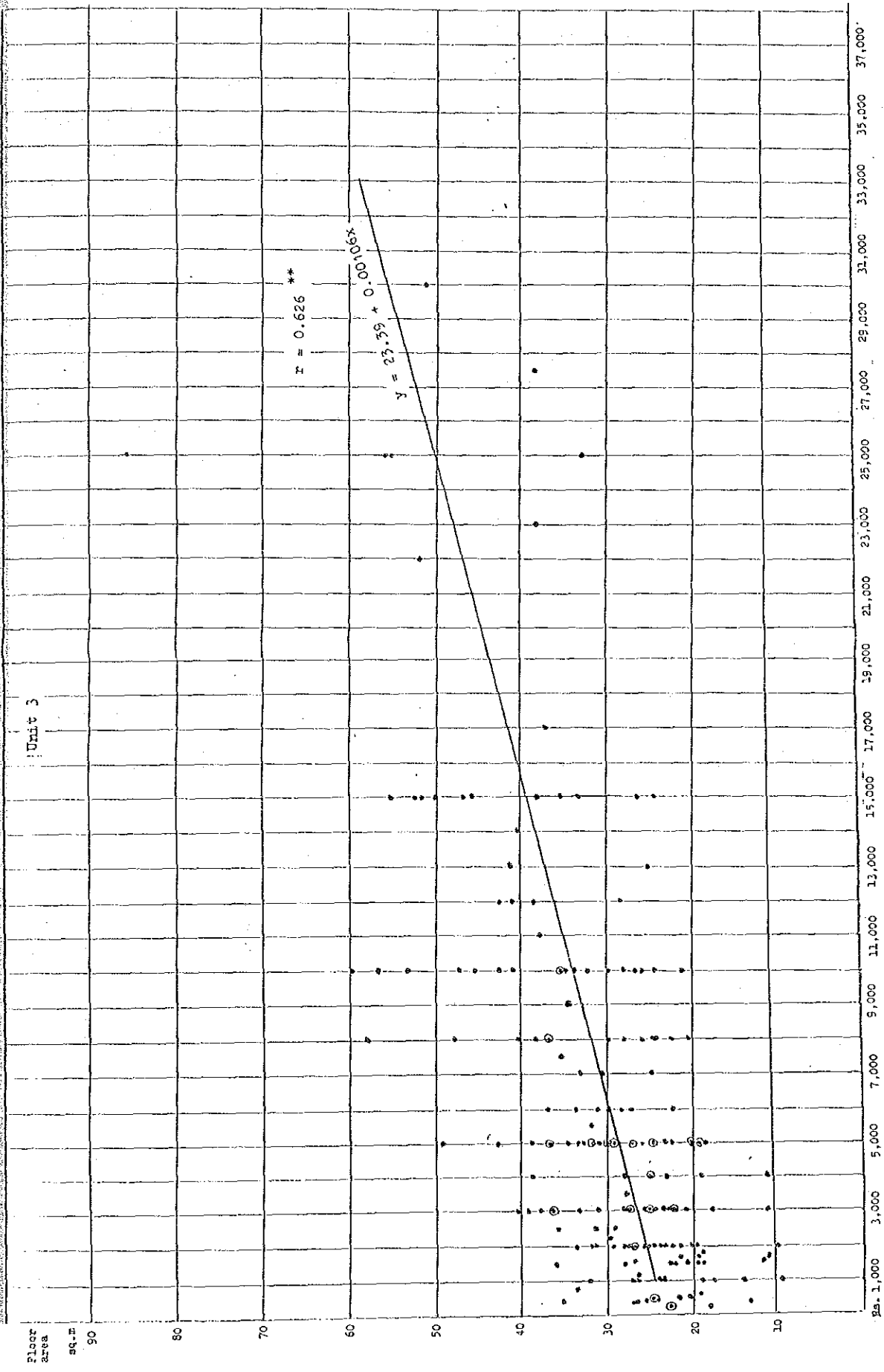


Figure 2-3-1 (2) Correlation of floor area and amount of the money brought in at the time of settlement (unit 3)

2-3-3 Ownership of household items

The ownership of selected household items such as bicycles, radios, T.V. sets, sewing machines, pressure lamps, wall clocks, wrist watches, kerosen cookers, umbrellas, electric torches, beds, tables or desks, chairs or benches, wardrobes and cupboards etc. may be considered as a some what reasonable indicator of the economic status.

The most popular items among these were wrist watches, umbrellas and electric torches and many families possess more than one from each item. In both Units 3 out of 4 houses have radio sets. In Unit 2, 3 out of 4 families and in Unit 3, 1 out of 2 families owned bicycles. 6 families in Unit 2 and 4 families in Unit 3 owned battery operated television sets. Nobody owned cars or motorcycles. However, results have shown that 13 families (6.7%) in Unit 2 and 27 families (13.9%) in Unit 3 did not have even a bed. (Table 2-3-3)

Table 2-3-3 Ownership of the household items

		No. of households	No. of family members	Bicycle	Radio	T.V.	Sewing machine	Wall clock	Wrist watch
Unit 2	No.	193	981	141	148	06	60	21	248
	(%)			(73.1)	(76.7)	(3.1)	(31.1)	(10.9)	(128.5)
Unit 3	No.	194	1,322	92	150	04	59	44	241
	(%)			(47.4)	(77.3)	(2.1)	(30.4)	(22.7)	(124.2)

		Kerosene cooker	Umbrella	Electric torch	Bed		Table and desk	
					Total	Capita	Total	Capita
Unit 2	No.	01	291	242	276	0.29	275	0.28
	(%)	(0.5)	(150.8)	(125.4)	(143.0)		(142.5)	
Unit 3	No.	05	290	223	326	0.23	362	0.26
	(%)	(2.6)	(149.5)	(114.9)	(168.0)		(186.6)	

		Chair & bench		Wardrobe	Cupboard
		Total	Capita		
Unit 2	No.	554	0.57	65	16
	(%)	(287.0)		(33.6)	(8.3)
Unit 3	No.	912	0.65	50	15
	(%)	(470.1)		(25.8)	(7.7)

Note: Figures in parenthesis are percentages of household

2-3-4 Ownership of farm machinery and equipment

The ownership of farm equipment falls far below the actual requirement, for example 16% of the farmers in Unit 2 and Unit 3 did not have enough manures to cultivate their paddy allotments.

4 farmers in Unit 2 and one farmer in Unit 3 had two wheel tractors, and many farmers desired to own two-wheel tractors. While the survey was in progress throwing type threshing machine was bought by a farmer which became popular.

(Table 2-3-4)

Table 2-3-4 Ownership of the farm machinery and equipment

	No. of households	Family labour per household	Mamoty		Plough (iron)	Two wheel tractor	Two wheel tractor trailer	Sprayer	Cart
			Total	Per household					
Unit 2	No.	193	573	3.0	67	04	04	03	0
	(%)	(100)	(296.9)		(34.7)	(2.1)	(2.1)	(1.6)	(0)
Unit 3	No.	194	488	2.5	105	01	0	12	0
	(%)	(100)	(251.5)		(54.1)	(0.5)	(0)	(6.2)	

Note: Figures in parenthesis are percentages of household

2-4 Annual Household Income

2-4-1 Source of household income

Households in Unit 2 generated 81.8% of their income from agriculture and 18.2% from non agricultural earnings. The corresponding figures for Unit 3 are 74.3% and 25.7% respectively. All the households in Unit 2 and 3 depend on paddy cultivation for their income. Income from other crops and livestock is negligible. Non agricultural income sources were salaries, labour wages, business, hire charges from agricultural machinery or animals, land leases, remittances and pensions. (Table 2-4-1)

Table 2-4-1 Sources of annual household income

Source of income	From agriculture											
	Paddy		Other crops		Livestock		Total		Remittances		Pensions	
	Amount (Rs.)	%	Amount (Rs.)	%	Amount (Rs.)	%	Amount (Rs.)	%	Amount (Rs.)	%	Amount (Rs.)	%
Unit 2	12,624	81.5	-	-	40	0.3	12,664	81.8				
Unit 3	14,500	72.8	-	-	378	1.9	14,878	74.7				

Source of income	From nonagriculture											
	Salaries and labour wages		Business		Rental charges		Land leases		Remittances		Pensions	
	Amount (Rs.)	%	Amount (Rs.)	%	Amount (Rs.)	%	Amount (Rs.)	%	Amount (Rs.)	%	Amount (Rs.)	%
Unit 2	1,929	9.4	299	1.9	68	0.4	197	1.3	273	1.8	51	0.3
Unit 3	1,454	7.3	940	4.7	101	0.5	2,336	11.7	216	1.1	0	0

Source of income	All sources				
	Total		Per household		No. of households
	Amount (Rs.)	%	Amount (Rs.)	%	
Unit 2	2,818	18.2	15,482	100	197
Unit 3	5,047	25.3	19,925	100	194

2-4-2 Annual household income

In Unit 2 the annual household income ranges from Rs.3,000/= to Rs.46,800/= with an average of Rs.15,482/=, and among above income from the agriculture ranges from Rs.3,000/= to Rs.27,500/= with an average of Rs.12,644/= per household. In Unit 3 the corresponding figures were Rs.6,900/= to Rs.49,500/= and average of Rs.19,925/=. There were Rs.3,900/= to 27,000/= with an average of Rs.14,876/=. There were 16 (8.1%) householders in Unit 2 where nonagricultural income exceeded the agricultural income. The figure for Unit 3 is 20 (10.3%).

(Table 2-4-2-1, Table 2-4-2-2)

The government of Sri Lanka supports families having a monthly income of less than Rs.700/= per month (1986 year) by issuing food stamps. There were 30 households in Unit 2 and 1 in Unit 3 generating an annual income of less than Rs.8,400/=.

The average annual income of Unit 3 exceeded that of Unit 2 by Rs.4,443/=. The major contributing factors to this excess (i) an average Rs.2,214/= increase in agricultural income (ii) Rs.2,139/= increase from land leases.

Table 2-4-2-1 Distribution of annual household income

(Rs.)

Income class	Below 8,400		8,401 - 10,000		10,001 - 15,000		15,001 - 20,000		20,001 - 25,000		25,001 - 30,000	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Unit 2	30	15.2	10	5.1	68	34.5	57	29.0	15	7.6	10	5.0
Unit 3	01	0.5	04	2.0	45	23.2	70	36.1	45	23.2	11	5.7

Income class	Over 30,001		Total		Maximum		Minimum		Average	
	Number	%	Number	%	Income	Income	Income	Income	Income	Income
Unit 2	07	3.5	197	100	46,800	3,000	15,482			
Unit 3	18	9.3	194	100	49,500	6,900	19,925			

Table 2-4-2-2 Distribution of the annual household income from agriculture

Income class (Rs.)		Less than 10,000	10,001 15,000	15,001 20,000	Over 20,001	Total	Average of income (Rs.)
Unit 2	No. of households	53	92	45	07	197	12,666
	(%)	(26.9)	(46.7)	(22.8)	(3.6)	(100)	
Unit 3	No. of households	22	96	47	29	194	14,878
	(%)	(11.3)	(49.5)	(24.2)	(15.0)	(100)	

2-4-3 Analysis of the household incomes of over Rs.25,000/= per annum

The number of households generating an income of over Rs.25,000/= per annum are 16 (8%) and 29 (15%) in Unit 2 and 3 respectively. Table 2-4-3(1) and Table 2-4-3(2) indicate the sources of this income. These were 2 families in Unit 2 and 6 families in Unit 3 who generated an annual income of over Rs.25,000/= from agriculture alone. Average income from agriculture for Unit 2 and Unit 3 are Rs.15,582/= and Rs.18,848/= respectively. The average income from agriculture in Unit 2 and 3 are Rs.12,664/= and Rs.14,878/= respectively. (Table 2-4-2-2). Therefore the agricultural income of Unit 3 farmers exceeded that of their counterparts in Unit 2 in the range of Rs.2,900/= - Rs.3,970/=. The highest income from agriculture was Rs.31,800/= converted from a yield of 10.9 ton of paddy from 2 ha (530 bushels per 5 acres).

2-4-4 Relationship of average annual household income and previous occupations

Table 2-4-4 shows that full time farmers who settled down in Unit 3 generated an annual average income of Rs.15,483/= where as the non-farmers who settled down in Unit 2 generated an income of Rs.10,820/=. The annual average income generated by the full time farmers settled down in Unit 2, non-farmers settled down in Unit 3 and the part time farmers settled down in Unit 2 and 3, did not show a significant difference. It ranged between Rs.13,500/= and Rs.14,000/=.

Table 2-4-3 (1) Income sources of households generating an annual
an annual income of over Rs.25,000/=

(1) Unit 2

No.	Total	Agri- culture	Salary Labour wages	Busi- ness	Rental charges	Remit- tances	Land leases	Pen- sions
1	25,400	10,200	13,200			2,000		
2	25,490	19,290	6,200					
3	25,900	14,900	9,600			1,400		
4	26,000	6,000	20,000					
5	26,600	12,000	1,000				13,600	
6	27,000	9,000	18,000					
7	27,000	12,000	15,000					
8	27,500	27,500						
9	27,800	12,900		10,000	1,400	3,500		
10	30,200	13,200	17,000					
11	33,000	15,000	18,000					
12	33,675	19,675	14,000					
13	39,000	27,000				12,000		
14	42,000	24,000	18,000					
15	45,000	14,640		30,000		360		
16	46,800	12,000	34,800					
Ave- rage	31,773	15,582	11,550	2,500	88	1,203	850	0
(%)	(100)	(49.0)	(36.3)	(7.9)	(0.3)	(3.8)	(2.7)	

Note: 181 families generated an annual income of less than
Rs.25,000/= per household, their average income is Rs.13,702/= and
from agriculture Rs.12,664/= per family.

Table 2-4-3 (2) Income sources of households generating an annual income of over Rs.25,000/=

(2) Unit 3

(Rs.)

No.	Total	Agri- culture	Salary Labour Wages	Busi- ness	Rental charges	Remit- tances	Land leases	Pen- sions
1	25,000	12,000					13,000	
2	26,000	9,000	17,000					
3	26,000	12,000					14,000	
4	26,900	23,400		3,500				
5	27,000	12,000					15,000	
6	27,000	27,000						
7	27,000	9,000		18,000				
8	27,000	21,000			6,000			
9	28,000	12,000					16,000	
10	28,200	12,000					16,000	
11	28,800	10,800					18,000	
12	30,000	15,000					15,000	
13	30,260	20,700					9,560	
14	31,000	21,000		10,000				
15	31,400	29,400				2,000		
16	31,500	16,500					15,000	
17	31,600	21,600				10,000		
18	32,000	32,000						
19	34,400	14,400		20,000				
20	35,000	15,000		15,000			5,000	
21	35,500	28,000					7,500	
22	36,000	21,000		15,000				
23	36,500	16,500					20,000	
24	39,700	20,700		19,000				
25	42,500	15,000					27,500	
26	43,300	26,300				9,000	8,000	
27	45,075	31,800		8,000			5,275	
28	47,280	21,780		24,500			1,000	
29	49,500	19,500		30,000				
Ave- rage	33,049	18,848	586	5,500	328	724	7,063	0
(%)	(100)	(57.0)	(1.8)	(16.6)	(1.0)	(2.2)	(21.4)	

Note: 165 families generated an annual income of less than Rs.25,000/= per household, their average income is Rs.17,524/= and from agriculture Rs.14,878/= per family

Table 2-4-4 Relationship between the average household income from the agriculture and the occupations held prior to arrival in new settlement

	Full-time farm household		Part-time farm household		Non farmer	
	No. of households	Income from agriculture	No. of households	Income from agriculture	No. of households	Income from agriculture
Unit 2	89	Rs.13,642	36	Rs.13,558	61	Rs.10,820
Unit 3	145	Rs.15,438	13	Rs.13,962	29	Rs.13,522

2-5 Household Expenditure

Average living expenditure per household in 1985 was Rs.16,405/= and Rs.19,756/= in Unit 2 and Unit 3 respectively. Engels coefficient in Unit 2 and Unit 3 are almost the same i.e. 54.90% and 54.81% respectively. Major consume items such as rice, sugar, tea, condiments, vegetables and clothing occupied more 10% of this coefficient. However farmers are sufficient in rice, therefore in order to reduce the expenditure, it is advisable to achieve self sufficiency in vegetables.

The expenditure for rice, vegetables and clothing per household in Unit 3 is 1.5 times that of Unit 2. However the capita expenditure is almost the same in both Units. Unit 2 household contained twice the amount of durable goods as in Unit 3 households. This could be attribute to the spaciousness of the Unit 2 house. (Table 2-5-1)

Table 2-5-1 Household expenditure (1985)

(1) Foods

(Rs.)

	Rice		Bread		Fish, Meat, Eggs		Vegetables		Sugar, Tea Condiments		Oil, Coconut and others		Total		Engels coefficient	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
Unit 2	2,537	15.5	420	2.6	782	4.8	1,609	9.8	3,064	18.7	595	3.6	9,007		54.90	
Unit 3	3,370	17.1	360	1.8	936	4.7	2,198	11.1	3,108	15.7	854	4.3	10,827		54.81	

(2) Expenses other than food

	Clothings		Housing		Education		Fuel		Religious expenses		Medical expenses		Social expenses		Liquor Tobacco	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
Unit 2	2,026	12.3	905	5.5	416	2.5	383	3.3	285	1.7	524	3.2	264	1.6	490	3.0
Unit 3	3,584	18.1	607	3.1	673	3.4	773	3.9	243	1.2	852	4.3	239	1.2	516	2.6

	Durable goods		Transportation Celebration and others		Total		Grand total		Per capita		Total Number of households
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	Amount	
Unit 2	1,323	8.1	782	4.8	7,398	100	16,405		3,281		196
Unit 3	641	3.2	801	4.0	8,929	100	19,756		2,742		194

2-6 Credit

2-6-1 Cultivation loans

In 1984/85 Maha and 1985 Yala 53.8% of the farmers in Unit 2 and 85.1% of the farmers in Unit 3 received cultivation loans from the People's Bank. Average amount credited per farmer was Rs.3,883/= in Unit 2 and Rs.4,210/= in Unit 3. 62.3% of the farmers in Unit 2 and 86.7% of the farmers in Unit 3 paid back the cultivation loans fully. The repayment rate of the total cultivation loans given were 75.8% in Unit 2 and 86.4% in Unit 3. (Table 2-6-1)

Relationship between paddy yields and the utilization of cultivation loans, Table 2-6-1 indicates the yield differences of users and non-users of cultivation loans in 1984/85 Maha and 1985 Yala. Total yield of the 2ha has been considered for this comparison. The yield difference has been only 10% (460 kg of paddy) in Unit 2 and 8% (600 kg of paddy) in Unit 3. The amount of cultivation loans used is Rs.3,883/= (equivalent to 1,300 kg of paddy) and Rs.4,210/= (equivalent to 1,400 kg of paddy) in Unit 2 and 3 respectively. The difference is insignificant for a comparison. It could be deduced that even the some non-credit users have funded their inputs and resulting a moderate uniformity in paddy yields. However the not so satisfactory yields of the loan receivers tempts to suggest credit supervision.

2-6-2 State of indebtedness of farmers

In Unit 2, 166 cases of borrowing money by 118 households were observed. This amounts to the indebtedness of 60% of households in Unit 2. The reasons for borrowing money and the number of cases among under each category are summarised below. (Table 2-6-2-1 (1)(2), Figure 2-6-2)

Reasons for borrowing	No. of cases
(1) Living expenses	122
(2) Sickness	18
(3) Procurement of farm machinery	17
(4) Funeral expenses	7
(5) Marriages	4
Total	168

Table 2-6-1 Cultivation loans

(Total of 1984/85 Maha and 1985 Yala)

	Total No. of farmers	Received				Not received	
		No. of farmers	% of total farmers	Total amount Rs.	Amount per farmer Rs.	No. of farmers	% of total farmers
Unit 2	197	106	53.8	411,647	3,883	91	46.2
Unit 3	194	165	85.1	694,635	4,210	29	14.9

	Repayment of cultivation loans									
	Full repayment				Partial repayment				Total paid	
	No. of farmers	% of used farmers	Amount Rs.	% of received amount	No. of farmers	% of used farmers	Amount Rs.	% of received amount	Amount Rs.	% of received amount
Unit 2	66	62.3	284,091	69.0	15	14.1	27,950	6.8	312,014	75.8
Unit 3	143	86.7	595,416	85.7	03	1.8	4,675	0.7	600,091	86.4

	Defaulting of cultivation loans								Total of defaulted amount	
	Total defaulting				Partial defaulting				Amount Rs.	% of received amount
	No. of farmers	% of used farmers	Amount Rs.	% of received amount	No. of farmers	% of used farmers	Amount Rs.	% of received amount		
Unit 2	15	14.1	78,874	19.2	10	9.5	20,732	5.0	99,606	24.2
Unit 3	16	9.7	83,028	11.9	03	1.8	11,516	1.7	94,544	13.6

	Yield				
	Farmers requiring cultivation loans		Farmers not receiving cultivation loans		
	No. of farmers	Average yield bushels per 5 acres	No. of farmers	Average yield bushels per 5 acres	% of used farmers
Unit 2	106	234	83	211	90.1
Unit 3	165	252	29	232	92.1

The rate of borrowing stood at Rs.2,444/= per household and per Rs.1,756/= per case. 22 householders have paid the debts in full and 8 householders in part. These full and part payment of loans amounted to Rs.49,463/=. This is covering only 17.2% of their total borrowings. This has resulted the continued indebtedness of 96 householders (48.7%) in Unit 2 at the rate of Rs.2,489/= per household or Rs.1,213/= when averaged to include all the households in Unit 2. This situation was observed towards the end of 1985. (Table 2-6-2-2)

In Unit 3, 78 cases of borrowing money by 57 households were observed. This amounts to the indebtedness of 29.4% of the households in Unit 3. The reasons for borrowing money and the number of cases coming under each category are summarized below.

Reasons for borrowing	No. of cases
(1) Living expenses	45
(2) Procurement of farm machinery	10
(3) Funeral expenses	1
(4) Marriages	1
Total	57

The rate of borrowing stood at Rs.3,202/= per household and Rs.2,340/= per case. 11 householders have repaid the debts in full and 20 householders in part. These full and part repayment of loans amounted to Rs.63,065/=. This is 34.5% of the total amount borrowed. It is more than double the part payment percentage of Unit 2. Towards the end of 1985, 46 households (23.7%) in Unit 3 continued to be indebted at the rate of Rs.2,597/= per household. When averaged to include all the houses in Unit 3, it stood at Rs.616/= per household.

The main sources of borrowing are summarized below.

Types of lenders	Number of cases	
	Unit 2	Unit 3
(1) Tradesmen (Mudalalies)	97	40
(2) Relatives	53	11
(3) Friends	14	17
(4) Banks	02	-
(5) Shops	-	09
Total	166	78

Table 2-6-2-1 (1) State of indebtedness of farmers
(The sources, purposes and the amounts of borrowing)

(1)

Lender	Unit	Sickness				Funeral				Wedding				
		No. of case of borrowing	%	Amount (Rs.)		No. of case of borrowing	%	Amount (Rs.)		No. of case of borrowing	%	Amount (Rs.)		
				Amount	%			Amount	%			Amount	%	
Tradesmen	2	05	3.0	6,300	2.2	1,260	0.6	1,500	0.5	1,500	0.1	380	0.1	380
	3	01	1.3	600	0.3	600	0	0	0	0	0	0	0	0
Relatives	2	13	7.7	27,810	9.6	2,139	3.0	6,445	2.2	1,289	1.1	10,000	3.5	5,000
	3	04	5.1	4,300	2.4	1,075	0	0	0	0	0	0	0	0
Friends	2	0	0	0	0	0	0.6	5,500	1.9	5,500	0.6	2,000	0.7	2,000
	3	06	7.7	13,150	7.2	2,192	1.3	5,000	2.7	5,000	1.3	1,000	0.5	1,000
Shop and others	2	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Banks	2	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	18	10.7	34,110	11.8	1,895	4.2	13,445	4.6	1,921	2.4	12,380	4.3	3,095
	3	11	14.1	18,050	9.9	1,641	1.3	5,000	2.7	5,000	1.3	1,000	0.5	1,000

Note: * Some times the same person has borrowed for sickness and consumption, therefore the actual number of borrowers in Unit 2 and Unit 3 are 118 and 57 respectively.

Table 2-6-2-1 (2) State of indebtedness of farmers
(The sources, purposes and the amounts of borrowing)

(2)

Lender	Unit	Consumption			Farm equipment, others			Total								
		No. of case of borrowing	%	Amount (Rs.) Amount % Per case	No. of case of borrowing	%	Amount (Rs.) Amount % Per case	No. of case of borrowing	%	Amount (Rs.) Amount % Per case						
Tradesmen	2	85	50.6	120,495	41.8	1,418	05	3.0	6,013	2.4	2,304	97	58.4	135,588	47.0	1,398
	3	34	35.9	84,735	46.4	2,492	05	6.4	16,590	9.1	3,318	40	51.3	101,925	55.8	2,548
Relatives	2	26	15.5	48,590	16.8	1,969	07	5.4	11,728	4.1	2,040	53	31.9	104,573	36.3	1,973
	3	03	3.8	12,500	6.8	4,167	04	5.1	11,500	6.3	2,875	11	14.1	28,300	15.5	2,573
Friends	2	09	5.4	19,927	6.9	2,214	03	1.8	4,348	1.5	1,449	14	8.4	31,775	11.0	2,270
	3	04	5.1	2,000	1.1	500	06	7.7	10,270	5.6	1,712	17	21.8	31,400	17.2	1,848
Shop and others	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	04	5.1	7,700	4.2	1,925	05	6.4	13,200	7.2	2,640	09	11.5	20,900	11.4	2,322
Banks	2	02	1.1	16,475	5.7	8,238	0	0	0	0	0	02	1.2	16,475	5.7	8,232
	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	122	72.6	205,487	69.5	1,684	17	10.1	29,617	10.0	1,742	* 166	100	288,411	100	1,756
	3	45	57.7	106,935	58.6	2,376	20	25.6	51,560	28.2	2,578	* 78	100	182,545	100	2,340

Note: * Some times the same person has borrowed for sickness and consumption, therefore the actual number of borrowers in Unit 2 and Unit 3 are 118 and 57 respectively.

Table 2-6-2-2 State of borrowing and repayment

	Borrowing				Repayment			
	No. of borrowers	Percentage of households	Amount (Rs.)		No. of full repayments	No. of part repayments	Amount	
			Total Rs.	Per borrower			Total Rs.	Percentage of total borrowings
Unit 2	118	60.0%	288,441	2,444	22	08	49,463	17.2%
Unit 3	57	29.4%	182,545	3,202	11	20	63,065	34.5%

Balance						
	No. of borrowers	Percentage of households	Amount			
			Amount Rs.	Total		Per household of total Rs.
				Percentage of total borrowings	Per borrower Rs.	
Unit 2	96	48.7%	238,948	87.8%	2,489	1,213
Unit 3	46	23.7%	119,480	65.5%	2,597	616

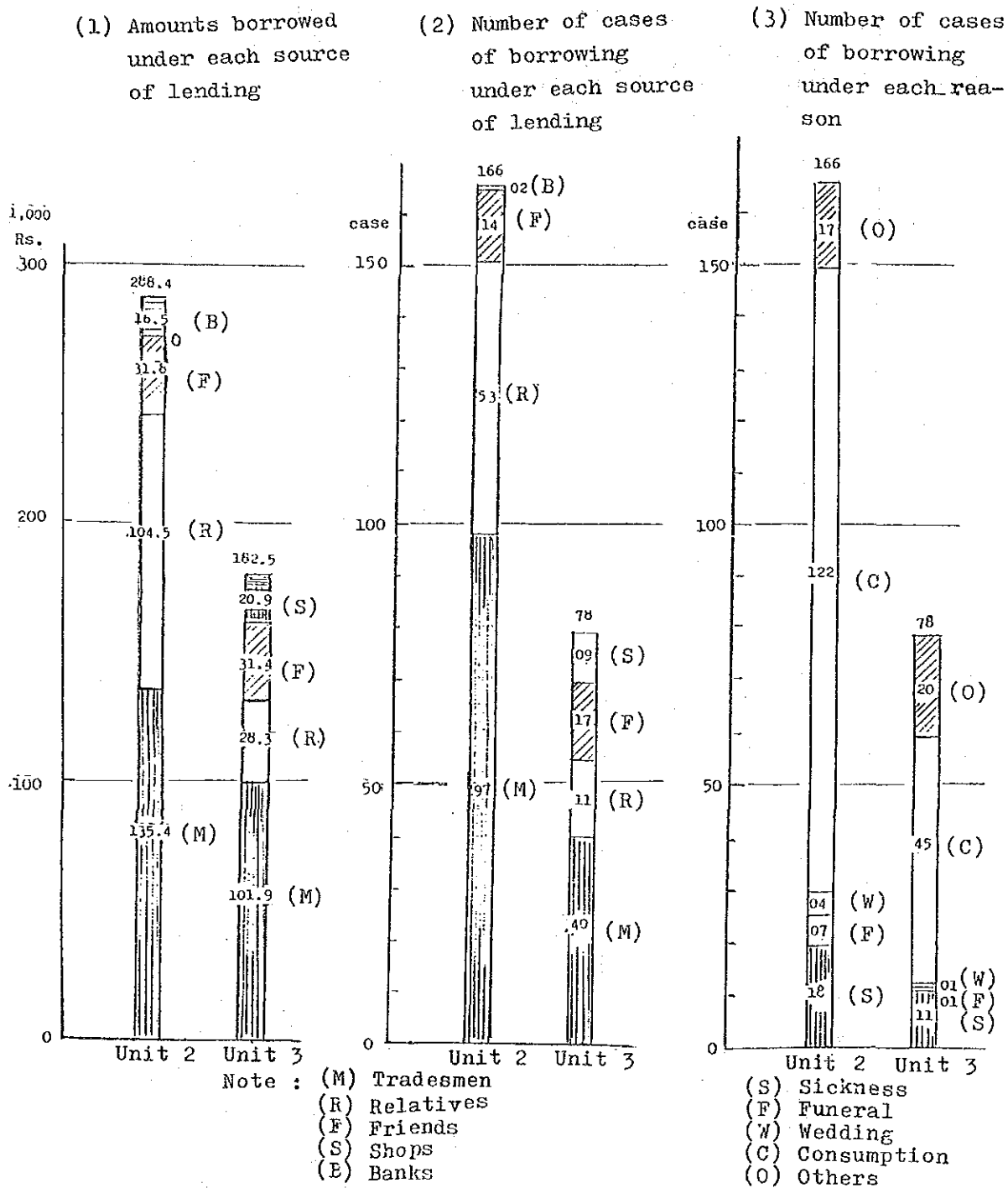


Figure 2-6-2 State of indebtedness of farmers

2-7 Savings

45.7% of the households in Unit 2 and 79.4% in Unit 3 have savings accounts, mainly in the People's Bank. (Unit 2, 81.1% and Unit 3, 98.1%). However it was observed that 26 deposits (29%) in Unit 2 and 65 deposits (42%) in Unit 3 were less than Rs.100/= and could be thought as deposits made solely for the purpose of opening bank accounts to obtain credit etc.

There were 5 persons in each Unit who had deposit over Rs.5,000/=. All of them have nonagricultural income of at least Rs.5,000/=. No one has been able to deposit Rs.5,000/= solely from the agricultural income. Excluding the Rs.5,000/= depositors the average deposit per household in Unit 2 is Rs.289/= and in Unit 3 Rs.109/=. This is about $\frac{1}{2}$ and $\frac{1}{3}$ of the averages that include the Rs.5,000/= depositors in Unit 2 and Unit 3 respectively. (Table 2-7-1, Table 2-7-2, Table 2-7-3, Table 2-7-4)

2-8 Some questions Ask from the Farmers

2-8-1 Preference for parboiled rice

Preference for parboiled rice differs with localities and individuals. According to Table 2-8-1-1, parboiled rice seems to be more popular in Unit 2 than in Unit 3. There were 176 households (90.2%) consuming over 50% of parboiled rice in Unit 2 compared to 112 households (58%) in Unit 3. The consumption percentage of parboiled and raw rice are given below.

	Parboiled rice	Raw rice
Unit 2	74.6%	25.4%
Unit 3	53.7%	46.3%

(Table 2-8-1-1, Figure 2-8-1)

Reasons for the preference of parboiled or raw rice for consumption are given in Table 2-8-1-2. Selection of parboiled rice for consumption has been based mainly on its economy followed by habit. In the case of raw rice habit was considered first followed by taste. Almost all the people who consumed parboiled rice preferred to have some aroma in the parboiled rice. Table 2-8-1-3 shows 90% of households who consumed parboiled rice preferred aroma.

Table 2-7-1 State of savings

Saving class	Less than Rs. 100		Rs. 101-200		Rs. 201-500		Rs. 501-1,000		Rs. 1,001-4,999		Over Rs. 5,000	
	No. of depositors	Amount per depositor	No. of depositors	Amount per depositor	No. of depositors	Amount per depositor	No. of depositors	Amount per depositor	No. of depositors	Amount per depositor	No. of depositors	Amount per depositor
Unit 2	No.	197	90	Rs. 110,229	Rs. 1,225	Rs. 563	85	Rs. 637	Rs. 289			
	(%)	(100)	(45.7)				(43.1)					
Unit 3	No.	194	154	59,394	386	306	149	138	109			
	(%)	(100)	(79.4)				(76.8)					
Unit 2	No.	26	15	Rs. 143	18	Rs. 409	13	Rs. 829	13	Rs. 2,042	05	Rs. 11,016
	(%)	(28.9)	(16.7)		(20.0)	(14.4)	(14.4)		(14.4)	(5.6)		
Unit 3	No.	65	62	140	08	316	08	769	06	1,918	05	7,600
	(%)	(42.2)	(40.3)		(5.2)	(5.2)	(5.2)		(3.9)	(3.2)		

Table 2-7-2 Banking facilities of depositors

	People's Bank			Rural Bank			Bank of Ceylon		
	No. of depositors	Amount		No. of depositors	Amount		No. of depositors	Amount	
		Total	Per depositor		Total	Per depositor		Total	Per depositor
Unit 2 (%)	73 (81.1)	Rs. 74,459	Rs. 1,020	06 (6.7)	Rs. 4,455	Rs. 743	06 (6.7)	Rs. 27,190	Rs. 4,532
Unit 3 (%)	151 (98.1)	56,619	375	01 (0.6)	700	700	02 (1.3)	2,075	1,038

	Post office			Total		
	No. of depositors	Amount		No. of depositors	Amount	
		Total	Per depositor		Total	Per depositor
Unit 2 (%)	05 (5.5)	Rs. 4,125	Rs. 825	90 (100)	Rs. 110,229	Rs. 1,225
Unit 3	0	0	0	154 (100)	59,394	386

Table 2-7-3 Income of the over Rs.5,000/= deposit holders

Name of Unit	Code of farmer	Deposit amount Rs.	Income of household (Rs.)							Total
			Agri-culture	Nonagriculture			Rental charges	Land leases		
				Wages	Business	Remittance				
Unit 2	A	16,082	10,200	34,800						45,000
	B	14,000	14,000		15,000	4,000				33,000
	C	10,000	27,000			12,000				39,000
	D	10,000	12,900		10,000	3,500	1,400			27,800
	E	5,000	12,000	15,000						27,000
Unit 3	F	10,000	16,500						20,000	36,500
	G	10,000	12,000						10,000	22,000
	H	8,000	19,500		30,000					49,500
	I	5,000	21,000		15,000				5,000	36,000
	J	5,000	21,000							27,000

Table 2-8-1-1 Consumption pattern of parboiled rice and raw rice

(1) Consumption of more than 50% parboiled rice

Consumption class	Par-boiled rice	Raw rice	Par-boiled rice	Raw rice	Par-boiled rice	Raw rice	Par-boiled rice	Raw rice	Par-boiled rice	Raw rice	Par-boiled rice	Raw rice
	60-70 %	40-30 %	75-80 %	25-20 %	90-100 %	10-0 %	Total	50%	50%	50%		
Unit 2	No. of households		23	92	51	166	10					
	No. of households		(11.8)	(47.4)	(26.2)	(85.1)	(5.1)					
Unit 3	No. of households		12	42	53	107	05					
	No. of households		(6.3)	(21.7)	(27.5)	(55.4)	(2.6)					

(2) Consumption of more than 60% raw rice

Consumption class	Raw rice	Par-boiled rice	Raw rice	Par-boiled rice	Raw rice	Par-boiled rice	Raw rice	Par-boiled rice	Raw rice	Par-boiled rice	General total	No. of households	% of consumed amount	Raw rice
	90-100 %	10-0 %	75-80 %	25-20 %	60-70 %	40-30 %	Total	Par-boiled rice	Raw rice	Par-boiled rice				
Unit 2	No. of households		04	09	0.6	19	195						(74.6)	(25.4)
	No. of households		(2.0)	(4.5)	(3.0)	(9.8)	193						(53.7)	(46.3)
Unit 3	No. of households		65	14	02	81	193						(42.0)	(57.0)
	No. of households		(33.7)	(7.2)	(1.0)	(42.0)	(46.3)						(53.7)	(46.3)

Table 2-8-1-2 Reason for the preference of parboiled rice or raw rice

Parboiled rice								
		Quality	Easy cooking	Habit	Economical	Nutritive	Tasty	Total
Unit 2	No.	0	14	11	132	08	11	176
	(%)	(0)	(7.2)	(5.6)	(67.2)	(4.1)	(5.6)	(90.3)
Unit 3	No.	03	01	37	59	10	02	112
	(%)	(1.5)	(0.5)	(19.2)	(30.6)	(5.2)	(1.0)	(58.0)
Total	No.	03	15	48	191	18	13	288
	(%)	(0.8)	(3.9)	(12.3)	(49.2)	(4.6)	(3.4)	(74.2)

Raw rice								
		Easy pre- paration	Habit	Economical	Nutritive	Tasty	Total	Grand Total
Unit 2	No.	0	04	0	0	15	19	195
	(%)	(0)	(2.1)	(0)	(0)	(7.7)	(9.8)	(100)
Unit 3	No.	07	42	0	0	32	81	193
	(%)	(3.6)	(21.8)	(0)	(0)	(16.6)	(42.0)	(100)
Total	No.	07	46	0	0	47	100	388
	(%)	(1.8)	(11.9)	(0)	(0)	(12.10)	(25.8)	(100)

Table 2-8-1-3 Preference for the aroma of the parboiled rice

		(1) Strong	(2) Medium	(3) Slight	(4) Total (1)+(2)+(3)	(5) No aroma	Total
Unit 2	No.	08	118	40	166	10	176
	(%)	(4.5)	(67.1)	(22.7)	(94.3)	(5.7)	(100)
Unit 3	No.	04	68	23	95	17	112
	(%)	(3.6)	(60.7)	(20.5)	(84.8)	(15.2)	(100)
Total	No.	12	186	63	261	27	288
	(%)	(4.2)	(64.6)	(21.9)	(90.6)	(9.4)	(100)

Note: These data were collected from the households where parboiled rice consumption was over 50%.

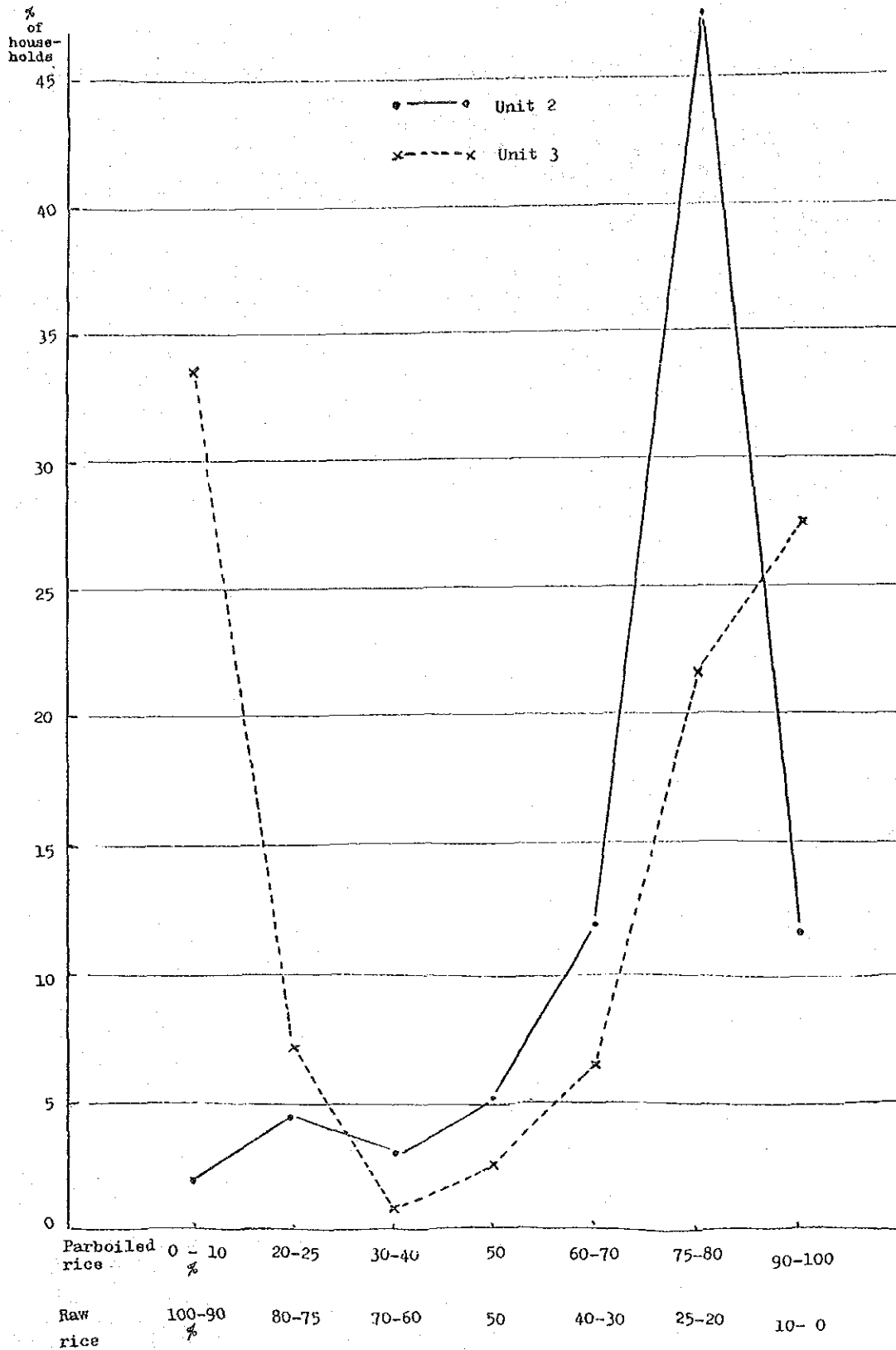


Figure 2-8-1 Consumption pattern of parboiled rice and raw rice

2-8-2 Purchased rice

100% of the rice consumed is processed at home. A bushel of paddy is milled for Rs.7/50 at the village mill. This self processed and consumed rice, if priced would be about Rs.5/= per kg and it could be assumed that the quality is poor.

33 households (16.8%) in Unit 2 and 38 households (19.6%) in Unit 3 purchased consumption rice from outside. They had no regard for the quality of rice. Rice quality becomes inferior due to the presence of stones, sand, weed seeds, unripened grains, varietal mixing and other grain mixing etc. The size, shape, taste, and polish etc. contributes to improve the quality of grains.

Price of ordinary rice is about Rs.7/50 per kg. High quality rice is about Rs.8/= - Rs.8/50 per kg. Consumption of Samba rice is very rare in this area, only 10 cases appeared in this survey. Samba price is about Rs.10/50 - Rs.11/= per kg. When asked about the price they preferred to pay for quality rice they answered in the following manner.

Quality rice of ordinary varieties: Rs.9/= per kg

Quality rice of samba varieties : Rs.11/= per kg

It would be useful to conduct consumption survey of different qualities of rice. (Table 2-8-2)

2-8-3 Utility of a would be donation

A question was posed to the farmers as to how they would utilize a would be donation. The answers given by them are tabulated in Table 2-8-3-1.

- (1) In the case of would be donation of Rs.10,000/=, farmers first preference was to develop their houses. 129 householders (67.2%) in Unit 2 and 153 householders (82.3%) in Unit 3 were in favour of housing development. The overwhelming majority in Unit 3 for housing development could be attributed to the poor condition of their houses. Their second preference was to improve their agriculture. 50 households (26%) in Unit 2 and 15 households (8.1%) in Unit 3 were in favour of agricultural development.

Table 2-8-2 Purchase of rice for consumption

		Total	Consumed rice		
		No. of household	Total amount kg	Amount of self-sufficient kg	Amount of purchased kg
Unit 2	No.	196	82,912	79,479	3,433
	(%)	(100)	(100)	(95.9)	(4.1)
Unit 3	No.	194	108,970	99,291	9,679
	(%)	(100)	(100)	(91.1)	(8.9)

		Purchased rice						
		Total	Ordinary rice		High quality rice		Samba rice	
		No. of households	No. of households	Price Rs./kg	No. of households	Price Rs./kg	No. of households	Price Rs./kg
Unit 2	No.	33	19	7.65	09	8.35	05	10.80
	(%)	(16.8)						
Unit 3	No.	38	17	7.45	16	9.10	05	10.50
	(%)	(19.6)						

Table 2-8-3 Farmers plan for utilizing a would be donation of
(1) Rs.10,000/= (2) Rs.20,000/=

(1) Rs. 10,000/=

Items	Savings			Agriculture						Others			Total									
	Housing		For children	Business		Equipment		Animal		2 wheel tractor		Land		General improvement		Vehicle						
	No.	%		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%					
Unit 2	129	67.2	03	1.6	01	0.5	14	7.3	10	5.2	03	1.6	06	3.1	17	8.8	50	26.0	0	0	192	100
Unit 3	153	82.7	08	4.3	04	2.2	02	1.1	03	1.6	0	0	01	0.5	09	4.9	15	8.1	01	0.5	165	100

(2) Rs.20,000/=

	Savings			Agriculture						Others			Total									
	Housing		For children	Business		Equipment		Animal		2 wheel tractor		Land		General improvement		Vehicle						
	No.	%		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%					
Unit 2	113	56.5	02	1.0	03	1.5	24	12.0	08	4.0	11	5.5	02	1.0	22	11.0	67	33.5	0	0	200	100
Unit 3	138	76.2	08	4.4	09	5.0	02	1.1	01	0.5	02	1.1	01	0.5	08	4.4	14	7.7	05	2.8	181	100

(2) In case of a would be donation of Rs.20,000/=, the first housing and second agriculture remains the same as in the case of Rs.10,000/=. There is a decrease in the preference of housing development compared to (1) above. However the preference to invest in business, vehicles and agriculture has increased. There were about 10 persons who prepared to save for their children. This is an education of their earnest desire for the welfare and better education of their children.

2-8-4 Parents desire for their children's education and the future occupations

All parents desired a good education for their children. As indicated in Table 2-8-4-1 parental aspirations for the education of their children are very high. They wished to see that 28.1% of their sons in Unit 2 and 75.4% of their sons in Unit 3 entering the university, and of their daughters they wished that 31.5% and 83% in Unit 2 and 3 respectively entered the university. Some parents wished that all their children gained university admission. This is an unrealistic dream.

Most parents wished to have their children in government service. Only 10 parents wished to establish their children in own agriculture. Out of the sons there were 89 in Unit 2 and 37 in Unit 3 who wished to engaged in agriculture outside their parents' holdings. The number of daughters who wished to do so were much less, only 8 and 5 from Unit 2 and 3 respectively. The number of youth who desired to be skilled workers were 36 (14.4%) boys and 36 (18.8%) girls in Unit 2 and 36 (8.9%) boys and 16 (9.9%) girls in Unit 3. Opportunities to become salarimen and factory workers were very rare in this area. Hence those who desired such employment did not exceed 10%.

The prime desire of the parents was to see that their children entering university and finally end up as government servants. However a large number of farm youth preferred to become skilled workers. (Table 2-8-4-1, Table 2-8-4-2)

Table 2-8-4-1 Parents desire for their children's education

Level	Grade 5		Grade 9		O/L		A/L		University		Total		
	S	D	S	D	S	D	S	D	S	D	S	D	
Unit 2	No.	56	43	11	19	54	29	40	46	63	63	224	200
	(%)	(25.0)	(21.5)	(4.9)	(9.5)	(24.1)	(14.5)	(17.9)	(23.0)	(28.1)	(31.5)	(100)	(100)
Unit 3	No.	24	16	26	08	26	23	28	17	320	312	424	376
	(%)	(5.7)	(4.3)	(6.1)	(2.1)	(6.1)	(6.1)	(6.7)	(4.5)	(75.4)	(83.0)	(100)	(100)

Note: S - Son, D - Daughter

Table 2-8-4-2 Parents desire for future occupations of their children

Kinds	Agriculture own		Agriculture outside		Skillful workers		Shopmen Shopgirls		Employee of companys		Public servants		Total		
	S	D	S	D	S	D	S	D	S	D	S	D	S	D	
Unit 2	No.	05	01	89	08	36	36	09	03	06	02	105	129	250	179
	(%)	(2.0)	(0.6)	(35.6)	(4.5)	(14.4)	(18.8)	(3.6)	(1.7)	(2.4)	(1.1)	(42.0)	(73.3)	(100)	(100)
Unit 3	No.	02	02	37	05	36	16	11	01	07	05	312	200	405	335
	(%)	(0.5)	(0.6)	(9.1)	(1.5)	(8.9)	(9.9)	(2.7)	(0.3)	(1.7)	(1.5)	(77.1)	(91.2)	(100)	(100)

Note: S - Son, D - Daughter

2-8-5 Farmer's anticipated income

Table 2-1-3 indicates that annual household income in the places of their origin has been Rs.9,131/= for Unit 2 and Rs.9,430/= for Unit 3. Table 2-4-2-1 indicates their annual household income after settlement, Rs.15,482/= and Rs.19,925/= for Unit 2 and Unit 3 respectively. Almost all the farmers were satisfied about this new development. However their desire for further improvement continues, and all of them wanted to increase their annual income. Anticipated annual income ranged from Rs.18,000/= to Rs.55,000/= averaging Rs.31,370/= for Unit 2 and ranged from Rs.20,000/= to Rs.50,000/= averaging Rs.34,400/= for Unit 3. (Table 2-8-5-1)

Time required for the realization of anticipated income varied from 1 year to 10 years and averaged 4.5 years for Unit 2 and 3.3 years for Unit 3 respectively. (Table 2-8-5-2)

Table 2-8-5-3 is the farmers view of the composition of anticipated income. Paddy is the main crop to be cultivated solely or combining with other crops or livestock. The six combinations are:

- (I) Paddy only
- (II) Paddy and subsidiary cash crops
- (III) Paddy, subsidiary cash crops and poultry or cow
- (IV) Paddy and poultry or cow
- (V) Paddy and business
- (VI) Paddy and labour wages

Table 2-8-5-1 Anticipated annual household income

	No. of farmers	Rs. Less than 20,000	Rs. 20,001 30,000	Rs. 30,001 40,000	Rs. 40,001 50,000	Rs. Over 50,001	Total	Average Rs.	Maximum Rs.	Minimum Rs.
Unit 2	0	05	36	22	01	64	31,370	55,000	18,000	
	(0)	(7.8)	(56.3)	(34.4)	(1.5)	(100)				
Unit 3	02	22	33	08	0	65	34,400	50,000	20,000	
	(3.1)	(33.8)	(50.8)	(12.8)	(0)	(100)				

Table 2-8-5-2 Time required for the realization of anticipated income

Realization year	Realization year										Average year	
	1	2	3	4	5	6	7	8	9	10		Total
Unit 2	01	03	16	08	28	02	03	01	0	02	64	4.5
	(1.6)	(4.7)	(25.0)	(12.5)	(43.7)	(3.1)	(4.7)	(1.6)	(0)	(3.1)	(100)	
Unit 3	01	19	20	08	16	01	0	0	0	0	65	3.3
	(1.5)	(29.2)	(30.8)	(12.3)	(34.6)	(1.5)	(0)	(0)	(0)	(0)	(100)	

Table 2-8-5-3 Composition of the anticipated income

Type	I		II		III		IV		V		VI	
	Paddy only		Main	Suppliment	Main	Suppliment	Main	Suppliment	Main	Suppliment	Main	Suppliment
Source of income			Paddy	Subsid- iary cash crops	Paddy	Subsid- iary cash crops	Paddy	Poultry or cow	Paddy	Business	Paddy	Labour charges
Unit 2	No. of farmers (%)	06 (9.4)		18 (28.1)		20 (31.3)		15 (23.4)		04 (6.3)		01 (1.5)
	Amount Rs. (%)	28,300	29,400 (77.5)	37,940 (8,540) (22.5)	45,400 (9,200) (20.3)	30,000 (66.0)	6,200 (13.7)	37,600 (30,000) (80.0) 7,600 (20.0)	42,000 (30,000) (71.4) 12,000 (28.6)	38,500 (30,000) (77.9) 8,500 (22.1)		
Unit 3	No. of farmers (%)	17 (26.1)		14 (21.5)		0 (0)		02 (3.1)		17 (27.7)		15 (23.1)
	Amount Rs. (%)	27,000	25,800 (81.6)	31,600 (5,800) (18.4)				41,000 (30,000) (73.2) 10,300 (26.8)		41,300 (30,000) (72.6) 11,300 (27.4)		39,000 (30,000) (76.9) 9,000 (23.1)

Note: Paddy yield target of 6,150 kg/ha (120 bushels/acre) in both Maha and Yala seasons.

Chapter III AGRICULTURAL SITUATION

3-1 Paddy Cultivation

Land development in Units 1, 2, and 3, Block 302 was completed under the Japanese Government aid programme before the commencement of 1984/85 Maha season. This was the first season of paddy cultivation under regular irrigation and it continued through 1985 Yala and 1985/86 Maha.

Generally the paddy fields constructed from newly cleared jungles are rich in nutrients. However in Units 2 and 3 the paddy fields are 0.1 - 0.15 ha in size and in the process of its development the top soil has been disturbed considerably. As a result the soil fertility became uneven as evidenced by the uneven growth of weeds. Owing to this situation during the first two years some of the paddy fields did not show any response to the package of practices applied by the farmers.

3-1-1 Extent of paddy cultivation

Almost all the settlers cultivated the full 1 ha allotment, except for a few who were affected by the inadequacy of both family labour and finances. During the 1985/86 Maha which was their third cultivation season after settling down, some of the affected farmers have resorted to

(1) leasing out part of the allotment on share cropping (Ande) basis.

(2) leasing out part of the allotment on a payment as relief measures to the above problems. Out of 65 farmers questioned in the survey 3 farmers in Unit 2 and 3 farmers in Unit 3 resorted to these relief measures. The Socio Economic Survey covered more of Unit 3 and less of Unit 2.

3-1-2 Land preparation

Land preparation was carried out using tractors and buffalos. Field clearing and plastering of ridges and foot paths were done manually. During 1985/86 Maha season primary ploughing, secondary ploughing and levelling are carried out as follows. Extents are expressed in percentages of the total paddy lands in each Unit.

(1) Primary ploughing

	1985 Yala		
	4T	2T	B
Unit 2	15%	45%	40%
Unit 3	34	-	66

1985/86 Maha		
4T	2T	B
10%	39%	51%
20	1.5	78.5

(2) Secondary ploughing

	4T	2T	B
Unit 2	18%	56%	26%
Unit 3	54	04	42

4T	2T	B
06%	52%	42%
51	03	46

Note: 4T: Four wheel tractor
2T: Two wheel tractor
B : Buffalo

(3) Levelling

Entire levelling operations were carried out by buffalos. In 1985 Yala a single farmer managed his entire land operation and levelling manually, but after 1985/86 Maha all manual operations ceased. (Table 3-1-2)

Table 3-1-2 Modes of land preparation

1985 Yala

Operation		1st ploughing			2nd ploughing			Level- ing	Total
Modes		4T	2T	B	4T	2T	B		
Unit 2	ha	11.4	26.0	24.6	11.4	34.6	16.0	62.0	62.0
	(%)	(18.4)	(41.9)	(39.7)	(18.4)	(55.8)	(25.8)	(100)	(100)
Unit 3	ha	22.0	-	43.0	35.0	3.0	27.0	65.0	65.0
	(%)	(33.8)	-	(66.2)	(53.8)	(4.6)	(41.6)	(100)	(100)

1985/86 Maha

Operation		1st ploughing			2nd ploughing			Level- ing	Total
Modes		4T	2T	B	4T	2T	B		
Unit 2	ha	0.4	24.0	31.6	4.0	32.0	26.0	62.0	62.0
	(%)	(10.3)	(38.7)	(51.0)	(6.5)	(51.6)	(41.9)	(100)	(100)
Unit 3	ha	13.0	1.0	51.0	33.0	2.0	30.0	65.0	65.0
	(%)	(20.0)	(1.5)	(78.5)	(50.8)	(3.0)	(46.2)	(100)	(100)

Note: 4T: 4 wheel tractor
 2T: 2 wheel tractor
 B : Buffalo

3-1-3 Varieties

100% of the varieties used were improved high yielding varieties. BG 34-8 (3 months variety) and BG 94-1 ($3\frac{1}{2}$ months variety) were the main varieties cultivated in both Units in 1985 Yala. These varieties have been issued by the MEA during the first season of the settlement. However by 1985/86 Maha several farmers have introduced other new varieties in the $4-4\frac{1}{2}$ months are groups such as BG 400-1, BG 379-2, BG 380 and even the early improved variety BG 11-11. Bg 11-11 is a Samba variety which has come in through some government source. (Table 3-1-3-1, Table 3-1-3-2)

Table 3-1-3-1 Varietal spread

Varieties		BG 34-8	BG 276-5	BG 94-1	BG 400-1	BG 379-2	BG 11-11	BG 380	Total
Unit 2	ha	32.8	0	39.8	2.8	0	0	0	63.4
	(%)	(32.8)	(0)	(62.8)	(4.4)	(0)	(0)	(0)	(100)
Unit 3	ha	1.0	0.4	63.6	0	0	0	0	65.0
	(%)	(1.5)	(0.6)	(97.9)	(0)	(0)	(0)	(0)	(100)

1985/86 Maha

Varieties		BG 34-8	BG 279-5	BG 94-1	BG 400-1	BG 379-2	BG 11-11	BG 380	Total
Unit 2	ha	6.9	0.8	36.5	5.9	8.1	3.4	5.0	62.6
	(%)	(11.0)	(1.3)	(58.3)	(9.4)	(12.9)	(15.5)	(1.6)	(100)
Unit 3	ha	35.2	0	0	13.7	8.1	5.5	2.5	65.0
	(%)	(54.1)	(0)	(0)	(21.1)	(12.5)	(8.5)	(3.8)	(100)

Table 3-1-3-2 Cultivated extents of varieties

	1985 Yala						1985/86 Maha					
	Unit 2			Unit 3			Unit 2			Unit 3		
	No. of cultivators	Extent cultivated ha	No. of cultivators	Extent cultivated ha	No. of cultivators	Extent cultivated ha	No. of cultivators	Extent cultivated ha	No. of cultivators	Extent cultivated ha	No. of cultivators	Extent cultivated ha
GB 34-8	25	20.0	01	01	10	6.9	0	0	0	0	0	0
BG 276-5	0	0	01	0.4	01	0.8	0	0	0	0	0	0
BG 94-1	44	39.9	64	62.6	44	34.6	50	35.2	50	35.2	50	35.2
BG 400-1	02	0.8	0	0	09	5.7	64	9.7	64	9.7	64	9.7
BG 379-2	0	0	0	0	13	7.7	09	8.1	09	8.1	09	8.1
BG 11-11	0	0	0	0	07	3.3	07	5.5	07	5.5	07	5.5
BG 380	01	0.5	0	0	01	1.0	03	2.5	03	2.5	03	2.5
Others												
Total	72	60.4	66	64.0	75	59.2	85	65.0	85	65.0	85	65.0

3-1-4 Quality of seed paddy

MEA has its own seed paddy farm in Unit 1, Block 302, adjacent to the survey area. MEA has a plans to supply the entire certified seed paddy requirements of the System 'C'. Free seed paddy was given to all settlers for their first cultivation in the new lands. The main varieties issued were BG 94-1 and BG 34-8. 5 bushels were provided for each 1 ha allotment. After settling down farmers introduced other recommended high yielding varieties were purchased from government sources. As a result the use of certified seed paddy reached high level in the project area. MEA anticipate renewal of seed paddy once in 4 seasons. Therefore at any given season they will plan to supply only 25% of the total amount of seed paddy used during that season. As such for 3 consecutive seasons farmers own seed will be used for sowing. Therefore it is advisable for them to select seed plots in their fields with the first sowing of certified seed paddy and continue this selection during the latter two seasons. (Table 3-1-4)

3-1-5 Establishment of the paddy crop

Under ideal conditions of crop management no significant yield difference has been observed between broadcasting and transplanting. However under the managerial conditions of an average farmer transplanting has always indicated better results over broadcasting. This difference could be attributed to

- (1) Unevenness in broadcasting and occurrence of vacancies.
- (2) Tendency for thick sowing to avoid the occurrence of vacancies.
- (3) Difficulties experienced in weed control, expensive weedicides and difficulty of hand weeding under broadcast conditions.
- (4) Unevenness in land preparation.
- (5) Convenience of weed controle, fertilizer topdressing etc. in transplanting.

3-1-5-1 The question of superiority of transplanting over broadcasting

Farmers views were obtained about the superiority of transplanting over broadcasting. 96% of them mentioned that transplanting out yielded broadcasting under their field conditions.

Table 3-1-4 Replacement of seed paddy

Season	Quality of Seed paddy	Unit 2			Unit 3		
		Varieties	Bushels	%	Varieties	Bushels	%
1984/85 Maha	Certified seed	BG 94-1	52.5	17.1	BG 94-1	322.0	89.7
		BG 34-8	13.1				
		BG 400-1	41.0	11.0			
	Sub total		127.5	41.4		322.0	89.7
	Own seed others		135.0	43.8		16.0	4.4
			45.5	14.8		21.0	5.9
Sub total		180.5	58.6		67.0	10.3	
Total		308.0	100.0		359.0	100.0	
1985 Yala	Certified seed	BG 94-1	4.0	1.3	BG 94-1	103.0	25.8
		BG 34-8	22.0	7.2	BG 276-5	3.0	0.8
		BG 400-1	5.5	1.8			
	Sub total		31.5	10.4		106.0	26.6
	Own seed others		236.0	77.4		292.5	73.4
		36.0	11.9		0	0	
Sub total		272.0	89.6		292.5	73.4	
Total		303.5	100.0		398.5	100.0	
1985/86 Maha	Certified seed	BG 34-8	1.0	0.3	BG 94-1	64.0	15.3
		BG 34-6	2.0	0.6	BG 276-5	2.5	0.6
		BG 400-1	12.0	3.7	BG 400-1	83.0	19.9
		BG 379-2	28.0	8.7	BG 379-2	43.0	10.3
		BG 11-11	4.0	1.2	BG 11-11	33.0	7.9
				BG 380	9.0	2.2	
Sub total		47.0	14.5		234.5	56.2	
Own seed others		214.5	66.4		180.0	43.1	
		61.5	19.0		3.0	0.7	
Sub total		276.0	85.5		183.0	43.8	
Total		323.0	100.0		417.5	100.0	

3-1-5-2 Difficulties of transplanting paddy

Farmers in Unit 2 and Unit 3 indicate the following two factors as main barriers in expanding the extents under transplanting.

Table 3-1-5-2 Main reasons of difficulty of transplanting

	Unit 2	Unit 3
(1) Insufficient family labour	86%	78%
(2) Insufficient money to hire labour	66	43

3-1-5-3 Adoption of transplanting by farmers

Extents under transplanting during the two seasons immediately after settling down ie. 1985 Yala and 1985/86 Maha have been very low (Table 3-1-5-3). In 1985 Yala 4 (6.2%) out of 65 farmers in Unit 2 transplanted only 3.6 (5.5%) ha out of 65 ha, Unit 3 had no transplanting. In 1985/86 Maha 22 (33.9%) farmers in Unit 2 transplanted 15.3 (23.5%) ha. In comparison to this Unit 3 had only 2 (3.0%) farmers transplanted 2 ha. Although the extent under transplanting has been low in Unit 3 the yield obtained has been higher than that of Unit 2. This difference could be attributed to factors other than the method of crop establishment such as soil fertility and use of fertilizer. However when inquired about the extents of transplanting in 1986/87 Maha from 65 farmers in each Unit, it was observed that 62 (95%) farmers in Unit 2 will have transplanting 42 (65%) ha and 63 (97%) farmers in Unit 3 will have transplanting 135 (83%) ha.

3-1-5-4 Row transplanting

Row transplanting was very rare. However farmers were aware of the superior qualities of row transplanting. High cost involved in row transplanting hindered the spreading of this technique. Following measures will contribute to reduce the cost of row transplanting.

Table 3-1-5-3 Extent of broadcasting and transplanting

(1) 1985 Yala (achievement)

		Row seeding	Row trans-planting	Random trans-planting	Broad casting	Total
Unit 2	No. of farmers	01	01	03	60	65
	(%)	(1.5)	(1.5)	(4.6)	(92.4)	(100)
	Extent ha	01	06	03	60.0	65.0
	(%)	(1.5)	(0.9)	(4.6)	(93.0)	(100)
Unit 3	No. of farmers	0	0	0	65	65
	(%)	0	0	0	(100)	(100)
	Extent ha	0	0	0	65.0	65.0
	(%)	0	0	0	(100)	(100)

(2) 1985/86 Maha (achievement)

		Row seeding	Row trans-planting	Random trans-planting	Broad casting	Total
Unit 2	No. of farmers	01	05	17	51	* 65
	(%)	(1.5)	(7.7)	(24.2)	(78.5)	(-)
	Extent ha	0.3	2.8	12.5	49.4	65.0
	(%)	(0.5)	(4.3)	(19.2)	(76.0)	(100)
Unit 3	No. of farmers	0	01	01	63	65
	(%)	0	(1.5)	(1.5)	(97.0)	(100)
	Extent ha	0	01	01	63.0	65.0
	(%)	0	(1.5)	(1.5)	(97.0)	(100)

(3) 1986/87 Maha (plan)

		Row seeding	Total of row and local transplanting	Broad casting	Total
Unit 2	No. of farmers	-	54	34	* 65
	(%)	-	(83.1)	(25.3)	(-)
	Extent ha	-	42.0	23.0	65.0
	(%)	-	(64.6)	(35.4)	(100)
Unit 3	No. of farmers	-	61	26	* 65
	(%)	-	(93.8)	(40.0)	(-)
	Extent ha	-	54.0	11.0	65.0
	(%)	-	(83.1)	(16.9)	(100)

Note: * Some farmers adopt transplanting and broadcasting together.

(1) Manually operated paddy transplanting machine

Many farmers in Unit 2 and Unit 3 were aware of the transplanter designed by the Farm Machinery Training Centre, Maha Illuppallama. A dapog type nursery was required for this machine. The price of this machine is Rs.3,050/=. About half the number of farmers who were aware of the use of this machine in other areas expressed their desire to own one.

(2) Rake type row marker

Most of the farmers were aware of this type of marker. However non of them had the experience of using it. Rake type marker could be turned out at the village carpenter for a cost of about Rs.250/=. Use of the rake type marker could save upto 30% of the labour that is required for row transplanting using the conventional rope. Therefore this is an appropriate technique suitable for introduction to the farmers.

3-1-6 Fertilizer

Almost all the farmers in Unit 2 and 3 knew the Department of Agriculture fertilizer recommendation for paddy and they fertilized their paddy crops. However it was observed that 20% of the farmers in Unit 2 and 17% of the farmers in Unit 3 applied fertilizer inadequately, creating an imbalance (Table 3-1-6-3). The Department of Agriculture fertilizer recommendation for paddy and the actual amount of fertilizer used for paddy in this area are given in Table 3-1-6-1 and Table 3-1-6-2. Farmers in Unit 2 used 73-74% of the total of fertilizer required for a hectare of paddy, while farmers in Unit 3 did much better by using 92-93% of the fertilizer requirement of paddy. 4-4 $\frac{1}{2}$ months paddy varieties were not cultivated during 1985 Yala. In 1985/86 Maha 4-4 $\frac{1}{2}$ months varieties occupied 29.4% and 45.9% of the extents cultivated in Unit 2 and Unit 3 respectively. As a result the fertilizer usage in Unit 2 and Unit 3 increased by 10 and 15 kg per ha in the fields where medium aged varieties are cultivated. This increase has been in the basal fertilizer. The per hectare fertilizer use in Unit 3 exceeds that of Unit 2 by 80kg. However the excessive use of TDM fertilizer i.e. 150 kg per ha in Unit 3 requires observation. The normal recommendation is 125 kg/ha.

Table 3-1-6-1 Department of Agriculture fertilizer recommendation for paddy in this area (kg/ha)

Fertilizer	Basal	Topdressing		Total
	V Mix.	Urea	TDM 1	
3-3 $\frac{1}{2}$ months varieties	187.5	93.75	125	406.25
4-4 $\frac{1}{2}$ months varieties	187.5	125	125	437.25

Note: N P₂O₅ K₂O
 Urea 46%
 V Mix. 4 : 30 : 12
 TDM 1 34 : 0 : 16

Table 3-1-6-2 Actual use of fertilizer (kg per ha)

Ferti- lizer	1985 Yala				1985/86 Maha			
	Basal V Mix.	Topdressing		Total	Basal V Mix.	Topdressing		Total
		Urea	TDM 1			Urea	TDM 1	
Unit 2	107.9	71.6	119.0	298.5	123.3	69.1	115.4	307.8
Unit 3	135.6	87.5	150.0	373.1	151.7	85.3	150.0	387.0

Table 3-1-6-3 Percentage of actual use of fertilizer for the recommendation

		1985 Yala		1985/86 Maha	
		Actual use	Recommendation	Actual use	Recommendation
Unit 2	kg	298.5	406.25	307.8	415
	(%)	(73.4)	(100)	(74.2)	(100)
Unit 3	kg	373.1	406.25	387	421
	(%)	(91.8)	(100)	(93.3)	(100)

Table 3-1-6-4 Percentage of farmers who did not use fertilizer or used inadequate quantities (unbalanced) of fertilizer

Fertilizer		1985 Yala				1985/86 Maha			
		Did not use				Did not use			
		Any fertilizer	V Mix.	Urea	Total	Any fertilizer	V Mix.	Urea	Total
Percentage of farmers	Unit 2	4.7	10.9	4.7	20.3	4.7	9.3	4.7	18.7
	Unit 3	0	9.2	7.7	16.9	0	6.1	10.8	16.9

Note: All farmers except no fertilizer users applied some quantity of TDM 1.

3-1-7 Weed control

Weed control was mainly by using weedicides. 85% of the farmers in Unit 2 and all farmers in Unit 3 applied weedicides such as 3.4 DPA and MCPA (Table 3-1-7-1). Cost of the recommended dosage of MCPA for 1 ha i.e. 900ml. is Rs.80/=. However Cyplus weeds bring the dominant weed in the area, farmers have to use 3.4 DPA for its control. 8,100 ml. which is the recommended dosage of 3.4 DPA for a hectare costs Rs.1,100/=. Therefore application of the recommended dosage of 3.4 DPA was restricted to places infested with Cyplus weeds. The average percentages of 1985 Yala and 1985/86 Maha of the extents spread with 3.4 DPA per farmer was 23.6% and 33.9% for Unit 2 and Unit 3 respectively and the total costs of weedicides applied per farmer was Rs.366/= in Unit 2 and Rs.458/= in Unit 3. The cost of 3.4 DPA/ha required for controlling Cyplus weeds is Rs.1,100/= and it occupies 18% of the total cost cultivation of paddy (Table 3-1-7-2, Table 3-1-14). Therefore serious consideration should be given, either to the introduction of a low chemicals for Cyplus weeds control or to the introduction of a cultivation technique to control Cyplus. However 3.4 DPA is the most effective weedicide for Cyplus control. Row transplanting with the introduction of the rotary weeder could be a fitting suggestion.

Table 3-1-7-1 Methods of weed control

		1985 Yala				1985/86 Maha			
		Hand weeding	Rotary weeder	Weedicide		Hand weeding	Rotary weeder	Weedicide	
				3.4 DPA	MCPA			3.4 DPA	MCPA
Unit 2	ha	0	0	10.4	34.6	0	0	7.2	45.6
	(%)	(0)	(0)	(16.0)	(56.8)	(0)	(0)	(11.1)	(70.2)
Unit 3	ha	0	0	22.4	63.2	0	0	22.0	64.0
	(%)	(0)	(0)	(34.5)	(97.2)	(0)	(0)	(33.4)	(98.5)

Table 3-1-7-2 Application of weedicides

1985 Yala										
	3.4 DPA					MCPA				Total
	Percentage of users (%)	Percentage of extent applied (%)	Extent per user (%)	Expenditure of weedicides per used farmer Rs.	Percentage of users (%)	Percentage of extent applied (%)	Extent per user (%)	Expenditure of weedicides per used farmer Rs.	No. of used farmers (%)	
Unit 2	(63.0)	(15.8)	(25.0)	284	(32.3)	(56.2)	(100)	96	(88.0)	380
Unit 3	(100)	(34.8)	(34.4)	390	(97.1)	(97.0)	(100)	76	(100)	466

1985/86 Maha										
	3.4 DPA					MCPA				Total
	Percentage of users (%)	Percentage of extent applied (%)	Extent per user (%)	Expenditure of weedicides per used farmer Rs.	Percentage of users (%)	Percentage of extent applied (%)	Extent per user (%)	Expenditure of weedicides per used farmer Rs.	No. of used farmers (%)	
Unit 2	(49.2)	(11.1)	(22.2)	252	(43.1)	(70.0)	(100)	100	(83.0)	352
Unit 3	(100)	(33.6)	(33.3)	378	(98.0)	(98.0)	(98.0)	82	(100)	460

Note: Recommendation dosage of weedicides

3.4 DPA : 8,100 ml/ha, MCPA (40) : 900 ml/ha

3-1-8 Pest control

Pest damages reported by the farmers are indicated in the form of percentages in Table 3-1-8. 58.5% of the farmers in Unit 2 and 78.5% of the farmers in Unit 3 reported pest damages respectively in 37.4% and 45.8% of the extents in 1985 Yala. 44.6% of the farmers in Unit 2 and 22.7% in Unit 3 reported pest damages on 30.1% and 17.5% of the extents in 1985/86 Maha. Fortunately the damages reported were not serious. Major insect pests detected were Leaf Rollers, Brown Plant Hoppers, Stem Borers, Gall Midges, Thrips and Paddy Bug. (Table 3-1-8)

Insecticides recommended by the Department of Agriculture such as Monocrotophos, Baycarb, Lebaycid, Carbofuran (Curaterr, Furadan) were purchased by the farmers for controlling these pest attacks from the MEA stores and shops in the town. There were a few farmers who did not apply the recommended dosage of agrochemicals, but the majority used the correct amounts. The average costs of agrochemicals used by farmers in 1985 Yala and 1985/86 Maha are Rs.202/= for Unit 2 and Rs.168/= for Unit 3.

Neglegible incidents of yellow virus and some fungus were reported.

Hand sprayers and knapsack sprayers were used by the farmers for spraying insecticides. Only a few farmers owned sprayers. Majority either borrowed or contracted the spraying at the rate of Rs.30/= per acre per spraying.

3-1-9 Harvesting

3-1-9-1 Harvesting time

60% of farmers harvested their paddy at the proper time, 35 to 40 days after heading. 40% of the farmers harvested their paddy too late, over 45 days after heading. Delayed harvesting has enhanced shedding of grains, lowering the quality of rice. Main reason for delayed harvesting is insufficient labour. Labour utilization for harvesting in Unit 2 has been 20.6 man-days and for Unit 3, 16.8 man-days. Harvesting time is the second peak in the labour requirement of paddy cultivation. (Table 3-1-9-1, Table 3-1-9-2)

Table 3-1-8 Outbreak of insect pests and diseases and cost of pesticides

(1) Insect pests

Kind of insect pest	1985 Yala				1985/86 Maha			
	Unit 2		Unit 3		Unit 2		Unit 3	
	% of farmers reporting	% of extent affected	% of farmers reporting	% of extent affected	% of farmers reporting	% of extent affected	% of farmers reporting	% of extent affected
Leaf Rollers	23.1	15.4	4.6	4.0	26.2	16.8	10.8	7.4
Brown Plant-hoppers	9.2	5.2	58.5	32.3	3.0	0.7	9.2	4.6
Stem Borers	16.9	10.8	15.4	18.6	10.8	8.6	1.5	0.9
Gall midge	6.2	1.7	0	0	3.0	0.7	0	0
Thrips	3.1	1.5	0	0	1.5	0.6	0	0
Paddy Bug	4.6	2.8	3.0	0.9	3.0	2.6	6.2	4.6
Total	58.5	37.4	78.5	45.8	44.6	30.1	27.7	17.5
Cost of insecticides used farmer	Rs.216		Rs.187		Rs.189		Rs.148	

(2) Diseases

Kind of diseases	1985 Yala				1985/86 Maha			
	Unit 2		Unit 3		Unit 2		Unit 3	
	No. of farmers	Extent ha	No. of farmers	Extent ha	No. of farmers	Extent ha	No. of farmers	Extent ha
Yellow virus	01	0.4	01	1.0	0	0	0	0
Fungas	0	0	0	0	0	0	01	0.2

Note: Results of a survey involving 65 farmers and 65 ha in Unit 2 and 3

Table 3-1-9-1 Harvesting time

Harvesting time		Days after heading			Total
		35	40	45	
No. of farmers threshing	No.	26	52	52	130
	(%)	(20)	(40)	(40)	(100)

Table 3-1-9-2 Drying of paddy

Grains and straw intact	No. of days dried		0	1	2	3	4	Total
	farmers	No.		02	08	99	18	01
(%)			(1.6)	(6.2)	(77.3)	(14.1)	(0.8)	(100)
Paddy after threshing	farmers	No.	104	20	03	01		128
		(%)	(81.3)	(15.6)	(2.3)	(0.8)		(100)

3-1-9-2 Drying of harvest

90% of the farmers dried their paddy after harvest while intact to the straw. Paddy is dried for 2 to 3 days in the field itself. 80% of the farmers did not to any drying specially after threshing. (Table 3-1-9-2)

3-1-10 Lodging of paddy plants

Plant lodging is one of the favourable factors for lowering the quality of rice. Lodging occurred in 18.6 (14.3%) ha in 1985 Yala and 34.7 (26.7%) ha in 1985/86 Maha in the survey area (130 ha) of Unit 2 and Unit 3. Plant lodging was most prominent in broadcasted fields under unbalanced fertilizer application, especially under excessive

use of Urea or TDM. Combined with heavy rain, a similar situation occurred in 1985/86 Maha season. No relationship in lodging was observed with either the variety or the difference in the location of paddy fields (upper, middle or lower).

3-1-11 Threshing

128 farmers out of 130 farmers resorted to the 4 wheel tractor, one farmer used 2 wheel tractor and one farmer used combination of 2 wheel tractor and threshing machine for threshing operations. Buffalos were not used for threshing. The cost of 4 wheel tractor and 2 wheel tractor was not different.

Cost of threshing by tractor for 1 ha averaged:

Rs.354/= (Unit 2) Rs.331/= (Unit 3) in 1985 Yala

Rs.350/= (Unit 2) Rs.340/= (Unit 3) in 1985/86 Maha

depending on yield conditions.

Threshing plays an important role in the production of high quality rice, but when threshing is done by tractor or buffalos on the bare ground mixing of stones, sand and other varieties is unavoidable. Threshing type of paddy thresher has become popular in other areas including zone 2. The paddy threshed from this machine is of high quality, since it eliminates the mixing of stones and sand usually occurring in the bare threshing floor. The hiring of this type of machine is more economical to the farmers than threshing by tractor or buffalos. Threshing capacity of the machine is 2 ha per day, and the cost is Rs.250/= per 1 ha. Upto 1985/86 Maha only one farmer in the survey area owned this type of machine. This machine is sold for Rs.23,000/= on installment payment.

3-1-12 Transportation of the threshed paddy

All farmers transported their threshed paddy from their threshing floors to the homesteads by hired tractors at a cost of about 80 cents per bushel in both Units and in 1985 Yala and 1985/86 Maha.

(Table 3-1-12)

Table 3-1-12 Transportation of threshed paddy

(1) 1985 Yala

	No. of farmers	Kind of transportation		Transportation of paddy per farmer (Bu)	Hire charges	
		Tractor	Ox-cart		Per farmer Rs.	Per bushel ct.
Unit 2	65	65	0	168.0	142.5	85
Unit 3	65	65	0	180.3	141.6	79

(2) 1985/86 Maha

	No. of farmers	Kind of transportation		Transportation of paddy per farmer (Bu)	Hire charges	
		Tractor	Ox-cart		Per farmer Rs.	Per bushel ct.
Unit 2	65	65	0	194.9	159.1	82
Unit 3	65	65	0	205.2	149.7	73

3-1-13 Yield and production of paddy

The yield per acre at the settlement season of 1984/85 Maha was 51 bushels in Unit 2 and 53 bushels in Unit 3 respectively. These yields were inferior to the national average yield 67.84 bushels in 1984/85 Maha. However, in next season of 1985 Yala it increased to 67.8 bushels and 69.3 bushels in Unit 2 and Unit 3 respectively, and in 1985/86 Maha is further more increased to 74.9 bushels in Unit 2 and 80.5 bushels in Unit 3. These yields were all superior to the national average yields of the corresponding same seasons, 64.83 bushels in 1985 Yala and 69.54 bushels in 1985/86 Maha. (Table 3-1-13-1, Table 3-1-13-2) These yields were achieved with only a small extent under transplanting and also with inadequate fertilizing,

Table 3-1-13-1 Average paddy production from $2\frac{1}{2}$ acres (1 ha)
(in 1985 Yala and 1985/86 Maha)

(1) 1985 Yala

	Less than 100 bu.	101-150 bu.	151-200 bu.	201-250 bu.	Over 251 bu.	Total No. of farmers	Average production bu.
Unit 2 No. of farmers (%)	05 (7.9)	18 (28.6)	31 (49.2)	06 (9.5)	03 (4.8)	63 (100)	168.0
Unit 3 No. of farmers (%)	03 (4.6)	19 (29.2)	33 (50.8)	08 (12.3)	02 (3.1)	65 (100)	180.3

(2) 1985/86 Maha

	Less than 100 bu.	101-150 bu.	151-200 bu.	201-250 bu.	Over 251 bu.	Total No. of farmers	Average production bu.
Unit 2 No. of farmers (%)	03 (4.8)	12 (19.1)	28 (44.4)	15 (23.8)	05 (7.9)	63 (100)	187.4
Unit 3 No. of farmers (%)	01 (1.5)	13 (20.0)	25 (38.5)	15 (23.1)	11 (16.9)	65 (100)	205.2

Table 3-1-13-2 Average paddy yield
(Bushels per acre)

	1984/85 Maha	1985 Yala	1985/86 Maha
Unit 2	51.0	67.2	74.9
Unit 3	53.0	72.1	82.0
*National	67.84	64.83	69.54

* Source: Department of Census & Statistics

weed control and pest control etc. If all the farmers in Unit 2 and Unit 3 adhere to the guidance on paddy cultivation provided by the MEA, the average yield in Unit 2 and Unit 3 will reach more than 100 bushels per acre (5,125 kg per ha) in the near future.

Paddy production from the 1 ha varied in a wide range, from less than 100 bushels to 310 bushels. In 1985 Yala 63.5% of the farmers in Unit 2 and 66.2% of the farmers in Unit 3, and in 1985/86 Maha 76.1% of the farmers in Unit 2 and 78.5% of the farmers in Unit 3 harvested over 151 bushels from the 1 ha (60.4 bushels per acre). In 1985 Yala 4.8% of the farmers in Unit 2 and 3.1% of the farmers in Unit 3, and in 1985/86 Maha 7.9% of the farmers in Unit 2 and 16.9% of the farmers in Unit 3 harvested over 251 bushels from the 1 ha (over 100.4 bushels per acre).

3-1-14 Production cost and returns from paddy

Table 3-1-14 shows the total input, output and net income from paddy production of Unit 2 and Unit 3 farmers. Cost of paddy production in 1985/86 Maha increased only by Rs.200/= to that of in 1985 Yala. However, the gross income of 1985/86 Maha increased by Rs.2,288/= in Unit 2 and by Rs.2,340/= in Unit 3. Over that of 1985 Yala due to an increase in the purchase price of paddy and an increase in the actual production by farmers.

The total net income of the two seasons, 1985 Yala and 1985/86 Maha was Rs.9,072/= in Unit 2 and Rs.12,030/= in Unit 3. Net income of Unit 3 enables the farmers to enjoys a reasonable living standard, but that of Unit 2 is only Rs.672/= above the income level for eligibility under the National Food Stamp Programme.

The desirable gross income cost of inputs ratio would be to keep the cost of inputs below 50% of gross income. However in 1985 Yala this ratio was very high at 65.3% in Unit 2 and 54.6% in Unit 3, but in 1985/86 Maha it come down to 55% and 46.8% in Unit 2 and Unit 3 respectively. The difference in this ratio in Unit 2 and 3 would be attribute to

- (1) In Unit 3 there is 'Attam' labour (farmers mutually helping each other without payment) which helps to reduce the cost

Table 3-1-14 Production cost and incomes from paddy
per $2\frac{1}{2}$ acres (1 ha) (Rs.)

Items	1985 Yala		1985/86 Maha	
	Unit 2	Unit 3	Unit 2	Unit 3
Land preparation				
Tractor and buffalo	1,814	1,600	1,841	1,644
Seed paddy (bu)	(5.2) 494	(6.7) 637	(6.3) 599	(6.5) 618
Fertilizer (kg)	(289) 867	(353) 1,059	(296) 888	(387) 1,161
Agrochemicals				
(1) Weedicides	380	466	352	460
(2) Pesticides	216	182	226	173
Sprayer hire charge (2 times)	60	60	60	60
Threshing (Tractor)	332	332	350	341
Cleaning hire charge	179	167	183	171
Transportation	142	143	150	159
Sub total	4,483	4,646	4,649	4,787
Cost of hired labour (Man-day)	(53.7)	(37.3)	(55.3)	(38.3)
(Wages @ man-day)	39	38	39	38
	2,094.3	1,417.4	2,150.1	1,455.4
Total cost	6,577.3	6,063.4	6,779.1	6,242.4
Percentage of total input	65.3%	54.6%	55.0%	46.8%
Yield (Bu/ $2\frac{1}{2}$ acs)	168.0	180.3	187.4	205.2
Price (@ bushel)	60	61	66	65
Gross output	10,080.0	10,998.3	12,368.4	13,338.0
Net farm income	3,502.7	4,934.9	5,569.3	7,095.6
Family and attam	Rs.39x24.5	Rs.38x30.6	Rs.39x17.8	Rs.38x32.0
Labour income	955.5	1,162.8	694.2	1,216.0
(Man-day)	(24.5)	(30.6)	(17.8)	(32.0)
(excluding water management)				

of labour.

- (2) The paddy production in Unit 3 is 12.3 bushels in 1985 Yala, 17.8 bushels in 1985/86 Maha per ha ($2\frac{1}{2}$ acres) more than in Unit 2.

3-1-15 Labour requirement

The labour requirement was at a peak during (1) land preparation and (2) harvesting operations. Table 3-1-15-1 shows that land preparation and harvesting consumed 31% of the total labour requirement in paddy cultivation. Labour was hired for these two operations. In the near future wider adoption of transplanting by farmers will create another peak in labour requirement.

The three sources of labour were family labour, hired labour and 'Attam' labour. Unit 3 has all the above sources of labour but Unit 2 has no 'Attam' labour. Normally 'Attam' labour takes place among relatives and close friends. Even though 80% of the families in Unit 2 and 5% of the families in Unit 3 are related to each other there was no 'Attam' labour in Unit 2 and 20% of the farmers had 'Attam' labour in Unit 3. Author could not reconfirm whether Unit 2 has no habit of 'Attam' labour or the farmers misinterpreted the question. Source of labour in Unit 2 was family labour 31% and hired labour 69% and in Unit 3 family labour was 30%, hired labour 55% and 'Attam' labour 15% in 1985 Yala. Labour charges are Rs.38 - 39/= per day in this area. (Table 3-1-15-2)

3-1-16 Disposal of paddy

All farmers reserved 3 - 4% (4 - 6 bushels) of the production for seed, about 25% (40 - 50 bushels) of the production was kept for their consumption and 71 - 73% of the production marketed. Quantity marketed varied from about 20 bushels to over 200 bushels in 1985 Yala and 1985/86 Maha.

In 1985 Yala 95% of the farmers in Unit 2 sold on the average 72% (119.8 bushels) of production paddy to the private traders at an average price of Rs.59/50/bushel. Only 1.3% was sold to the Paddy

Table 3-1-15-1 Requirement of labour for different operations in 1985 Yala (for 1 ha)

Operations		Unit 2				Unit 3			
		Hired	Family	Attam	Total	Hired	Family	Attam	Total
Land preparation	M/D (%)	18.3	6.0	-	24.3 (31.1)	12.1	6.0	2.9	21.0 (30.9)
Broad casting	M/D (%)	6.3	3.2	-	9.5 (12.2)	4.8	2.6	2.8	10.2 (15.0)
Trans-planting	M/D (%)	2.5	0.4	-	2.9 (3.7)	1.0	0.2	0.1	1.3 (1.9)
Application of fertilizer	M/D (%)	0.1	1.7	-	1.8 (2.3)	-	2.0	-	2.0 (2.9)
Weed and pest control	M/D (%)	0.2	2.1	-	2.3 (2.9)	0.1	1.4	-	1.5 (2.2)
Harvesting	M/D (%)	14.9	5.7	-	20.6 (26.2)	10.4	3.8	3.6	17.8 (26.2)
Threshing	M/D (%)	5.7	2.5	-	8.2 (10.5)	5.8	2.0	0.4	8.2 (12.1)
Cleaning	M/D (%)	4.0	1.8	-	5.8 (7.4)	2.0	1.4	0.3	3.7 (5.5)
Transportation	M/D (%)	1.7	1.1	-	2.8 (3.6)	1.1	1.0	0.1	2.2 (3.3)
Total	M/D (%)	53.7 (68.7)	24.5 (31.3)	-	78.2 (100)	37.3 (53.0)	20.4 (30.0)	10.2 (15.0)	67.9 (100)

Note: Excluding water management

M/D: Manday

Table 3-1-15-2 Source of labour (for 1 ha)

	Source of labour		Hired	Family	Attam	Total	Wages M/D (Rs.)
		M/D (%)					
1985 Yala	Unit 2	M/D (%)	53.7 (68.7)	24.5 (31.3)	- (-)	78.2 (100)	39
	Unit 3	M/D (%)	37.3 (55.0)	20.4 (30.0)	10.2 (15.0)	67.9 (100)	38
1985/86 Maha	Unit 2	M/D (%)	55.3 (75.7)	17.8 (24.3)	- (-)	73.1 (100)	39
	Unit 3	M/D (%)	38.3 (54.5)	20.0 (28.4)	12.0 (17.1)	70.3 (100)	38

Note: Excluding water management

M/D: Manday

Marketing Board (P.M.B) at a price of Rs.62/50/bu. Total recovered by sale of paddy was Rs.7,266/= per farmer. In Unit 3 farmers sold 54.7% (97.4 bushels) of paddy production to the private traders at an average price of Rs.59/60/bu. and 28.1% of farmers sold part of their production 15.7% (27.9 bushels) to the PMB at a price of Rs.61/70/bu. Average quantity of sold was 70.5% (125.3 bushels) of the production and amount realized was Rs.7,518/=.

In 1985/86 Maha paddy was sold to the same places as in 1985 Yala. 95% of the farmers in Unit 2 marketed 73.6% (135.2 bushels) of paddy production realizing Rs.8,879/=. They sold 71.2% of their production to the private traders at a price of Rs.65/60/bu., and only 4.8% of the farmers sold 4.4 bushels to the P.M.B. at a price of Rs.68/=bu. Meanwhile in Unit 3 farmers marketed 72.7% (147 bushels) of production realizing Rs.9,595/=. They sold 50% (101.6 bushels) of the production to the private traders at a price of Rs.64/50/bu, and 46.2% of the farmers sold 22.3% (45.4 bushels, increase of 1.6 times over 1985 Yala) of their production to the P.M.B. at a price of Rs.67/=bu.

Although the Paddy Marketing Board pays a higher price for the farmers produce, farmers find it difficult to reach the qualifying standards of the P.M.B. due to busymen and labour shortages etc. They do not have means of transportation, hence it is convenient to dispose the paddy at home or at threshing floor to a private traders who comes to the door step. P.M.B. purchases points are located at quite a distance from Unit 2. The payment for the purchases made are also delayed. As a result it is advantageous for the farmers to sell their paddy to private traders avoiding all the difficulties mentioned above. However the sale of 30% of production to P.M.B. in Unit 3 in 1985/86 Maha is an encouraging tendency which would spread even Unit 2. (Table 3-1-16)

Table 3-1-16 Disposal of paddy (per farmer)

1985 Yala

	Production per farmer (Bu)	Reserva- tion for seed (Bu)	Reserva- tion for consump- tion(Bu)	To private traders			To Paddy Marketing Board					Total		
				No. of farmers	Quanti- ty(Bu)	Price per bushel	Amount (Rs.)	No. of farmers	Quanti- ty(Bu)	Price per bushel	Amount (Rs.)	Quanti- ty(Bu)	Price per bushel	Amount (Rs.)
Unit 2	166.4	7.0	37.4	62	119.8	59.5	7,128	02	2.2	62.5	138	122.0	59.6	7,266
(%)	(100)	(4.2)	(22.5)	(100)	(72.0)		(98.2)	(3.0)	(1.3)		(1.8)	(73.3)		(100)
Unit 3	177.8	5.2	47.3	64	97.4	59.6	5,805	18	27.9	61.7	1,659	125.3	60.0	7,518
(%)	(100)	(2.9)	(26.6)	(100)	(54.7)		(79.8)	(28.1)	(15.7)		(22.2)	(70.5)		(100)

1985/86 Maha

Unit 2	183.6	7.7	40.7	62	130.8	65.6	8,580	03	4.4	68.0	299	135.2	65.7	8,879
(%)	(100)	(4.2)	(22.2)	(100)	(71.2)		(96.6)	(4.8)	(2.4)		(3.4)	(73.6)		(100)
Unit 3	203.1	6.3	49.8	65	101.6	64.5	6,553	30	45.4	67.0	3,042	147.0	65.2	9,595
(%)	(100)	(3.1)	(24.5)	(100)	(50.0)		(68.3)	(46.2)	(22.3)		(31.7)	(72.7)		(100)

3-2 Commercial Cultivation of Other Field Crops

The survey indicated that the commercial cultivation of other crops was done by only a few farmers. However it was observed that almost all the farmers cultivated other crops in their homesteads in Maha for their consumption. Any surplus produce was sold out, but this cannot be considered as a commercial level transaction. The main other field crops cultivated were maize, cassava, pulses, chilli and vegetables.

Almost all the farmers were aware of the high incomes obtained by their counterparts in System 'H' from chillies. Many farmers desired to cultivate some extent under other cash crops such as chillies and onions under irrigation during the on coming Yala seasons.

3-3 Permanent Crops

All farmers planted permanent crops (fruit tree) in their homesteads. Most commonly cultivated were banana, coconut, mango, jak, orange and papaw. They had no plans to sell their surplus highland produce except for a few farmers who wanted to dispose off their bananas.

3-4 Animal Husbandry

Few farmers were found to be rearing animals such as buffalos, milk cows and poultry. The survey indicated that 35% of the farmers desired animal husbandry. Their order of preference was milk cows, poultry for eggs, buffalos and cattle. Non availability of funds and credit prevented the immediate implementation of a programme.

3-5 Land Lease

Though only two years have lapsed after the settling in of farmers, unauthorised land transactions such as mortgaging, leasing etc. have already become a common thing in the area. Most of the transactions were confined only to a portion of the allotment. Mortgaging or leasing out of the entire allotment was not observed.

IV WATER MANAGEMENT

4-1 Organization

Turn out groups of farmers were organized to facilitate better water management. 25 turn out groups in Unit 2 and 20 turn out groups in Unit 3 were organized guided by the MEA. A turn out group comprises of 8 - 10 farmers depending on the same field channel for irrigation water. The leaders of the groups are elected by voting.

4-2 Participation Frequency of the Turn Out Groups in Channel

Clearing and maintenance of irrigation structures differed with each turn out group. (Table 4-2) Farmers have participated either once, twice or thrice in channel clearing (weeding and desilting) in groups. There had been 12 instances of participation in repairs to irrigation structures, individually or groups.

Table 4-2 Farmers participation in channel clearing and maintenance of irrigation structures individually or in groups

Type of operation	Times of participation					
	Once		Twice		Thrice	
	Individual	Group	Individual	Group	Individual	Group
Weeding	17	15	19	19	03	03
Desilting	17	15	16	16	05	05
Repairs to structures	01	01	05	05	0	0

Note: Number of farmers questioned 45

4-3 Water Availability

There were very few complains about nonavailability of water during different stage of land pereparation and different growth stages of paddy in 1985 Yala. All farmers were satisfied about the water availability in 1985/86 Maha. (Table 4-3)

Table 4-3 Complaints received in 1985 Yala and 1985/86 Maha on irrigation difficulties during different stages of paddy cultivation

Stage of paddy cultivation	Number of groups complaining	
	1985 Yala	1985/86 Maha
Land preparation	16	0
Seedling	15	0
Tillering	14	0
Flowering	15	0
Ripening	16	0

Note: 45 turn out groups were questioned in obtaining above results

4-4 Difficulties Experienced in Irrigation

Only few cases were reported in 1985 Yala. (Table 4-4)

Table 4-4 Difficulties experienced in irrigation

Type of difficulty	No. of groups Experiencing difficulty	
	1985 Yala	1985/86 Maha
Insufficient water	06	0
No water	02	0
Excess water	01	0
Unreliability of supply	10	0
Bad timing of supply	02	0

Note: Answers obtained by questioning 45 groups

4-5 Checking and Adjusting the Water Levels of Paddy Fields by Farmers

85% of farmers check the water levels every day, 11% of farmers check the water levels two or three times a week and 4% of farmers once a week. (Table 4-5)

Table 4-5 Checking of paddy field water level by farmers

Frequency	No. of farmers	
	No.	(%)
Daily	38	(85)
Three times a week	03	(07)
Two times a week	02	(04)
Once a week	02	(04)
Seldom	0	(0)
Never	0	(0)

Note: Number of farmers questioned 45

4-6 Closing of Water Inlet to the Paddy Fields from the Distributory Channels on Rainy Days

All the 45 farmers questioned told that they close the water inlets on rainy days.

4-7 Understanding of the Proper Water Level for Paddy

45 farmers questioned and 39 farmers answered as follows.

Table 4-7 Understanding of the proper water level for paddy

Water depth (cm)	No. of farmers who believed it as the correct depth
Below 2.5	13
2.6 - 5.0	26
5.1 - 7.5	0

4-8 Understanding of the Role of Water Management Turn Out Groups

45 farmers questioned answered in the following manner.

Table 4-8 Understanding of the role of water management turn out groups

	Fair distribution of irrigation water	Better maintenance of channel
No. of farmers	24	21

4-9 Understanding of the Water Management Charge

45 farmers questioned answered as follows.

Table 4-9 Understanding of the water management charge

	Required for maintenance of canals	Repairs to canal structures
No. of farmers	21	07

4-10 Water Charge

All farmers were aware that the water charge was Rs.250/= per hectare, year. 45 farmers when questioned about the reasonability of water charge answered in the following manner. (Table 4-10)

Table 4-10 Opinion for the water charge level

	Reasonable	Unreasonable (expensive)	Did not answer	Total
No. of farmers	31	02	12	45

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