SOCIO-ECONOMIC STUDY OF FARMERS IN PUZHAKKAL BLOCK IN COMMAND AREA OF PEECHI IRRIGATION PROJECT

BY

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THESIS

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DECLARATION

I, hereby declare that this thesis entitled "Socio-economic study of farmers in Puzhakkal block in command area of Peechi Irrigation Project" is a bonafide record of research done by me during the course of research and that the thesis has not previously formed the basis for the award to me of any degree, diploma, associateship, fellowship or other similar title, of any other University or Society.

Vellanikkara,
24 - 12 - 1982

SANTHA, A.M.

CERTIFICATE

Certified that this thesis entitled "Socio-economic study of farmers in Puzhakkal block in command area of Peechi Irrigation Project" is a record of research work done independently by Kum. Santha, A.M., under my guidance and supervision and that it has not previously formed the basis for the award of any degree, fellowship or associateship to her.

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C O N T E N T S

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INTRODUCTION

INTRODUCTION

Agriculture has been given a prime place in India since the beginning of the era of planned development. The progress of the entire economy is dependent upon the agricultural sector to a great extent. Irrigation forms the datum line for sustained successful agriculture. Hence water resource development, exploiting the surface as well as ground water was given unique importance in the plans for agricultural development. Upto the end of the Fourth Plan an irrigation potential of 11.69 million hectares was created. But the effective utilisation has been assessed at 84 per cent of the potential. Hence a shift of emphasis from creation of irrigation potential to full utilisation of the available potential was suggested in the plans.

The proper and efficient use of irrigation potential created, has to be taken up in two distinct phases - completion of all engineering works upto the last point in the water delivery system and more efficient on farm use of irrigation facilities to achieve improvements in agricultural production. The Irrigation Commission (1970-72) and the National Commission on Agriculture (1973) have examined the requirements

for both phases and emphasised the need for systematic Command Area (Ayacut) Development Programme. Considering the unutilised potential existing, Command Area Development Programme was launched towards the end of the Fourth Plan as a centrally sponsored scheme.

The concept of Command Area Development is a process of scientific management of water, land and crops. This Integrated Area Development requires co-ordinated action on several directions such as creation of distributaries and field channels, tapping of surface and ground water, soil conservation, agricultural extension, co-operation, provision for inputs and other infrastructural facilities like marketing, finance, storage etc. The ultimate goal is to promote a strategy for regional development, with the objective of maximising output, income and employment and general welfare of the people. The Command Area Development Authority is responsible for water management and the integrated development of the command areas. It may also help in agricultural development programmes with special emphasis on small and marginal farmers and agricultural labourers through maximising the yield per unit of water utilised, maximising the yield per unit of land irrigated and increasing the area of land irrigated.

The Command Area Development Authority in Kerala came into existence on August 1979. The Peechi irrigation project was one of the irrigation systems brought under the control

of the authority. A study of socio-economic background of the area under CADA would enable in the planning of programmes and further evaluation of the benefits.

Peechi Irrigation Project consists of a dam across Manali river, a tributary of Karuvannur river. The canal system consists of two main canals one on either bank. Together they are expected to irrigate an area of 17,256 hectares in Trichur district. The dam is located at 76°1[illegible]' E longitude and 10°30' N latitude. The river descends from the Vaniampara hills of the Western Ghats. The dam and reservoir is located at Peechi 24 km east of Trichur town. The construction of dam was started in 1947 and water was first let out for irrigation in 1953. The left bank canal which is 45 km long irrigates 2828 hectares of mundakan lands. The right bank canal which is 37 km in length irrigates an area of 6764 hectares of mundakan land in addition to 7664 hectares of kole lands. The ayacut of the peechi irrigation project is distributed in 5 blocks, namely Irinjalakuda, Anthikad, Cherppu, Puzhakkal and Ollukkara.

The socio-economic study of farmers in Puzhakkal block of command area of Peechi irrigation project was taken up with the following objectives.

1. To study the methods and practices followed for cultivation.

2. To assess the availability and use of resources.

3. To study cost and income structure of farm business.

4. To study the savings, investments, assets and debts pattern.

5. To understand general social and economic conditions - education, consumption pattern, standard of living etc.

6. To study the infrastructural facilities available.

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REVIEW OF LITERATURE

REVIEW OF LITERATURE

Socio-economic studies about the command area of irrigation projects in India seem to be limited. A brief review of the available literature is presented in four sections in this chapter.

General Socio-economic studies in Command areas

The various aspects of optimising benefits from utilisation of irrigation in Chambal Valley was studied by Anand (1960). He reported that maximum benefits can be obtained by reclamation of waste lands, adopting protective measures like levelling of land, soil conservation, drainage, mechanisation, provision for inputs, extension, communication, credit facilities and industrialisation through agro based industries.

The effects of Bakra Dam irrigation on the economy of Barani villages in Hissar were marked improvements in economic conditions of farm families, pattern of productive employment of family labour and demand for casual and permanent labour in villages (Anonymous, 1967).

Pathak and Desai (1977) made an attempt to over view the importance of irrigation and need for command area development. They discussed how canal irrigation can change cropping pattern and improve the agricultural practices in command area leading to improvements in economic conditions of beneficiaries.

Sisodia (1977) studied the difference in cropping pattern, cropping intensity and yields between the command and non-command areas in Chambal Valley. In non-command area the output was found to be more variable with the cropping pattern oriented towards food grains. But there was a better balance between food grains and cash crops in command areas.

Charan (1978) conducted a study in West Banas project which revealed that introduction of the project increased stability in agricultural production and intensity of inputs used which resulted in increased yields. The project also helped to bring more people above the poverty line and to even out the distribution of income in the region.

Singh et al. (1978) conducted an economic appraisal of on farm development programme in Ramganga command area. The immediate impact of on farm development observed in the case of extension of irrigation and cropping intensities.

Khuspe and Sawani (1979) carried out investigation on the canal water utilisation behaviour of farmers in Mula

Project command area and reported under utilisation of irrigation facilities by 56.67 per cent of farmers.

Pandey (1979) conducted a socio-economic study of Kiul-Bandua chandan project command area and highlighted socio-economic conditions of the area and infrastructural facilities.

Sharma and Kumar (1979) conducted a survey in Tomaria reservior system and concluded that the discrepancy which existed in the distribution of water did not adversely affect agricultural production due to other constraints like fertilizer use by which the small farmers could not reach the level of productivity reached by large farmers.

Pawar et al. (1980) made an expost evaluation of Ghod irrigation project. The study revealed that 39 per cent of the irrigation potential was unused and the various reasons attributed were inadequate and untimely supply of water, unsuitability of land to irrigation, inadequate supply of credit and other inputs and infrastructural facilities.

Suryawanshi et al. (1980) studied the economics of investment in Girna command area of Maharastra which revealed that there was a definite impact of CAD in cropping pattern, crop yields and levels of income of farmers. After the establishment of CADA the benefit cost ratio was found to increase from 1.14 to 2.13.

Economics of Crop and Livestock enterprises

Singh (1966) analysed the relation of size of holding and cost of cultivation. The results showed an increasing trend in output and decreasing trend in cost per acre with increase in holding size.

Chourasia and Singh (1972) studied the economics of local and high yielding varieties of paddy and wheat in Panagar village of Madhya Pradesh. The results showed that high yielding varieties were more labour intensive and responsive to fertilizers than local varieties. Even though the expenditure was high the cost per quintal was low for high yielding varieties.

Patil et al.(1978) studied the cost and income structure of farm business in Girna Command area and estimated the cost of cultivation per hectare of paddy to be Rs.1865.47 with a total output of 11.67 quintals and the per hectare net profit was Rs.610.59. The total per hectare cost of cultivation of banana worked out to Rs.7492.97. Though the amount involved was high the crop yielded a net profit of Rs.4876.54 per hectare.

Bal et al. (1980) in an investigation worked out the input output ratio and found that the ratio was higher for crop production when compared to milch animals in different farm sizes. The study conducted by Singh (1980) to explore into the potentiality of dairying revealed that it provide

additional income and employment to farm families.

Singh et al. (1980) studied the economics of livestock production in Farukhabad district and reported an average gross farm income and expenses of Rs.4991.22 and Rs.3553.88 respectively. The livestock production contributed 28.57 per cent of total farm income and 29.48 per cent of total farm expenses.

Patil et al. (1980) made an investigation on the socio-economic conditions of Ghod command area. While discussing the utilisation of farm resources and cost structure they estimated the cost of cultivation of paddy to be Rs.1740.45 with an output of 11.72 quintals. The per hectare profit was Rs.885.07.

Radhakrishnan et al. (1981) reported that the cost of cultivation of paddy during 1978-79 in Trichur district was Rs.2240.34 per hectare excluding rental value of land for high yielding varieties and Rs.1905 per hectare for local varieties. The cost per quintal was estimated to be Rs.80 for high yielding varieties and Rs.107 for local varieties. The B.C. ratio was 1.32 for high yielding varieties and 1.12 for local varieties excluding rental value.

Radhakrishnan et al. (1981) studied the cost of cultivation and economics of paddy in Kerala during 1979-80. The cost per quintal was estimated to be Rs.52.88 for high yielding varieties and Rs.93.60 for local varieties without taking

rental value of land into account. The benefit cost ratio was 1.64 for high yielding varieties and 1.14 for local varieties in Trichur.

Resource use

The study conducted by Radhakrishnan (1971) revealed that permanent men labour and irrigation water were the limiting factors influencing cropping pattern and hence there existed greater scope for increasing the income of farmers by reorganising existing resources with the technical knowhow available.

Negi et al. (1972) analysed the resource productivity and efficiency in different crops, using Cobb-Douglas function. The findings revealed that land was the most important resource which had significant and positive impact on almost all crops. Fertilizer showed a significant and positive impact on high yielding varieties of wheat.

Chaula (1975) assessed the expenditure on modern inputs for small farmers in Amritsar and found that only meagre expenditure was incurred as they did not apply the recommended dose of fertilizer, irrigation etc.

Rathore et al. (1975) compared the resource use efficency of irrigated and unirrigated area using Cobb-Douglas production function. The irrigated farms were found to generate substantial output and were also using higher quantum of labour.

Singh et al. (1975) reported that the percentage of area under food crops decreased as farm size increased while that of cash crops increased as size of holding increased. Input, output and net income per farm showed an increasing trend with increase in farm size.

Desai (1977) analysed the cropping pattern of farmers in Surat district and showed that increasing the availability of net irrigable land would shift the cropping pattern in favour of more remunerative and labour intensive crops such as banana, high yielding varieties of paddy etc.

Bhawan and Bansal (1977) reported that the land resources were efficiently used in small and medium farms. The study revealed that all categories of farms could increase their income by more investment on milch animals and intensive use of fertilizers.

Palaniswamy and Rajagopalan (1977) conducted a study to find out the pattern of employment of labour in different farm sizes. The total labour input per unit area decreased as the size of farm increased and family labour input was more on small farmers.

Mangalabhanu (1977) in his report on command area development of Peechi, Chalakudy and Malampuzha irrigation projects revealed that the cropping intensity of Peechi command area was 168.42 and average size of holding was 0.68 hectare. He also reported that fertilizer use was far less than recommended dose and yield was 3180 kg per hectare for high

yielding varieties and 2315 kg per hectare for local varieties of paddy in 1976-77.

Naidu et al. (1981) indicated inverse relationship between farm size and productivity and also between farm size and intensity of cropping. Due to the existance of positive relationship between cropping intensity and labour use the size of farm has inverse relationship with employment of human labour per unit of land.

Income, Expenditure and Savings.

Kahlon et al. (1972) showed that adopting modern technology increased farmers gross income by 48.93 per cent and production expenditure by 36.2 per cent. The study also showed that farm family expenditure raised sharply whereas savings decreased due to investment on buildings and infrastructural facilities.

Deole et al. (1972) studied the income and savings of farmers in command area of purna project. The study revealed that in the case of non-beneficiaries, crop production accounted about 68 per cent of gross annual income per holding, income from wages was about 17 per cent and income from livestock and other sources were meagre. In the case of beneficiaries crop production accounted for about 76 per cent of gross income and other sources was about 24 per cent. The expenditure in the case of non-beneficiaries was 46.25 on crop production and

53.75 on consumption and for beneficiaries 51.81 per cent on crop production and 48.19 per cent on consumption.

Garg and Srivastava (1972) reported modern farm technology as a major factor which influence income and expenditure of farmers. The income from crops showed an increasing trend with increase in farm size. The expenditure pattern showed that family consumption expenditure formed the largest share followed by crop enterprise.

The study conducted by Nandal(1972) revealed that the gains due to green revolution had been distributed among farmers of all categories irrespective of different demographic and socio-economic characteristics. But both the absolute and relative income gains increased with increase in size of holding, level of mechanisation, formal education of head of the family and number of income earners of family which accelerated inter regional and intra regional imbalances.

Parthasarathy and Sathyanarayana (1972) reported that in all types and sizes of farms, family expenses constituted a major item of expenditure followed by crop and livestock enterprises.

The income and expenditure pattern of small farmers studied by Chawla et al. (1975) revealed that the food items accounted maximum expenditure followed by clothing, lighting, housing, miscellaneous items, medicine, social ceremonies and

education. The expenditure on food items varied inversely with farm size indicating prevelance of diversification of food habits. Expenses on clothing, lighting, medicine, education and fuel varied positively with farm sizes.

Sidhu et al. (1980) studied the annual domestic expenditure per farm family in various size groups in different zones in Punjab and found that average expenditure per family was Rs.11919.28 per annum. It was Rs.9634.62 on small farms, Rs.12590.66 on medium farms and Rs.17010.75 on large farms. They also reported the per head expenditure as Rs.1322.44, Rs.1466.53 and Rs.1450.22 for small, medium and large farms respectively.

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MATERIALS AND METHODS

MATERIALS AND METHODS

This chapter deals with the different aspects of methodology followed in carrying out this socio-economic investigation.

Sampling design

The sample used for the study consisted of one hundred farmers of Puzhakkal block of Trichur district. Two stage simple random sampling was adopted. At the first stage from the list of panchayath wards in the Block five panchayath wards were selected randomly. In the second stage twenty farm families were selected randomly from each selected panchayath ward. The following were the panchayath wards selected for the study.

	Name of Ward	Name of Panchayat
1.	Choorakkattukara	Adat
2.	Manakkodi	Arimpur
3.	Avanur	Avanur
4.	Puthurkkara	Ayyanthole
5.	Kariattukara	Ayyanthole

Collection of data

The data were collected using a well structured schedule (Appendix-I) by personal interview method. The data in respect of items such as land and farm assets, various inputs used for different farm enterprises, output, expenditure incurred on family maintenance, social and economic characteristics and infrastructure developments were collected. The survey was conducted in April 1982. The informations gathered were for the year 1981-82 commencing from April 1981 to March 1982.

The data collected from the farmers were first tabulated and classified according to the size of holding and also by the gross income of the family. The classification by holding size was as follows.

S_1 - upto 0.60 hectare

S_2 - 0.60 to 0.80 hectare

S_3 - 0.80 to 1.00 hectare

S_4 - 1.00 to 1.40 hectares

S_5 - more than 1.40 hectares

The income wise classification was done as follows.

I_1 - Upto Rs.7,500

I_2 - Rs. 7,500 to Rs. 15,000

I_3 - Rs.15,000 to Rs. 20,000

I_4 - Rs.20,000 to Rs. 25,000

I_5 - more than Rs. 25,000

CONCEPTS AND DEFINITIONS

i. Human labour

a. Family labour

It consists of actual work done by family members for crop production. The labour has been valued at the rates paid to hired labour.

b. Hired labour

Hired labour consisted of casual labour. The actual payment made in cash or kind has been taken into account for the purpose of working out economic of crops.

ii. Bullock labour

Bullock labour consisted of both owned and hired Owned bullock labour has been accounted as per the rates for hired bullock labour prevailing in the locality.

iii. Tractor hours

Tractor use was entirely through hiring in. The actual hire charges paid were taken into account.

iv. Seeds, manures, fertilizers and pesticides

Home produced seeds and manures have been valued at prices which prevailed in the concerned localities while purchased seeds, manures and fertilizer are valued at actual prices paid.

v. Irrigation charges

Irrigation charges included the charges actually paid for irrigation and dewatering to the revenue department and co-operative societies. In the case of well irrigation actual charges paid for fuel or electricity charges were considered.

vi. Rental value of owned land

The rental value of owned land has been considered as 1/5th of the value of gross produce of the respective crop.

vii. Interest on working capital

Interest was calculated at 12 per cent per annum for four months for paddy and for the whole year for perennial and annual crops.

viii. Interest on fixed capital

Interest was estimated at the rate of 10.25 per cent on the value of implements, machinery and sprayers. The interest was allocated to crops in proportion to the area under each crop.

ix. Depreciation

The depreciation was calculated at two per cent for pucca buildings and five per cent for katcha buildings. For implements the rate of depreciation charged was 15 per cent

for iron implements and 20 per cent for wooden implements, baskets, ropes etc. Five per cent depreciation was considered for pumpsets and 10 per cent for sprayers.

ix. Cost concepts

The analysis was carried out by using different cost concepts i.e., cost A, B and C.

a. Cost A

This cost covers expenses on items such as

1. hired human labour
2. hired bullock labour
3. owned bullock labour
4. seeds (farm produced and purchased)
5. manures and fertilizers
6. irrigation
7. crop protection
8. depreciation of implements, machinery and sprayers
9. interest on working capital

Cost A can be explained as out of pocket expenditure or paid up cost.

b. Cost B

This includes cost A + Rental value of owned land + interest on fixed capital.

c. Cost C

This includes cost B + imputed value of family labour.

x. Measures of income

The Farm business analysis has been carried out by using different measures of income.

a. Gross income

Gross income from crops and live stock was computed considering all products including by products. It was evaluated at the prices which prevailed during the immediate post harvest period or actual prices received.

Profit at different levels were worked out for individual crops as follows.

1. Farm business income: The difference between gross income and cost A (i.e., profit at Cost A) represents the farm business income of cultivators.

b. Family labour income

The difference between gross income and cost B represents the income of cultivators on account of his own and family labour.

c. Net income

The difference between the gross income and cost C (i.e., the profit at cost C) represents the net return for the farm enterprise.

d. Farm investment income

It is farm business income (i.e., profit at cost A) - inputed value of family labour.

xii. Adult consumption units

The consumption units were calculated on the basis of equivalence followed by Ahare (1975) for studying the expenditure pattern of the family

Male/Female	Age in years	Consumption units
Male or female	1 - 5	0.50
Male or female	6 - 9	0.73
Male or female	10 - 13	0.83
Female	14 and above	0.83
Male	14 and above	1.00

House hold experditure

To find the standard of living the percentage of expenditure on different items of consumption viz., food, clothing and foot wear, fuel and lighting, education, medicine, travel, recreation and other items were worked out per adult unit and per house hold.

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AREA OF STUDY

AREA OF STUDY

The Puzhakkal block is located in Trichur taluk of Trichur district. The total geographical area of the block is 14810 hectares. The climate is humid tropical with an oppressive hot season. The rainfall is seasonal and fairly assured. The soil is mostly laterite in nature with alluvial patches in the low lying areas. The total population of the block is 116215 according to 1971 census with a density of 784.15 persons/sq.km. The block head quarters is situated at Puranattukkara 3.42 km from Trichur.

Table 4.1. Land use pattern of Puzhakkal block

Sl.No.	Category	Area (ha)	Percentage
1.	Total geographical area	14810.00	100.00
2.	Forests	1098.00	7.41
3.	Land put to non-agricultural uses	970.00	6.55
4.	Barren and uncultivable land	Nil	
5.	Permanent pastures and grazing lands	Nil	
6.	Land under miscellaneous tree crops not included in net area sown	114.00	0.77
7.	Cultivable waste	Nil	
8.	Current fallows	240.00	1.62
9.	Fallow lands other than current fallows	4822.00	32.56
10.	Net area sown	7566.00	51.09
11.	Area sown more than once	1697.00	11.46
12.	Total cropped area	9263.20	62.55

Source: Records at Puzhakkal Block Headquarters, 1978.

Table 4.1 shows the land use pattern of the block. The total cropped area of the block is 9263.20 hectares which accounts for 62.55 per cent of the total geographical area. 32.52 per cent of the total area are fallow lands and 7.41 per cent of the area are forests.

The most important crop in terms of area is paddy which accounts for 66.81 per cent of the total cropped area. Table 4.2 shows the cropping pattern of the block.

Table 4.2. Area under principal crops in Puzhakkal Block

Sl.No.	Crops	Area (ha)	Percentage
1.	Paddy		
	1. Viruppu	812.56	8.77
	2. Mundakan	581.20	6.27
	3. Punja	4795.20	51.77
2.	Coconut	597.20	6.45
3.	Arecanut	828.80	8.95
4.	Banana	300.00	3.24
5.	Tapioca	594.80	6.42
6.	Vegetables	57.58	0.62
7.	Cashew	417.60	4.51
8.	Pepper	80.00	0.86
9.	Rubber	60.00	0.65
10.	Pineapple	88.00	0.95
11.	Ginger	14.00	0.15
12.	Cocoa	16.00	0.17
13.	Others	20.26	0.22
Total cropped area		9263.20	100.00

Source: Records at Puzhakkal Block Headquarters, 1978

The Puzhakkal block extends in 7 panchayats as shown below.

Name of panchayats*	Villages
1. Adat	Puzhakkal, Puranattukara, Chittilapilly, Adat
2. Arimpur	Manakodi, Veluthur, Parakkad, Eravu.
3. Avanur	Avanur, Tangalur, Velappaya, Chulieseri.
4. Ayyanthole	Ayyanthole, Trichur, Punkunnam, Pullazhi, Aranattukara
5. Kaiparambu	Kaiparambu, Anjur, Peramangalam.
6. Tholur	Tholur, Chalakkal, Edakulathur
7. Killannure	Killannure

Infrastructural Facilities

Agricultural development is influenced by available infrastructural facilities to a great extent. The transport and communication facilities, agricultural credit, education and health, irrigation and drinking water facilities are considered under infrastructural facilities.

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*A map of Puzhakkal block indicating the panchayat wards selected for the study is also attached.

Transport and Communication:

The Puzhakkal block head quarters is situated 14 km from Trichur, 8 km from Mulamkunnathukavu railway station and connected by the state high way. In this block all villages are well connected by roads which extends to about 184 Km of pucca roads and 137 Km of katcha roads. Bus services are available for 56.8 km in this area. There are 21 post offices of which 9 have telegraph facilities and 7 with telephones.

Agricultural Credit:

Farming as a business requires large amount of capital. Hence the facilities for agricultural credit plays a vital role in the process of agricultural development. In the Puzhakkal Block, agricultural credit is supplied by various agencies like co-operative societies, land development banks, nationalised and commercial banks, government and private agencies.

The total geographical area of the block is 148 10 hectares. In the jurisdiction of the block there are 16 co-operative societies, and 4 branches of commercial banks serving the credit needs of farmers. The cultivators borrow money from different sources so as to meet their credit requirements. The information on the extent of loans taken by sample farmers source wise in different

size of holdings are summarised in Table 4.3.

Table 4.3. Extent of finance availed by farmers-size group wise

(in Rs.)

	Avarge amount of loan per family			
	Co-operative society	Commercial banks	Other sources	Total
S_1	711.54 (46.25)	365.38 (23.75)	461.54 (30.00)	1538.46 (100.00)
S_2	50.00 (8.55)	535.00 (91.45)	---	585.00 (100.00)
S_3	352.17 (17.09)	1708.70 (82.91)	---	2060.87 (100.00)
S_4	90.91 (4.97)	1034.09 (56.52)	704.55 (38.51)	1829.55 (100.00)
S_5	665.00 (64.25)	285.00 (27.54)	85.00 (8.21)	1035.00 (100.00)
Average	419.00 (29.94)	765.75 (54.73)	214.50 (15.33)	1399.25 (100.00)

(Figures in parentheses represent percentages to total)

It was observed that on an average total amount borrowed per family worked out to Rs.1399.25. Of the total loans advanced by different agencies the share of commercial banks was the highest (54.73 per cent) followed by co-operative societies (29.94 percent) and other sources contributing 15.33 per cent. The share of loans advanced by co-operative societies was highest in S_5 with 64.25 per cent. While it was lowest in S_4 with 4.97 per cent. The contribution of

commercial banks to the total loans advanced to the farmers was highest for S_2 (91.45 percent) followed by S_3 with 82.91 percent. The total amount of loan per farmer was highest in S_3 (Rs.2060.87) followed by S_4, Rs.1829.55.

The loans advanced to the farmers according to income groups is presented in Table 4.4.

Table 4.4. Extent of finance availed by farmers - Income group wise (in Rs.)

	Average amount of loan per family			
	Co-operative society	Commercial banks	Others	Total
I_1	666.67 (39.12)	558.33 (32.76)	479.17 (28.12)	1704.17 (100.00)
I_2	448.28 (33.44)	685.34 (51.12)	206.90 (15.44)	1340.52 (100.00)
I_3	500.00 (20.45)	1525.00 (62.37)	420.00 (17.18)	2445.00 (100.00)
I_4	726.67 (62.64)	433.33 (37.36)	---	1160.00 (100.00)
I_5	---	541.67 (90.91)	54.17 (9.09)	595.83 (100.00)
Average	419.00 (29.94)	765.75 (54.73)	214.50 (15.33)	1399.25 (100.00)

(Figures in parentheses represent percentages to total)

Among the income groups the highest amount was advanced to I_3 which worked out to Rs.2445 per family followed by I_1 with Rs.1704.17 per family. The major share was made by

co-operative societies which was 62.64 percent in I_4. The commercial banks contributed the major share of total loans advanced for I_5 which was 90.91 percent.

Apart from co-operative credit societies there are 3 industrial co-operatives, one farming co-operative and 8 milk marketing Co-operatives operating in the block area.

Education and Health:

There are 9 high schools, 18 upper primary schools and 24 lower primary schools and a junior college in the block. Five primary health centres and Amala cancer institute are located in this area.

Irrigation and drinking water facilities:

Peechi and Vazhani irrigation projects are the two major projects providing irrigation facilities in this area. In addition there are many minor irrigation schemes also. The total area irrigated by all sources was estimated as 4770 hectares, which was 51.49 percent of total cropped area. The drinking water facilities are provided in most places. Wells also cater to this need.

All villages in the block area electrified. Two spinning mills are functioning in the block area.

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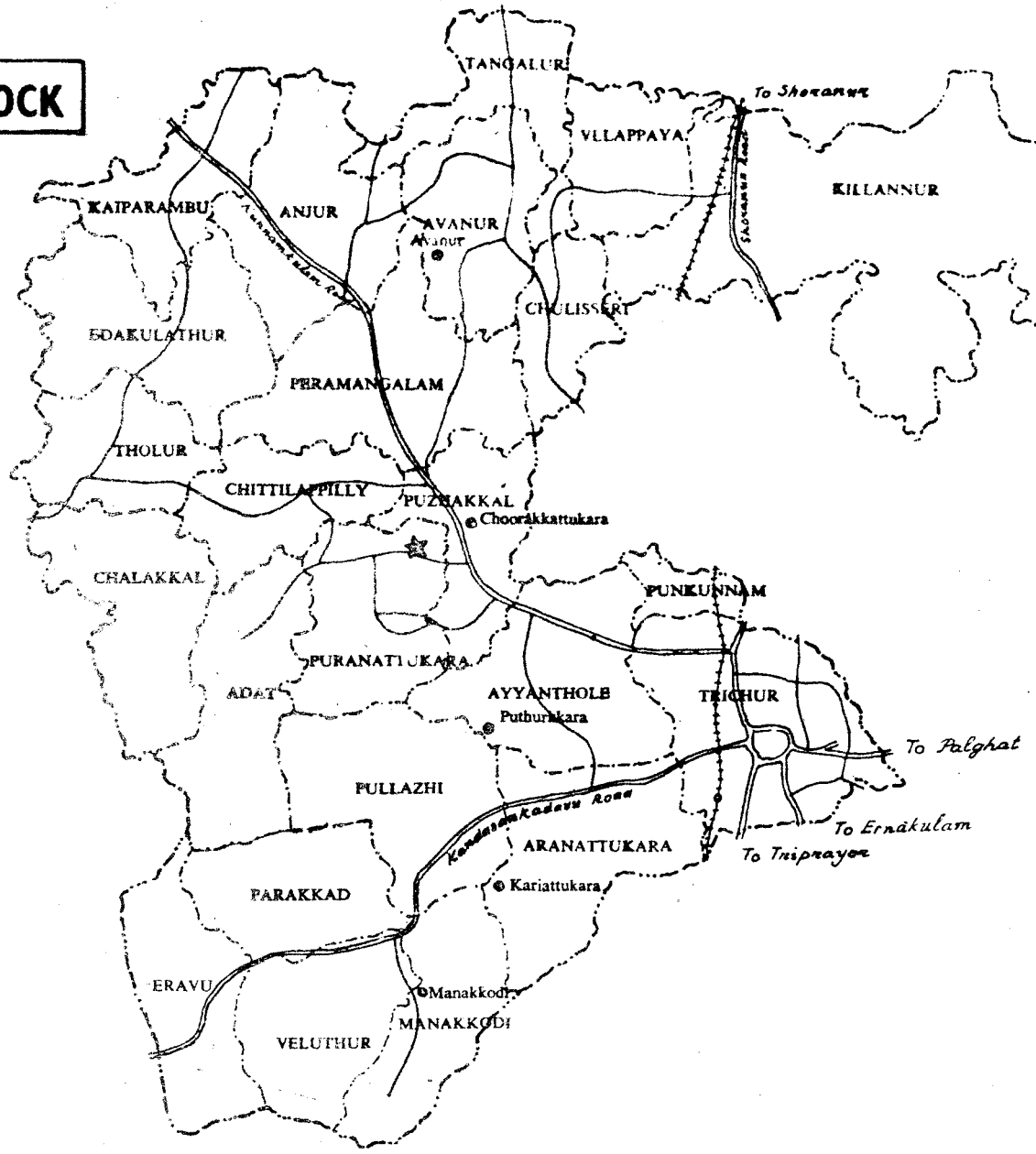
PUZHAKKAL BLOCK



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GENERAL CONDITIONS ON THE SAMPLE FARMS

GENERAL CONDITIONS ON THE SAMPLE FARMS

The socio-economic conditions of the farmers have a bearing on the ability to adopt the technologies transferred and on the efficiency of farming. Hence an attempt is made here to highlight the socio-economic characteristics of the farmers such as population, educational status, occupational distribution etc. The sample households were classified according to the size of holding and the gross income of the households for the purpose of the study.

According to the size of holding the households were classified into five classes as shown in Table 5.1.

Table 5.1. Distribution of sample farms - Size group wise

	Size group of holding (Hectares)	No.of holdings	Percent to total	Area of land in each class (ha)	Percent to total area	Average size of holding (ha)
S_1	< 0.60	26	26.00	10.32	9.95	0.40
S_2	0.6-0.80	20	20.00	14.38	13.87	0.72
S_3	0.81-1.00	23	23.00	21.17	20.42	0.92
S_4	1.01-1.40	11	11.00	13.53	13.05	1.23
S_5	>1.41	20	20.00	44.28	42.71	2.21
Total		100	100.00	103.68	100.00	1.04

The average size of holding was 1.04 hectares. The average size of holding of the lowest class (S_1) was 0.40 ha. This group accounted for 26 percent of households but they had only 9.95 percent of the total area. The average size of holding of the largest group (S_5) was 2.21 hectares while they formed only 20 percent of total households and they possessed 42.71 per cent of the total area.

The income wise distribution of the sample is given in Table 5.2.

Table 5.2. Distribution of sample farms - Income group wise

	Gross income Rs/annum	No.of holdings	Per cent to total	Area of land in each class (ha)	Per cent to total area	Average size of holding (ha)
I_1	< 7500	12	12.00	7.22	6.96	0.60
I_2	7500-15000	29	29.00	22.72	21.91	0.78
I_3	15000-20000	20	20.00	23.91	23.06	1.20
I_4	20000-25000	15	15.00	17.20	16.60	1.15
I_5	> 25000	24	24.00	32.63	31.47	1.36
	Total	100	100.00	103.68	100.00	1.04

Twelve per cent of the households had an income less than 7500 per annum whose average size of holding was 0.60 hectars. The number of households was maximum in the income group between

Rs.7500-15000 which accounted for 29 per cent of the total. Another 24 per cent of farmers had an average more than Rs.25000 whose average size of holding was 1.36 hectares and they possessed 31.47 per cent of the total area.

An analysis of the size group-wise composition of the family members revealed that 51.18 per cent were males and 48.82 percent were females. The average family size was found to be 6.35. The highest average family size of 6.65 was found in the lowest size group of holding. The family size was found to decrease with increase in the size of holding. Males were more than females in all size groups except in S_4. The classification of the respondents family members according to age and sex in different size group of holding is presented in Table 5.3.

The distribution showed that 69.61 per cent of the total members were in the age group of 15-60 which constituted the working population. Among holding size groups the percentage of people in this age group was highest in S_4 (78.78) followed by S_5 (70.96). The proportion of members of the age group above 60 was highest in S_5 which was found to be 13.71 per cent.

Table 5.4 shows the distribution of the sample family members in various income groups. The average family size was highest for I_5 which was 7.21 and lowest in I_3(5.4).

Table 5.3. Composition of the sample families - Size group-wise

Sl. No.	Family members		S_1	S_2	S_3	S_4	S_5	Overall
1	2		3	4	5	6	7	8
1.	Males	Above 60	7	2	5	1	10	25
		Average	0.27	0.10	0.22	0.09	0.50	0.25
		% of Total	4.05	1.57	3.45	1.52	8.06	3.94
2.	Females	Above 60	5	5	3	3	7	23
		Average	0.19	0.25	0.13	0.27	0.35	0.23
		% to Total	2.89	3.94	2.07	4.55	5.65	3.62
3.	Males	15 - 60	63	48	42	26	44	223
		Average	2.42	2.40	1.83	2.36	2.20	2.23
		% to Total	36.42	37.79	28.97	39.39	35.48	35.12
4.	Females	15 - 60	56	43	50	26	44	219
		Average	2.15	2.15	2.17	2.36	2.20	2.19
		% to Total	32.37	33.86	34.48	39.39	35.48	34.49
5.	Males	6 - 14	19	13	21	4	5	62
		Average	0.73	0.65	0.91	0.37	0.25	0.62
		% to Total	10.98	10.24	14.48	6.06	4.03	9.76
6	Females	6 - 14	16	13	14	5	8	53
		Average	0.62	0.65	0.61	6.45	0.40	0.53
		% to Total	9.25	10.24	9.65	7.57	6.45	8.35
7	Males	0 - 5	3	1	7	-	4	15
		Average	0.12	0.05	0.30	-	0.20	0.15
		% to Total	1.73	0.79	4.83	-	3.22	2.36
8.	Females	0 - 5	4	2	3	1	2	15
		Average	0.15	0.10	0.13	0.09	0.10	0.15
		% to Total	2.	1.57	2.07	1.52	1.61	2.36

- Continued-- - - - - -

Table 5.3 (Contd....)

1	2		3	4	5	6	7	8
9	Males	Total	92	64	75	31	63	325
		Average	3.54	3.20	3.26	2.82	3.15	3.25
		% to Total	53.18	50.39	51.72	46.97	50.81	51.18
10	Females	Total	81	63	70	35	61	310
		Average	3.11	3.15	3.04	3.18	3.05	3.10
		% to Total	46.82	49.61	48.28	53.03	49.19	48.82
11.	Total Population		173	127	145	66	124	635
		Average	6.65	6.35	6.30	6.00	6.20	6.35
		% to Total	100.00	100.00	10000	100.00	100.00	100.00

Those in the age group 15-60 was highest in I_5. The proportion of males was more than females in all groups except for I_2 and I_4.

Literacy rate was as high as 96.53 per cent. Literacy was slightly higher for males (97.74) than for females (95.25). Among the literates 20.33 per cent had only primary education, 18.68 per cent had attended middle school and 39.67 per cent had attended high school. Only 4.79 per cent were graduates while 1.16 per cen were post graduates. For males, 100 per cent literacy was found in S_2. In the case of both males and females the literacy was lowest in S_5 with 94.92 per cent and 93.22 per cent respectively.

Table 5.4. Composition of the sample families - Income groupwise

Sl.No.	Family members		I_1	I_2	I_3	I_4	I_5	Overall
1		2	3	4	5	6	7	8
1.	Males	Above 60	2	17	6	2	8	25
		Average	0.17	0.24	0.30	0.13	0.33	0.25
		% to Total	2.47	3.87	5.56	2.17	4.62	3.93
2.	Females	Above 60	3	6	5	3	6	23
		Average	0.25	0.21	0.25	0.20	0.25	0.23
		% to Total	3.70	3.31	4.63	3.26	3.47	3.62
3.	Males	15 - 60	30	58	34	33	68	223
		Average	2.50	2.00	1.70	2.20	2.83	2.23
		% to Total	37.04	32.05	31.48	35.87	39.31	35.12
4.	Females	15 - 60	28	67	34	30	60	219
		Average	2.33	2.31	1.70	2.00	2.50	2.19
		% to Total	34.57	37.02	31.48	32.61	34.68	34. 49
5.	Males	6 - 14	12	16	14	5	15	62
		Average	1.00	0.55	0.70	0.33	0.63	0.62
		% to Total	14.82	8.84	12.96	5.43	8.67	9.76
6.	Females	6 - 14	5	19	9	8	12	53
		Average	0.42	0.65	0.45	0.53	0.50	0.53
		% to Total	6.17	10.50	8.34	8.70	6.94	8.35

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Table 5.4 (Contd....)

1	2	3	4	5	6	7	8
7. Males	0 - 6	-	6	4	4	1	15
	Average	-	0.21	0.20	0.27	0.04	0.15
	% to Total	-	1.31	3.70	4.35	0.58	2.36
8 Females	0 - 6	1	2	2	7	3	15
	Average	0.08	0.07	0.10	0.47	0.13	0.15
	% to Total	1.23	1.00	1.85	7.61	1.73	2.36
9. Males	Total	44	87	58	44	92	325
	Average	3.67	3.00	2.90	2.93	3.83	3.25
	% to Total	54.32	48.07	53.70	47.83	53.18	51.18
10 Females	Total	37	94	50	48	81	310
	Average	3.08	3.24	2.50	3.20	3.38	3.10
	% to Total	45.68	51.93	46.30	52.17	46.82	48.82
11. Total Population		81	181	108	92	173	635
	Average	6.75	6.24	5.40	6.13	7.21	6.35
	% to Total	100.00	100.00	100.00	100.00	100.00	100.00

Table 5.5. Educational Status of sample families - size groupwise

Level of education	S_1		S_2		S_3		S_4		S_5		Total		
	M	F	M	F	M	F	M	F	M	F	M	F	Total
Below 5													
Total	3	7	1	2	7	3	-	1	4	2	15	15	30
Average	0.12	0.27	0.05	0.10	0.30	0.13	-	0.09	0.20	0.10	0.15	0.15	0.30
Primary													
Total	17	12	16	16	17	18	4	9	6	8	60	63	123
Average	0.65	0.46	0.80	0.80	0.74	0.78	0.36	0.82	0.30	0.40	0.60	0.63	1.23
% to Total	19.10	16.22	25.40	26.23	25.00	26.87	12.90	26.47	10.17	13.56	19.36	21.36	20.33
Middle School													
Total	25	18	11	9	9	12	5	7	8	9	58	55	113
Average	0.86	0.69	0.55	0.45	0.39	0.52	0.45	0.64	0.40	0.45	0.58	0.55	1.13
% to Total	28.09	24.32	17.46	14.75	13.24	17.91	16.13	20.59	13.56	15.25	18.71	18.64	18.68
High School													
Total	41	27	21	20	26	25	15	12	26	27	129	111	240
Average	1.58	1.04	1.05	1.00	1.13	1.09	1.36	1.09	1.30	1.35	1.29	1.11	2.40
% to Total	46.07	36.49	33.33	32.78	38.24	37.31	48.38	35.29	44.07	45.76	41.61	37.63	39.67
Undergraduate													
Total	3	12	7	5	3	4	4	4	8	8	25	33	58
Average	0.11	0.46	0.35	0.25	0.13	0.17	0.36	0.36	0.40	0.40	0.25	0.33	0.58
% to Total	3.37	16.22	11.11	8.20	4.41	5.97	12.90	11.77	13.56	13.56	8.06	11.19	9.59

Continued

Table 5.5 (Contd....)

Level of education	S_1 M	S_1 F	S_2 M	S_2 F	S_3 M	S_3 F	S_4 M	S_4 F	S_5 M	S_5 F	Total M	Total F	Total
Diploma Total	-	-	1	1	6	1	1	-	4	-	12	2	14
Average	-	-	0.05	0.05	0.26	0.04	0.09	-	0.20	-	0.12	0.02	0.14
% to Total	-	-	1.59	1.64	8.82	1.49	3.23	-	6.78	-	3.87	0.68	2.31
Graduate													
Total	2	2	5	5	3	4	1	1	4	2	15	14	29
Average	0.08	0.08	0.25	0.25	0.13	0.17	0.09	0.09	0.20	0.10	0.15	0.14	0.29
% to Total	2.25	2.70	7.94	8.20	4.41	5.97	3.23	2.94	6.78	1.39	4.84	4.74	4.79
Post-Graduate													
Total	-	-	2	1	2	1	-	-	-	1	4	3	7
Average	-	-	0.10	0.05	0.09	0.04	-	-	-	0.05	0.04	0.03	0.07
% to Total	-	-	3.17	1.64	2.94	1.49	-	-	-	1.70	1.29	1.02	1.16
Illiterate													
Total	11	3	-	4	2	2	1	1	3	4	7	14	21
Average	0.04	0.12	-	0.20	0.29	0.09	0.09	0.09	0.15	0.20	0.07	0.14	0.21
% to Total	1.12	4.05	-	6.56	2.94	2.99	3.23	2.94	5.08	6.78	2.26	4.74	3.47
Literate													
Total	88	71	63	57	66	65	30	33	56	55	303	281	584
Average	3.38	2.73	3.15	2.85	2.87	2.83	2.73	3.00	2.80	2.75	3.03	2.81	5.84
% to Total	98.88	95.95	100.00	93.44	97.06	97.01	96.77	97.06	94.92	93.22	97.74	95.25	96.53
Total													
Total	89	74	63	61	68	67	31	34	59	59	310	295	605
Average	3.42	2.85	3.15	3.05	2.96	2.91	2.82	3.09	2.95	2.95	3.10	2.95	6.05
% to Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

(The % to total above 5 years have been worked out)

Table 5.6. Educational status of sample families - income groupwise

Level of education	I_1		I_2		I_3		I_4		I_5		Total		Total
	M	F	M	F	M	F	M	F	M	F	M	F	
Below 5													
Total	-	1	6	2	4	2	4	7	1	3	15	15	30
Average	-	0.08	0.21	0.07	0.20	0.10	0.27	0.47	0.04	0.13	0.15	0.15	0.30
Primary													
Total	13	9	13	18	15	10	9	12	10	14	60	63	123
Average	1.08	0.75	0.45	0.62	0.75	0.50	0.60	0.80	0.41	0.58	0.60	0.63	1.23
% to Total	29.55	25.00	16.25	19.35	27.78	20.84	22.50	29.27	10.87	18.18	19.36	21.36	20.33
Middle School													
Total	11	12	17	18	5	12	10	5	15	8	58	55	113
Average	0.92	1.00	0.59	0.62	0.25	0.60	0.67	0.33	0.62	0.33	0.58	0.55	1.13
% to Total	25.00	33.33	21.25	19.35	9.26	25.00	25.00	12.19	16.31	10.39	18.71	18.64	18.68
High School													
Total	19	10	40	36	17	13	14	19	39	33	129	111	240
Average	1.58	0.84	1.38	1.24	0.85	0.65	0.93	1.27	1.63	1.38	1.29	1.11	2.40
% to Total	43.18	27.78	50.00	38.71	31.48	27.08	35.00	46.34	42.39	42.86	41.61	37.63	39.67
Undergraduate													
Total	1	3	4	10	6	7	5	2	9	11	25	33	58
Average	0.08	0.25	0.14	0.34	0.30	0.35	0.33	0.13	0.36	0.46	0.25	0.33	0.58
% to Total	2.27	8.33	5.00	10.76	11.11	14.58	12.50	4.88	9.78	14.28	8.06	11.19	9.59

Continued

Table 5.6 (Contd....)

Level of education	I_1		I_2		I_3		I_4		I_5		Total		
	M	F	M	F	M	F	M	F	M	F	M	F	Total
Diploma													
Total	-	-	1	-	4	-	1	1	6	1	12	2	14
Average	-	-	0.03	-	0.20	-	0.07	0.07	0.25	0.04	0.12	0.02	0.14
% to Total	-	-	1.25	-	7.41	-	2.50	2.44	6.52	1.30	3.87	0.68	2.31
Graduate													
Total	-	1	1	4	4	2	-	-	10	7	15	14	29
Average	-	0.08	0.03	0.14	0.20	0.10	-	-	0.41	0.29	0.15	0.14	0.29
% to Total	-	2.78	1.25	4.30	7.41	4.17	-	-	10.87	9.09	4.84	4.74	4.79
Post-graduate													
Total	-	-	-	-	-	-	1	-	3	3	4	3	7
Average	-	-	-	-	-	-	0.07	-	0.13	0.13	0.04	0.03	0.70
% to Total	-	-	-	-	-	-	2.50	-	3.26	3.90	1.29	1.02	1.16
Illiterate													
Total	-	1	4	7	3	4	-	2	-	-	7	14	21
Average	-	0.08	0.14	0.24	0.15	0.20	-	0.13	-	-	0.27	0.14	0.21
% to Total	-	2.78	5.00	7.53	5.55	8.33	-	4.88	-	-	2.26	4.74	3.47
Literate													
Total	44	35	76	86	51	44	40	39	92	77	303	281	584
Average	3.67	2.92	2.62	2.97	2.55	2.20	2.67	2.60	3.83	3.21	3.03	2.81	5.84
% to Total	100.00	97.22	95.00	92.47	94.44	91.67	100.00	95.12	100.00	100.00	97.74	95.25	96.53
Total	44	36	80	93	54	48	40	41	92	77	310	295	605
Average	3.66	3.00	2.76	3.20	2.70	2.40	2.67	2.73	3.83	3.21	3.10	2.95	6.05
% to Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

The average number of persons educated was found to be 5.84 out of an overall average number of persons (6.05) above the age group 6. The average number of males educated was more for S_1 with 3.38 and less for S_4 with 2.73. In the case of females S_4 recorded 97.06 per cent literacy which was found to be the highest. The detailed break up of the educational status of the families into size groups is presented in Table 5.5.

The classification based on income group is shown in Table 5.6. For males 100 per cent literacy was seen in classes I_1, I_4 and I_5. The highest rate of literacy for females was found in class I_5 which accounted 100 per cent. For both males and females the average number of educated persons was highest for I_5 with 3.83 and 3.21 respectively. The average number of persons literate and the literacy per cent were lowest in the group I_3.

The main occupation of the head of the families was Agriculture which accounted for 57 per cent, while 33 per cent were employed in Government service. The dependence on agriculture was highest for S_4 where 72.73 percent of the heads of house-holds mainly depended on agriculture. The occupational distribution of the head of the families for size groups are given in Table 5.7.

Such a distribution for the income groups shown in Table 5.8, revealed that those depending on agriculture was highest in the lowest income group which worked out to 91.67 percent. Those employed in Government service was highest for I_4 (46.67 per cent).

Table 5.7. Distribution of the heads of the households according to their main occupation - Size groupwise

	Agri-culture	Labour	Service	Profe-ssion	Trade	Total
S_1	16 (61.56)	2 (7.69)	7 (26.90)	1 (3.85)	-	26 (100.00)
S_2	12 (60.00)	- -	8 (40.00)	- -	- -	20 (100.00)
S_3	10 (43.48)	1 (4.35)	11 (47.82)	1 (4.35)	-	23 (100.00)
S_4	8 (72.73)	-	2 (18.18)	-	1 (9.09)	11 (100.00)
S_5	11 (55.00)	3 (15.00)	5 (25.00)	-	1 (5.00)	20 (100.00)
Overall	57 (57.00)	6 (6.00)	33 (33.00)	2 (2.00)	2 (2.00)	100 (100.00)

(Figures in parentheses represent percentages to total)

Table 5.8. Distribution of heads of the households according to their main occupation- Income groupwise

	Agri-culture	Labour	Service	Profe-ssion	Trade	Others
I_1	11 (91.67)	1 (8.33)	-	-	-	12 (100.00)
I_2	20 (68.96)	2 (6.90)	7 (24.14)	-	-	29 (100.00)
I_3	8 (40.00)	1 (5.00)	9 (45.00)	1 (5.00)	1 (5.00)	20 (100.00)
I_4	6 (40.00)	2 (13.33)	7 (46.67)	-	-	15 (100.00)
I_5	12 (50.00)	-	10 (41.66)	1 (4.17)	1 (4.17)	24 (100.00)
Overall	57 (57.00)	6 (6.00)	33 (33.00)	2 (2.00)	2 (2.00)	100 (100.00)

(Figures in parentheses represent percentages to Total)

Out of the total income earners, 38.28 per cent was employed in agriculture while 49.28 per cent was employed in Government service. The proportion of people engaged in agriculture was highest in S_4 (59.09 per cent) and that in service in S_3 (58.14 per cent). The number of income earners per family worked out to 2.09 which is 32.91 per cent of the total members in the family. The average income earners was highest for S_5 (2.35) while it was lowest for S_3 (1.87). Table 5.9 shows the occupational distribution of income earners of various size classes.

Table 5.9. Occupational distribution of the income earners - Size groupwise

Particulars		Agri-cul-ture	Labour	Ser-vice	Profe-ssion	Trade	Total
S_1	Total No.	21	5	23	6	-	55
	Per farm	0.81	0.19	0.88	0.23		2.11
		(38.18)	(9.09)	(41.82)	(10.91)		(100.00)
S_2	Total No.	17	1	24	-	-	42
	Per farm	0.85	0.05	1.2			2.10
		(40.48)	(2.38)	(57.14)			(100.00)
S_3	Total No.	14	3	25	1	-	43
	Per farm	0.61	0.13	1.09	0.04		1.87
		(32.56)	(6.98)	(58.14)	(2.33)		(100.00)
S_4	Total No.	13	-	8	-	1	22
	Per farm	1.18		0.73		0.09	2.00
		(59.09)		(36.36)		(4.55)	(100.00)
S_5	Total No.	15	3	23	5	1	47
	Per farm	0.75	0.15	1.15	0.25	0.05	2.35
		(31.91)	(6.38)	(48.94)	(10.64)	(2.13)	(100.00)
Total No.		80	12	103	12	2	209
Per farm		0.80	0.12	1.03	0.12	0.02	2.09
		(38.28)	(5.74)	(49.28)	(5.74)	(0.96)	(100.00)

(Figures in parentheses represent percentages to total)

A further classification of the income earners based on income groups showed that 66.67 per cent of the wage earners of I_1 depends on agriculture. As shown in Table 5.10 there is a steady trend of decline in proportion of people engaged in agriculture from I_1 (66.67) per cent) to I_5 (20.96 per cent).

Table 5.10. Occupational distribution of income earners in income groupwise

	Particulars	Agri-culture	Labour	Ser-vice	Profe-ssion	Trade	Total
I_1	Total No.	16	1	7	-	-	24
	Per farm	1.45	0.09	0.64			2.18
		(66.67)	(4.17)	(29.16)			(100.00)
I_2	Total No.	31	5	14	3	-	53
	Per farm	1.07	0.17	0.48	0.10		1.82
		(58.49)	(9.43)	(26.42)	(5.66)		(100.00)
I_3	Total No.	13	1	23	1	-	37
	Per farm	0.65	0.05	1.15	0.05		1.90
		(34.21)	(2.63)	(60.53)	(2.63)		(100.00)
I_4	Total No.	7	5	14	6	-	32
	Per farm	0.47	0.33	0.93	0.40		2.13
		(21.87)	(15.63)	(43.75)	(18.75)		(100.00)
I_5	Total No.	13	-	45	2	2	62
	Per farm	0.54		1.88	0.08	0.08	2.58
		(20.96)		(72.58)	(3.23)	(3.23)	(100.00)
	Total No.	80	12	103	12	2	209
	Per farm	0.80	0.12	1.03	0.12	0.02	2.09
		(38.28)	(5.74)	(49.28)	(5.74)	(0.96)	(100.00)

(Figures in parentheses represent percentages to total)

Persons engaged in Government service were highest in class I_5 which worked out to 72.58 per cent. The income earners per family was highest in I_5 with 2.58 and lowest for I_2 with 1.82.

Table 5.11: Land use pattern of the sample - Size groupwise (Area in hectares)

Particulars	Total area	S_1 per farm	Total area	S_2 per farm	Total area	S_3 per farm	Total area	S_4 per farm	Total area	S_5 per farm	Total area	Overall Per farm
1. Total holding	10.32	0.40	14.38	0.72	21.17	0.92	13.53	1.23	44.28	2.21	103.68	1.04
i. Wetland	5.76	0.22	8.45	0.42	10.96	0.48	7.20	0.65	26.47	1.32	58.84	0.59
ii. Garden land	4.56	0.18	5.93	0.30	10.21	0.44	6.33	0.58	17.81	0.89	44.84	0.45
2. Land put to non-agricultural uses	0.52	0.02	0.80	0.04	0.60	0.03	0.88	0.08	1.60	0.08	4.40	0.05
3. Net cropped area	9.80	0.38	13.58	0.68	20.57	0.89	12.65	1.15	42.68	2.13	99.28	0.99
i. Wetland	5.76	0.22	8.45	0.42	10.96	0.47	7.20	0.65	26.48	1.32	58.85	0.59
ii. Garden land	4.04	0.16	5.13	0.26	9.61	0.42	5.45	0.50	16.20	0.81	40.43	0.40
4. Gross cropped area	15.56	0.60	23.08	1.16	28.79	1.25	17.50	1.59	49.75	2.49	134.66	1.35
i. Wet land	8.99	0.35	13.78	0.69	17.26	0.75	10.27	0.93	33.63	1.68	83.93	0.84
ii. Garden land	6.57	0.25	9.30	0.47	11.53	0.50	7.23	0.66	16.12	0.81	50.73	0.51
5. Cropping intensity	158.67	-	169.96	-	139.96	-	138.34	-	116.57	-	135.64	-

Table 5.12. Land use pattern of sample - Income groupwise (Area in hectares)

Particulars	Total area	I_1 per farm	Total area	I_2 per farm	Total area	I_3 per farm	Total area	I_4 per farm	Total area	I_5 per farm	Overall Total area	Overall Per farm
1. Total holding	7.22	0.60	22.72	0.78	23.91	1.19	17.20	1.15	32.63	1.36	103.68	1.04
i. Wet land	3.83	0.32	12.03	0.41	12.84	0.64	10.38	0.69	19.76	0.82	58.84	0.59
ii. Garden land	3.39	0.28	10.69	0.37	11.07	0.55	6.82	0.46	12.87	0.54	44.84	0.45
2. Land put to non-agricultural uses	0.36	0.03	0.47	0.02	0.82	0.04	0.85	0.06	1.90	0.08	4.40	0.05
3. Net cropped area	6.86	0.57	22.25	0.76	23.09	1.15	16.35	1.09	30.73	1.28	99.28	0.99
i. Wet land	3.83	0.32	12.03	0.41	12.85	0.64	10.38	0.69	19.76	0.82	58.85	0.59
ii. Garden land	3.03	0.25	10.22	0.35	10.24	0.51	5.97	0.40	10.97	0.46	40.43	0.40
4. Gross cropped area	9.35	0.78	29.30	1.01	28.58	1.43	22.30	1.49	45.14	1.88	134.66	1.35
i. Wet land	5.02	0.42	16.68	0.58	18.42	0.92	15.41	1.03	28.40	1.18	83.93	0.84
ii. Garden land	4.33	0.36	12.62	0.43	10.16	0.51	6.89	0.46	16.74	0.70	50.73	0.51
5. Cropping intensity	136.30	-	131.69	-	123.78	-	136.39	-	146.89	-	135.64	-

The average number of income earners from agriculture is highest for the lowest income group I_1 (1.45). The average number of persons deriving income from Government service was highest in I_5 which worked out to 1.88.

Table 5.11 shows the land utilization pattern of the sample in various size groups. The total area owned by the sample farmers was 103.68 hectares of which 4.4 hectares are put to non-agricultural uses. The per farm availability of net cropped area was 0.99 hectare. Out of this 0.59 hectare was wet land and 0.40 hectare was garden land. The overall cropping intensity was 135.64. The intensity of cropping was lowest (116.57) in the largest size class while it was highest in S_2 (169.96). In the smallest size class the intensity of cropping was 158.67. The per farm availability of net cropped area ranged from 0.38 hectare in the case of S_1 to 2.13 hectares for S_5, the average worked out to 0.99 hectare.

The land utilisation pattern of the income groups of the sample is given in Table 5.12. The per farm availability of net cropped area shows a steady increase from I_1 (0.57 hectare) to I_5 (1.28 hectares). The highest cropping intensity was seen in I_5 which was 146.89 and lowest in I_3 (123.78). The per farm utilisation of land for non-agricultural purposes ranged from 0.02 hectare (I_2) to 0.08 hectare in I_5.

The overall gross cropped area was 134.66 hectares, of which 83.93 hectares were wetlands, and garden land accounted for 50.73 hectares. The main crop in the wet land was

Table 5.13. Cropping pattern for the sample - Size groupwise

(Area in hectares)

Particulars		S_1	S_2	S_3	S_4	S_5	Overall
1. Virippu	Total area	1.70	2.78	4.18	2.62	2.80	14.08
	Per farm	0.07	0.14	0.18	0.24	0.14	0.14
	% to Total	10.93	12.05	14.52	14.97	5.63	10.46
2. Mundakan	Total area	3.13	5.12	7.17	4.56	9.65	29.63
	Per farm	0.12	0.26	0.31	0.41	0.48	0.30
	% to Total	20.12	22.18	24.90	26.06	19.40	22.00
3. Punja (HYV)	Total area	3.55	1.60	2.40	2.72	13.10	23.37
	Per farm	0.14	0.08	0.11	0.25	0.66	0.23
	% to Total	22.81	6.93	8.34	15.54	26.33	17.35
4. Punja (Local)	Total area	0.61	4.28	3.51	0.37	8.08	16.85
	Per farm	0.02	0.21	0.15	0.03	0.40	0.17
	% to Total	3.92	18.55	12.19	2.11	16.24	12.51
Total Wet land	Total area	8.99	13.78	17.26	10.27	33.63	83.93
	Per farm	0.35	0.69	0.75	0.93	1.68	0.84
	% to Total	57.78	59.71	59.95	58.68	67.60	62.32
5. Coconut	Total area	3.90	3.87	4.40	2.55	7.78	21.60
	Per farm	0.12	0.19	0.19	0.23	0.39	0.22
	% to Total	19.28	16.76	15.28	14.57	15.64	16.04
6. Arecanut	Total area	0.89	2.70	2.25	2.50	2.79	11.13
	Per farm	0.03	0.14	0.10	0.23	0.14	0.11
	% to Total	5.72	11.70	7.82	14.29	5.61	8.27
7. Banana	Total area	0.13	0.20	0.19	0.28	0.27	1.07
	Per farm	0.01	0.01	0.01	0.03	0.01	0.01
	% to Total	0.83	0.87	0.66	1.60	0.54	0.79

Continued

Table 5.13 (Contd....)

Particulars		S_1	S_2	S_3	S_4	S_5	Overall
8. Mango	Total area	1.15	0.60	0.65	0.52	0.93	3.84
	Per farm	0.04	0.03	0.03	0.05	0.05	0.04
	% to Total	7.39	2.60	2.26	2.97	1.87	2.85
9. Cashew	Total area	0.04	0.93	2.56	1.00	2.83	7.36
	Per farm	0.01	0.05	0.11	0.09	0.14	0.07
	% to Total	0.26	4.03	8.89	5.72	5.69	5.47
10. Others	Total area	1.36	1.00	1.48	0.38	1.52	5.73
	Per farm	0.05	0.05	0.06	0.03	0.08	0.06
	% to Total	8.74	4.33	5.14	2.17	3.05	4.26
Total garden land	Total area	6.57	9.30	11.53	7.23	16.12	50.73
	Per farm	0.25	0.47	0.50	0.66	0.81	0.51
	% to Total	42.22	40.29	40.05	41.34	32.40	37.66
Total	Cropped area	15.56	23.08	28.79	17.50	49.75	134.66
	Per farm	0.60	1.16	1.25	1.59	2.49	1.35
	% to Total	100.00	100.00	100.00	100.00	100.00	100.00

Table 5.14. Cropping pattern for the sample - Income groupwise

(Area in hectares)

Particulars		I_1	I_2	I_3	I_4	I_5	Overall
1. Viruppu	Total area	0.83	4.30	2.32	3.30	3.33	14.08
	Per farm	0.07	0.15	0.12	0.22	0.14	0.14
	% to Total	8.88	14.68	8.12	14.80	7.38	10.46
2. Mundakan	Total area	1.37	5.25	7.46	4.90	10.65	29.63
	Per farm	0.11	0.18	0.37	0.33	0.44	0.30
	% to Total	14.65	17.92	26.10	21.97	23.59	22.00
3. Punja (HYV)	Total area	1.54	5.33	5.44	2.50	8.56	23.37
	Per farm	0.13	0.18	0.27	0.17	0.36	0.23
	% to Total	16.47	18.19	19.03	11.21	18.97	17.35
4. Punja (Local)	Total area	1.28	1.80	3.20	4.71	5.86	16.85
	Per farm	0.11	0.06	0.16	0.31	0.24	0.17
	% to Total	13.69	6.14	11.20	21.16	12.98	12.51
5. Wet land	Total area	5.02	16.68	18.42	15.41	28.40	83.93
	Per farm	0.42	0.57	0.92	1.03	1.18	0.84
	% to Total	53.69	56.93	64.45	69.10	62.92	62.32
6. Coconut	Total area	1.28	5.15	4.65	2.34	8.19	21.60
	Per farm	0.11	0.18	0.23	0.16	0.34	0.22
	% to Total	13.69	17.58	16.27	10.49	18.14	16.04
6. Arecanut	Total area	0.82	3.35	2.02	1.38	3.56	11.13
	Per farm	0.07	0.12	0.10	0.09	0.15	0.11
	% to Total	8.77	11.43	7.07	6.19	7.89	8.27

Continued

Table 5.14 (Contd.....)

Particulars		I_1	I_2	I_3	I_4	I_5	Overall
7. Banana	Total area	0.19	0.22	0.27	0.10	0.29	1.07
	Per farm	0.01	0.01	0.01	0.01	0.01	0.01
	% to Total	2.03	0.75	0.94	0.45	0.64	0.79
8. Mango	Total area	0.44	1.24	0.80	0.45	0.91	3.84
	Per farm	0.04	0.04	0.04	0.03	0.04	0.04
	% to Total	4.70	4.23	2.80	2.02	2.02	2.85
9. Cashew	Total area	0.95	1.46	1.51	1.58	1.87	7.36
	Per farm	0.08	0.05	0.08	0.10	0.08	0.07
	% to Total	10.16	4.98	5.28	7.09	4.14	5.47
10. Others	Total area	0.65	1.20	0.91	1.04	1.92	5.73
	Per farm	0.05	0.04	0.05	0.07	0.08	0.06
	% to Total	6.96	4.10	3.19	4.66	4.25	4.26
Garden land	Total area	4.33	12.62	10.16	6.89	16.74	50.73
	Per farm	0.36	0.44	0.51	0.46	0.70	0.51
	% to Total	46.31	43.07	35.55	30.90	37.08	37.66
Total	Cropped area	9.35	29.30	28.58	22.30	45.14	134.66
	Per farm	0.78	1.01	1.43	1.49	1.88	1.35
	% to Total	100.00	100.00	100.00	100.00	100.00	100.00

paddy (Punja) which occupied 29.86 per cent (40.22 hectares) of the total cropped area. Coconut, which occupied 16.04 per cent (21.6 hectares) of the total cropped area was the major crop in garden lands. Arecanut occupied 11.13 hectares which was 8.27 per cent of total area, cashew covered an area of 7.36 hectares (5.47 per cent) and banana covered an area of 1.07 hectares (0.79 per cent). The detailed break up of the area under different crops based on size classes is presented in Table 5.13. The overall per farm total cropped area was found to be 1.35 hectares. In the case of wet lands the area per farm was found to be 0.84 hectare and that for garden lands was 0.51 hectare. Both for wet lands and garden lands the cropped area per farm increased with the size of holdings.

The cropping pattern of the sample according to income classes is presented in Table 5.14. The total area under different crops, was highest for I_5. Cashew, mango and other miscellaneous crops accounted for an area of 16.93 hectares in total which is only 12.58 per cent of the total area. There was an increase in the cropped area with increase in the income also, for both garden lands and wet lands.

The overall proportion of area irrigated to the total area was recorded to be 68.94 per cent. Of the total area irrigated 59.05 per cent was irrigated by canals. The area irrigated was highest in S_5 (79.64 per cent) while it was lowest in S_2 (55.23 per cent).

Table 5.15. Sourcewise irrigation in the different size groups

(Area in hectares)

Particulars		S_1	S_2	S_3	S_4	S_5	Overall
1. Net cropped area	Total area	9.80	13.58	20.57	12.65	42.68	99.28
	Per farm	0.38	0.68	0.89	1.15	2.13	0.99
2. Net area irrigated	Total area	7.22	7.50	11.85	7.86	33.99	68.42
	Per farm	0.28	0.38	0.51	0.71	1.70	0.68
i. Canal	Total area	4.48	5.28	5.91	3.45	21.28	40.40
	Per farm	0.17	0.26	0.26	0.31	1.06	0.40
ii. Well	Total area	2.74	2.22	5.94	4.41	12.71	28.02
	Per farm	0.11	0.11	0.26	0.40	0.64	0.28
% of area irrigated to	total area	73.67	55.23	57.61	62.13	79.64	68.94
Gross area irrigated	Total area	8.34	14.03	12.47	9.40	38.14	82.38
	Per farm	0.32	0.70	0.55	0.85	1.91	0.82
i. Canal	Total area	5.30	8.07	6.34	4.25	23.14	47.10
	Per farm	0.20	0.40	0.28	0.39	1.16	0.47
ii. Well	Total area	3.04	5.96	6.13	5.15	15.00	35.28
	Per farm	0.12	0.30	0.27	0.47	0.75	0.35
Intensity of cropping in irrigated area		115.51	187.07	105.23	119.59	112.21	120.40

Table 5.16. Sourcewise irrigation in the different income groups

(Area in hectares)

Particulars		I_1	I_2	I_3	I_4	I_5	Overall
1. Net cropped area	Total area	6.86	22.22	23.09	16.35	30.73	99.28
	Per farm	0.57	0.77	1.15	1.09	1.28	0.99
2. Net area irrigated	Total area	4.14	14.37	14.96	10.10	24.85	68.42
	Per farm	0.34	0.49	0.75	0.67	1.04	0.69
i. Canal	Total area	2.56	7.68	8.64	6.90	14.62	40.40
	Per farm	0.21	0.26	0.43	0.46	0.61	0.40
ii. Well	Total area	1.58	6.69	6.32	3.20	10.23	28.02
	Per farm	0.13	0.23	0.32	0.21	0.43	0.28
% of area irrigated to the total area		60.35	64.67	64.79	61.77	80.87	68.94
Gross area irrigated	Total area	5.62	16.72	18.14	12.88	29.02	82.38
	Per farm	0.47	0.58	0.91	0.86	1.21	0.78
i. Canal	Total area	3.18	8.37	10.42	8.34	16.79	47.10
	Per farm	0.27	0.29	0.52	0.56	0.70	0.47
ii. Well	Total area	2.44	8.35	7.72	4.54	12.23	35.28
	Per farm	0.20	0.29	0.39	0.30	0.51	0.35
Intensity of cropping in irrigated area		135.75	116.35	121.26	127.52	116.78	120.40

The net area ir rigated per farm was found to be 0.68 hectare. It was lowest for S_1 (0.28 hecare) and highest for S_5 (1.70 hectares). The average intensity of cropping in irrigated area was only 120.40. Paddy, coconut, arecanut and banana alone were irrigated. Among the size classes the highest cropping intensity being recorded by S_2 (187.07). Table 5.15 shows the area irrigated by the different sources in the size classes.

The area irrigated to the total area was lowest in I_1 (60.35 per cent) and highest in I_5 with 80.87 per cent. The average net area irrigated ranges from 0.34 hectare for I_1 to 1.04 hectares for I_5. The intensity of cropping in income groups I_2 and I_5 are less than the average intensity of cropping in irrigated area. The area irrigated in the income classes is shown in Table 5.16.

The investment on land, livestock, buildings, implements and machinery form the assets for the farmers. The investment on these assets possessed by the sample farmers on an average and the extent of availability the different size classes is presented in Table 5.17. The total value of asset per farm was Rs.146534.20 on an average. The value of land per farm was Rs.110153.34 which had the major share (75.17 per cent)of the total assets. The proportion of investment on land was very high in all groups and it was highest in S_5 (85.92 per cent).

Table 5.17. Capital assets of the selected cultivators - Size group-wise (in Rs.)

Sl. No.		S_1	S_2	S_3	S_4	S_5	Overall
1. Land	Per farm	66065.77	64759.00	86003.65	147546.36	220067.50	110153.34
	Per hectare	166444.76	90068.15	93438.07	119956.39	99398.15	106243.57
	% to total	68.87	62.08	65.66	83.75	85.92	75.17
2. Livestock and Poultry	Per farm	1108.08	1663.20	1408.04	1308.64	2508.25	1590.19
	Per hectare	2791.67	2313.21	1529.76	1063.93	1132.90	1533.75
	% to total	1.16	1.59	1.08	0.74	0.98	1.09
3. Buildings i. Farm/ Cattle shed	Per farm	680.77	1275.00	1371.74	863.64	1430.00	1128.50
	Per hectare	1715.12	1773.30	1490.32	702.14	645.89	1088.45
	% to total	0.71	1.22	1.05	0.49	0.56	0.77
ii. Residence	Per farm	27269.23	35150.00	40782.61	24045.45	30650.00	32275.00
	Per hectare	68701.55	48887.34	44307.98	19549.15	13843.72	31129.44
	% to total	28.41	33.70	31.14	13.65	11.97	22.03
4. Implements and Machinery	Per farm	773.69	1413.04	1366.43	2355.00	1405.35	1338.17
	Per hectare	1949.22	1965.28	1484.55	1914.63	634.76	1290.67
	% to total	0.81	1.35	1.04	1.34	0.54	0.91
5. Shares	Per farm	34.23	51.00	45.22	54.55	67.50	49.00
	Per hectare	86.24	70.93	49.13	44.35	30.49	47.26
	% to total	0.04	0.06	0.03	0.03	0.03	0.03
Total	Per farm	95931.77	104311.24	130977.69	176173.64	256128.60	146534.20
	Per hectare	241688.56	145078.21	142299.81	143220.59	115685.91	141333.14
	% to total	100.00	100.00	100.00	100.00	100.00	100.00

Table 5.18. Capital assets of the selected cultivators - Income group-wise

(in Rs.)

Sl. No.	Items		I_1	I_2	I_3	I_4	I_5	Overall
1.	Land	Per farm	62959.17	94355.17	135881.20	127378.66	120634.16	110153.34
		Per hectare	104641.27	120435.73	113660.56	111086.04	88728.78	106243.57
		% to total	69.07	80.13	78.12	82.56	66.47	75.17
2.	Livestock & Poultry	Per farm	698.33	723.62	2031.10	2570.34	2103.18	1590.18
		Per hectare	1160.66	923.63	1698.95	2241.58	1546.93	1533.75
		% to total	0.77	0.62	1.17	1.67	1.16	1.09
3.	Buildings i.Farm	Per farm	800.00	860.34	1775.00	966.67	1179.17	1128.50
		Per hectare	1329.64	1098.15	1484.73	843.02	867.30	1088.45
		% to total	0.88	0.73	1.02	0.63	0.65	0.77
	ii.Residence	Per farm	25750.00	20327.59	32850.00	21933.33	55958.33	32275.00
		Per hectare	42797.78	25946.30	27478.04	19127.91	41158.44	31129.44
		% to total	28.25	17.30	18.89	14.22	30.84	22.03
4.	Implements & Machinery	Per farm	1119.83	1171.66	1326.80	1369.27	1560.46	1338.17
		Per hectare	1861.22	1578.02	1109.83	1194.13	1147.75	1290.67
		% to total	1.01	1.07	0.76	0.89	0.86	0.91
5.	Share	Per farm	22.50	59.31	62.00	47.33	40.00	49.00
		Per hectare	37.40	75.70	51.86	41.28	29.42	47.26
		% to total	0.02	0.05	0.04	0.03	0.02	0.03
	Total	Per farm	91149.83	117497.69	173926.10	154265.60	181475.30	146534.19
		Per hectare	151827.97	150057.53	145483.97	134533.96	133478.62	141333.14
		% to total	100.00	100.00	100.00	100.00	100.00	100.00

The per hectare value of land worked out to Rs.106243.57. The per farm investment on livestock including poultry was only Rs.1590.19 and per hectare investment was Rs.1533.75 which was only 1.09 per cent of the total assets. Residential buildings on an average constituted 22.03 per cent of the total assets. The per farm investment on residential buildings was Rs.32275/- and per hectare investment was Rs.31129.44. The proportion of the value of buildings in size groups tends to decrease with increase in the size groups. The highest proportion was seen in S_1 (33.70 per cent) and lowest in S_5 (11.97 per cent). The farm shed contributed only a minor share (0.77 per cent). The other items considered are implements and machinery which accounted for only 0.91 per cent and the shares in co-operatives which formed only 0.03 per cent of the total assets.

The total assets position of the farmers based on income groups is shown in Table 5.18. The proportion of value of land to the total assets was lowest (66.47 per cent) for I_5 and highest for I_4 (82.56 per cent). The investment on land per hectare was lowest for the group I_5 (Rs.88728.78) and highest for I_2 (Rs.120435.73). The per farm value of residential buildings was highest for I_5 (Rs.55958.33) contributing 30.84 per cent of the total assets. Both per farm and per hectare investment on livestock were highest in I_4 which contributes 1.67 per cent of the total assets. The per farm investment on

Table 5.19. Size group-wise per farm investment on livestock per farm

Size Groups	Particulars	Draft animals	Milch animals	Young stock	Goats	Paul-try	Total
S_1	Number	0.08	0.54	0.42	0.15	1.31	2.50
	Value (Rs.)	96.15	798.08	153.85	48.08	11.92	1108.08
	% to Total	8.68	72.02	13.88	4.34	1.08	100.00
S_2	Number	0.20	0.85	0.65	0.20	1.60	3.50
	Value (Rs)	200.00	1179.20	215.00	52.50	16.50	1663.20
	% to Total	12.03	70.90	12.93	3.16	0.99	100.00
S_3	Number	0.09	0.74	0.39	0.13	1.48	2.83
	Value (Rs)	65.22	1184.78	110.87	30.43	16.74	1408.04
	% to Total	4.63	84.14	7.87	2.16	1.18	100.00
S_4	Number	0.36	0.64	0.55	0.18	0.82	2.55
	Value (Rs)	340.91	772.73	140.91	45.91	8.18	1308.64
	% to Total	26.05	59.05	10.77	3.51	0.63	100.00
S_5	Number	0.20	1.25	0.75	0.15	5.00	7.35
	Value(Rs)	300.00	1897.50	212.50	47.00	51.25	2508.25
	% to Total	11.96	75.65	8.47	1.87	2.05	100.00
	Average						
	Number	0.16	0.80	0.54	0.16	2.09	3.75
	Value (Rs)	177.50	1180.34	166.50	44.45	21.40	1590.19
	% to Total	11.16	74.23	10.47	2.80	1.34	100.00

Table 5.20. Income group-wise investment on livestock per farm

Size Groups	Particulars	Draft animals	Milch animals	Young stock	Goats	Poultry	Overall
I_1	Number	0.17	0.42	0.33	0.04	0.83	1.79
	Value (Rs)	104.17	483.33	70.83	33.33	6.67	698.33
	% to Total	14.92	69.21	10.14	4.77	0.96	100.00
I_2	Number	0.07	0.28	0.14	0.10	0.38	0.97
	Value (Rs)	155.17	501.72	41.38	20.69	4.66	723.62
	% to Total	21.44	69.34	5.72	2.86	0.64	100.00
I_3	Number	0.20	1.10	0.75	0.65	2.10	4.80
	Value (Rs)	225.00	1392.50	260.00	130.00	23.60	2031.10
	% to Total	11.08	68.56	12.80	6.40	1.16	1.00
I_4	Number	0.27	1.33	0.93	0.07	1.47	4.07
	Value (Rs)	200.00	2026.67	313.33	16.67	13.67	2570.34
	% to Total	7.78	78.85	12.19	0.65	0.53	100.00
I_5	Number	0.17	1.04	0.71	0.13	5.17	7.22
	Value (Rs)	187.50	1643.08	195.83	24.79	51.98	2103.18
	% to Total	8.92	78.12	9.31	1.18	2.47	100.00
	Average						
	Number	0.16	0.80	0.54	0.16	2.09	3.75
	Value (Rs)	177.50	1180.34	166.50	44.45	21.40	1590.18
	% to Total	11.16	74.23	10.47	2.80	1.34	100.00

implements and machinery was highest for I_5 (Rs.1560.46) while per hectare investment on this item was highest in I_1 (1861.22).

The distribution of livestock population including poultry and the investment on livestock for the different size groups of holding is presented in Table 5.19. Milch animals formed the lion share of the total livestock assets which accounted for 74.23 per cent. Draft animals contributed to 11.16 per cent of the total investment on livestock. The number of animals and expenditure on milch animals was highest for S_5 which was 1.25 and Rs.1897.50 respectively. It was interesting to note that poultry accounted for a meagre share (1.34 per cent) of total investment on livestock. The investment on poultry was highest in S_5 (2.05 per cent). The average number of birds were 2.09.

Distribution of livestock based on the income classes is shown in Table 5.20. It revealed that the investment on milch animals was highest in I_4 (Rs.2026.67) followed by I_5 (Rs.1643.08). Goats accounted for a minor proportion (2.80 per cent) and that of young stock was 10.47 per cent. The investment on draft animals was highest for I_2 which accounts for 21.44 per cent.

Table 5.21 presents the investment on the different types of agricultural implements in various size groups.

Table 5.21. Value of tools, implements and machinery for the different size groups

Sl. No.	Items		S_1	S_2	S_3	S_4	S_5	Overall
1.	Tools and implements	Per farm	78.69	77.90	118.70	201.36	188.35	102.73
		Per hectare	198.25	108.34	128.96	163.71	85.07	99.08
		% Total	10.17	5.51	8.69	8.55	13.40	7.68
2.	Sprayer	Per farm	16.15	67.25	53.26	127.27	104.00	64.70
		Per hectare	40.69	93.53	57.86	103.47	46.97	62.40
		% Total	2.09	4.76	3.90	5.40	7.40	4.83
3.	Pumpset	Per farm	667.31	1250.39	1177.09	1985.46	1073.00	1147.74
		Per hectare	1681.21	1739.07	1278.84	1614.12	484.65	1107.01
		% Total	86.25	86.49	86.14	84.31	76.35	85.77
4.	Miscellaneous	Per farm	11.54	17.50	17.39	40.91	40.00	25.00
		Per hectare	29.07	24.34	18.89	33.33	18.07	22.18
		% Total	1.49	1.24	1.27	1.74	2.85	1.72
Total		Per farm	773.69	1413.04	1366.43	2355.00	1405.35	1338.17
		Per hectare	1949.22	1965.28	1484.55	1914.63	634.76	1290.67
		% Total	100.00	100.00	100.00	100.00	100.00	100.00

Table 5.22. Value of tools, implements and machinery for the different income groups

Sl. No.	Items		I_1	I_2	I_3	I_4	I_5	Overall
1.	Tools & implements	Per farm	99.58	98.40	161.80	131.60	120.88	102.73
		Per hectare	165.52	132.41	135.34	114.77	88.91	99.08
		% to total	8.89	8.39	12.19	9.61	7.74	7.68
2.	Sprayer	Per farm	12.50	43.10	123.50	53.33	72.08	64.70
		Per hectare	20.78	58.10	103.30	46.51	53.02	62.40
		% to total	1.12	3.89	9.31	3.90	4.62	4.83
3.	Pumpset	Per farm	982.75	1015.44	1021.50	1154.34	1338.34	1147.74
		Per hectare	1634.36	1367.70	854.46	1006.76	984.37	1107.01
		% to total	87.76	86.67	76.99	84.30	85.71	85.77
4.	Miscellaneous	Per farm	25.00	14.72	20.00	30.00	29.16	23.00
		Per hectare	41.55	19.81	16.73	26.16	21.45	22.18
		% to total	2.23	1.26	1.51	2.19	1.87	1.72
5.	Total	Per farm	1119.83	1171.66	1326.80	1369.27	1560.46	1338.17
		Per hectare	1861.22	1578.02	1109.83	1194.13	1147.75	1290.67
		% to total	100.00	100.00	100.00	100.00	100.00	100.00

Pumpsets made the largest contribution (85.77 per cent) to the total. The average per farm investment on implements and machinery with Rs.1338.17 and per hectare investment with Rs.1290.67. The per farm investment on implements and machinery was highest in S_4 with Rs.2355.00.

The per farm investment on implements and machinery were highest for I_5 which worked out to Rs.1560.46 and Rs.1147.75 respectively. The per farm investment on pump sets was highest in 15 (Rs.1338.34) and lowest in I_1 (Rs.982.75). The investment on pump-set showed an increasing trend with increase in the income. The overall per farm investment on implements and machinery showed a steady increasing trend with increase in income as shown in Table 5.22.

FARM BUSINESS STRUCTURE

FARM BUSINESS STRUCTURE

Economics of crops:

More than 85 per cent of the total geographic area of Puzhakkal block is cropped area. Though a variety of crops are grown in the block, the main crops are paddy, coconut, arecanut and banana. An attempt is made here to estimate the economics of these crops as they constitute the backbone of the economy of the region.

Economics of Paddy Cultivation:

Paddy is cultivated in Puzhakkal block in three seasons. Viruppu, Mundakan and Punja. Viruppu cultivation starts with the onset of south west monsoon (April-May). The second crop namely Mundakan is cultivated during September-October and December-January. The kole land paddy cultivation of Trichur district during the third crop season (Punja) is peculiar and is sown around January and harvested in April-May. The lands will be submerged under water during most of the year. During the cropping season bunds are built around kole lands and the water is drained out.

Local varieties are more popular in the Viruppu and Mundakan whereas high yielding varieties are also cultivated in Punja. Local varieties commonly cultivated in Viruppu are 'Thavalakannan', 'PKV', 'Kattamodan' etc. The varieties cultivated in Mundakan are 'Chitteni', 'Pathenpathara' (19½), Cheera etc. Short duration high yielding varieties like Triveni,Jyothi, Annapoorna etc. are cultivated during Punja.

Except in Kole lands the fields are thoroughly ploughed to incorporate weeds and straw into the soil. The land is puddled and levelled before sowing. Both tractor and bullocks are utilised for ploughing. 'Pattial' ploughing is prevalent in Kole areas where one or two ploughings are given just after crop is harvested. The lands will be left under water until next year punja season. The only preparatory cultivation done to raise the next crop is puddling.

Paddy is mainly grown as a transplanted crop during Mundakan season and direct sown crop in Viruppu and Punja. No seed treatment is practised in this area. Weeding is done only once in a season. Chemical weed control is not popular. Weeds are seen to be more during Punja season compared to Mundakan and Viruppu.

Pests and diseases are severe during Punja, more so for the high yielding varieties. Plant protection measures were seen adopted invariably by all farmers during punja whereas 15 per cent of the farmers were found applying pesticides for Mundakan.

Organic manures like cow dung and green leaf are incorporated into the soil along with preparatory cultivation. Organic manures and fertilizers are applied in Mundakan and Viruppu. The use of manures in Kole land is little due to the expenses in transporting manures to the field.

The Viruppu crop is purely rainfed whereas the Mundakan crop is seen supplemented with irrigation. Cultivation in Kole land is undertaken by dewatering the fields (Padasekharam) which are protected by bunds. Dewatering is conducted on a co-operative basis by Kole society formed in each area. The Punja is a fully irrigated crop.

Harvesting is by cutting at the base of the plants. Kind payments at the rate of 1/6 of the paddy harvested is made to the labourers as wages which includes the wages for transporting, threshing, winnowing etc. The earheads alone are harvested in Kole lands for the ease of transporting the produce from the fields.

In Virippu and Mundakan local varieties alone were seen grown by the sample farmers while high yielding varieties were also grown in Punja. In Table 6.1 the area under paddy for the various seasons for different size classes are shown. Of the total 100 farmers of the sample, 33 cultivated Viruppu crop, 60 cultivated in Mundakan and 63 in punja. Punja had the largest area under paddy which accounted for 40.22 hectares.

Table 6.1. Area under paddy for different seasons - Size group wise.

		Viruppu	Mundakan	Punja (HYV)	Punja (Local)
S_1	No.of farmers	8	15	16	3
	Total area (ha)	1.70	3.13	3.55	0.61
	Average area (ha)	0.21	0.21	0.22	0.20
S_2	No.of farmers	8	12	3	9
	Total area (ha)	2.78	5.12	1.60	4.28
	Average area (ha)	0.35	0.43	0.53	0.48
S_3	No.of farmers	10	15	4	7
	Total area (ha)	4.18	7.17	2.40	3.51
	Average area (ha)	0.42	0.48	0.60	0.50
S_4	No.of farmers	5	8	4	1
	Total area (ha)	2.62	4.56	2.72	0.37
	Average area (ha)	0.52	0.57	0.68	0.37
S_5	No.of farmers	2	10	9	7
	Total area (ha)	2.80	9.65	13.10	8.08
	Average area (ha)	1.40	0.97	1.46	1.15
	Total No.of farmers	33	60	36	27
	Total area (ha)	14.08	29.63	23.37	16.85
	Average area (ha)	0.43	0.49	0.65	0.62

Table 6.2. Area under paddy for different seasons - Income group wise

		Viruppu	Mundakan	Punja (HYV)	Punja (Local)
I_1	No. of farmers	3	5	6	3
	Total area (ha)	0.83	1.37	1.54	1.28
	Average area (ha)	0.28	0.27	0.26	0.43
I_2	No. of farmers	11	15	12	5
	Total area (ha)	4.30	5.25	5.33	1.80
	Average area (ha)	0.39	0.35	0.44	0.36
I_3	No. of farmers	7	15	8	3
	Total area (ha)	2.32	7.46	5.44	3.20
	Average area (ha)	0.33	0.50	0.68	1.07
I_4	No. of farmers	7	10	3	6
	Total area (ha)	3.30	4.90	2.50	4.71
	Average area (ha)	0.47	0.49	0.83	0.79
I_5	No. of farmers	5	15	7	10
	Total area (ha)	3.33	10.65	8.56	5.86
	Average area (ha)	0.67	0.71	1.22	0.59
	Total No.of farmers	33	60	36	27
	Total area (ha)	14.08	29.63	23.37	16.85
	Average area (ha)	0.43	0.49	0.65	0.62

The total area under high yielding varieties was 23.37 hectares with an average of 0.65 hectare. The average area under paddy was found to increase with increase in holding size in all seasons. The average area under paddy in Viruppu and Mundakan were 0.43 and 0.49 hectare respectively. 44.44 per cent of the farmers cultivating high yielding varieties were in S_1 but it accounted for only 15.19 per cent of the area under Punja.

The classification based on income also showed an increase in the average area with increase in income from I_1 (0.30 hectare) to I_5 (0.77 hectare). In I_5 the average area was highest for Punja with 1.22 hectares cultivated with high yielding varieties and 0.59 hectare with local varieties. The distribution of the total area under paddy in various seasons based on income classes is presented in Table 6.2.

The cost of cultivation per hectare on an average for Viruppu was found to be Rs.3726.16 while for Mundakan it was Rs.4641.51. For high yielding varieties in Punja the average cost per hectare worked out to Rs.4869.33 and that for local varieties it was Rs.4625.50 which is 5 per cent less than the cost incurred for high yielding varieties. A definite trend of decrease in cost of cultivation with increase in size of holding is not found for Viruppu and Mundakan. For high yielding varieties in Punja, the highest cost per hectare was recorded by S_1 (Rs.5618.24) and lowest

Table 6.3. Cost of cultivation per hectare of paddy for different seasons - Size group wise

(in Rs)

	S_1	S_2	S_3	S_4	S_5	Average
Viruppu Cost C	3601.94	3783.38	3715.70	3536.51	3940.57	3726.16
Cost C excluding rental value	2692.62	2749.60	2538.48	2634.68	2874.86	2683.16
Mundakan Cost C	4786.96	4397.23	4612.73	4554.43	4786.47	4641.51
Cost C excluding rental value	3509.87	3208.86	3298.08	3361.74	3500.55	3381.93
Punja(HYV)Cost C	5618.24	5186.56	4741.39	4747.72	4676.61	4869.33
Cost C excluding rental value	4488.12	4169.06	3644.22	3550.09	3593.78	3768.94
Punja-Local Cost C	5090.72	5269.84	4688.21	3253.14	4285.10	4625.50
Cost C excluding rental value	3819.19	3971.70	3362.34	2419.88	3296.93	3481.31

Table 6.4. Cost of cultivation per hectare of paddy in different seasons - Income group wise

	I_1	I_2	I_3	I_4	I_5	Average
Viruppu Cost C	3735.92	3708.03	3855.26	3467.50	3916.91	3726.16
Cost C excluding rental value	2934.38	2682.54	2840.53	2530.70	2664.40	2683.16
Mundakan Cost C	5292.02	4625.93	4592.90	4311.49	4751.67	4641.51
Cost C excluding rental value	3694.40	3368.59	3398.63	3180.02	3429.79	3381.93
Punja(HYV)Cost C	4977.43	4775.51	4505.50	5546.80	4942.35	4869.33
Cost C excluding rental value	3954.48	3707.14	3603.83	4212.60	3750.06	3768.94
Punja-Local Cost C	4650.71	5253.37	3569.34	4464.02	5133.78	4625.50
Cost C excluding rental value	3332.81	3928.77	2582.14	3384.10	3945.44	3481.31

in S_5 with Rs.4676.61. For local varieties in Punja the highest cost per hectare was found in S_2 (Rs.5269.84) and the lowest in S_4 (3253.14). The cost discussed so far includes the imputed value of rent on land also (Cost C). It cannot be a true representation of the actual expenses incurred by the farmers since virtually no rent is paid. Hence the per hectare cost of cultivation at Cost C and total cost excluding the value of rent for different size classes were worked out and presented in Table 6.3. The cost per hectare deleting rent was 27.99 per cent less for Viruppu and 27.14 per cent for Mundakan. For Punja the total cost without rental value were 77.72 percent and 75.26 percent for high yielding varieties and local varieties respectively of the total cost.

Table 6.4 presents the cost of cultivation per hectare of paddy in various seasons for the income classes. There is no definite trend seen among the classes. For Viruppu the highest cost per hectare was recorded by I_5 (Rs.3916.91) while the lowest was in I_4 (Rs.3467.50). For Mundakan the highest cost per hectare was recorded by I_1 (Rs.5292.02) which was 12.29 per cent higher than the average cost per hectare for the crop. While the lowest cost per hectare was in I_4 (Rs.4311.49) 7.11 per cent less than average cost per hectare. For Punja high yielding varieties the highest cost per hectare was noticed in I_4 (Rs.5546.80) which is 13.91 per cent higher

than the average cost and the lowest in I_3 (Rs.4505.50) which is 7.47 per cent less than the average cost.

The input wise split up of the cost per hectare of paddy for the various seasons is shown in Table 6.5. It revealed that the major share of the total cost incurred was on hired human labour which accounted for 22.62 per cent for Viruppu, 25.57 per cent for Mundakan and 26.86 per cent and 27.22 per cent respectively for high yielding and local varieties in Punja. The imputed value of rent on land constituted about 22 - 28 per cent of the total cost. It was found that cost A which forms the paid out cost accounted only for 62.54 per cent in Viruppu, 65.04 per cent in Mundakan and 68.16 per cent and 67.74 per cent respectively for high yielding and local varieties in Punja. The proportion of cost B to total cost varied from 91.33 per cent in the case of high yielding varieties in punja to 93 per cent for local varieties in punja.

The total cost per hectare according to the operations performed during different seasons is presented in Table 6.6. Among the various operations the largest proportion of the total cost was contributed by harvesting charges (14.42 percent) next to which was preparatory cultivation (14.25 per cent) for Viruppu. The proportion of cost incurred on seed materials and sowing was highest for Mundakan which accounted for 18.92 per cent followed by harvesting charges which contributed 14.83 per cent. The expenditure on harvesting was highest for high

Table 6.5. Input wise cost of cultivation per hectare of paddy for different seasons

(in Rs)

	Viruppu	Mundakan	Punja(HYV)	Punja(Local)
1. Hired human labour	842.98 (22.62)	1186.98 (25.57)	1307.75 (26.86)	1259.04 (27.22)
2. Bullock labour	371.73 (9.98)	344.66 (7.42)	407.33 (8.37)	404.79 (8.75)
3. Seeds	344.76 (9.25)	515.93 (11.11)	329.66 (6.77)	387.88 (8.39)
4. Plant protection	156.06 (4.19)	149.06 (3.21)	241.87 (4.97)	108.87 (2.35)
5. Irrigation	Nil	Nil	394.39 (8.10)	359.20 (7.77)
6. Manures	254.55 (6.83)	417.48 (8.99)	68.14 (1.40)	138.80 (3.00)
7. Fertilizers	256.37 (6.88)	275.04 (5.93)	429.17 (8.81)	341.50 (7.38)
8. Depreciation	14.48 (0.39)	13.74 (0.30)	12.93 (0.26)	11.80 (0.26)
9. Interest on working capital	89.50 (2.40)	116.31 (2.51)	127.60 (2.62)	121.20 (2.62)
Cost A	2330.43 (62154)	3019.20 (65.04)	3318.84 (68.16)	3133.15 (67.74)
10. Rental value	1043.00 (27.99)	1259.58 (27.14)	1100.39 (22.60)	1144.19 (24.74)
11. Interest on fixed capital	32.33 (0.87)	30.34 (0.65)	27.91 (0.57)	24.15 (0.52)
Cost B	3405.76 (91.40)	4309.12 (92.84)	4447.14 (91.33)	4301.49 (93.00)
12. Family labour charges	320.40 (8.60)	332.39 (7.16)	422.19 (8.67)	342.07 (7.00)
Cost C	3726.16 (100.00)	4641.51 (100.00)	4869.33 (100.00)	4625.50 (100.00)

(Figures in parentheses represent percentages to total)

Table 6.6. Operation wise cost of cultivation per hectare of paddy in different seasons.

(in Rs)

	Viruppu	Mundakan	Punja(HYV)	Punja(Local)
1. Preparatory cultivation	530.58 (14.25)	434.40 (9.36)	545.91 (11.21)	571.00 (12.34)
2. Seeds and sowing	419.85 (11.27)	877.97 (18.92)	432.78 (8.89)	570.02 (12.32)
3. Weeding	167.68 (4.50)	165.33 (3.56)	492.27 (10.11)	373.03 (8.06)
4. Plant protection	244.62 (6.56)	241.43 (5.20)	352.42 (7.24)	166.40 (3.60)
5. Irrigation	Nil	Nil	394.39 (8.10)	359.11 (7.76)
6. Manuring	362.72 (9.73)	510.78 (11.00)	107.86 (2.22)	229.25 (4.96)
7. Fertilizer application	284.00 (7.62)	303.19 (6.53)	540.40 (11.10)	366.72 (7.93)
8. Harvesting	537.40 (14.42)	688.48 (14.83)	734.47 (15.08)	688.71 (14.89)
9. Depreciation	14.48 (0.39)	13.74 (0.30)	12.93 (0.26)	11.80 (0.26)
10. Interest on working capital	89.50 (2.40)	116.31 (2.51)	127.60 (2.62)	121.20 (2.62)
11. Rental value	1043.00 (27.99)	1259.58 (27.14)	1100.39 (22.60)	1144.11 (24.73)
12. Interest on fixed capital	32.33 (0.87)	30.30 (0.65)	27.91 (0.57)	24.15 (0.53)
Total cost	3726.16 (100.00)	4641.51 (100.00)	4869.33 (100.00)	4625.50 (100.00)

(Figures in parentheses represent percentages to total)

yielding varieties which accounted for 15.08 per cent. The preparatory cultivation and fertilizer application accounted for 11.21 per cent and 11.10 per cent respectively. Viruppu and Mundakan are rainfed whereas Punja is irrigated. The average cost incurred for irrigation was 9.82 per cent higher for high yielding varieties. The expenditure on plant protection was more than double for high yielding varieties when compared with local varieties in punja. For fertilizers the expenditure was 47.36 per cent higher for high yielding varieties. Compared to local varieties only half the cost incurred for manures and manuring for local varieties is spend on high yielding varieties in punja for this item.

An analysis of the cost of cultivation excluding rental value of land input wise and operation wise for the various seasons is given in Table 6.7. and Table 6.8 respectively. Human labour constituted the major single item. As a proportion to the total it varied from 31.42 per cent for Viruppu to 36.17 per cent for local varieties in Punja. Hired human labour, bullock labour and seeds formed more than 50 per cent of total cost. Family labour constituted on an average 11.94 per cent for Viruppu which was the highest while the lowest was found to be 9.31 per cent for local varieties in Punja.

The operation wise cost per hectare of paddy shows that the bulk of the expenditure incurred was for harvesting,

Table 6.7. Input-wise cost of cultivation per hectare of paddy excluding rental value in different seasons

(in Rs)

	Viruppu	Mundakan	Punja(HYV)	Punja(Local)
1. Hired labour	842.98 (31.42)	1186.98 (38.10)	1307.75 (34.70)	1259.04 (36.17)
2. Bullock labour	371.73 (13.85)	344.66 (10.19)	407.33 (10.81)	404.79 (11.63)
3. Seeds	344.76 (12.85)	515.93 (15.26)	329.66 (8.74)	387.88 (11.14)
4. Plant protection	156.06 (5.82)	149.06 (4.41)	241.87 (6.42)	108.87 (3.13)
5. Irrigation	Nil	Nil	394.39 (10.46)	359.20 (10.32)
6. Manures	254.55 (9.49)	417.48 (12.34)	68.14 (1.81)	138.80 (3.99)
7. Fertilizers	256.37 (9.55)	275.04 (8.13)	429.17 (11.39)	341.50 (9.80)
8. Depreciation	14.48 (0.54)	13.74 (0.40)	12.93 (0.34)	11.80 (0.34)
9. Interest on working capital	89.50 (3.34)	116.31 (3.44)	127.60 (3.39)	121.20 (3.48)
10. Interest on fixed capital	32.33 (1.20)	30.34 (0.90)	27.91 (0.74)	24.15 (0.69)
11. Family labour charges	320.40 (11.94)	332.39 (9.83)	422.19 (11.20)	324.07 (9.31)
Total cost	2683.16 (100.00)	3381.93 (100.00)	3768.94 (100.00)	3481.30 (100.00)

(Figures in parentheses represent percentages to total)

Table 6.8. Operation-wise cost of cultivation per hectare of paddy excluding rental value in different seasons

(in Rs)

	Viruppu	Mundakan	Punja(HYV)	Punja (Local)
1. Preparatory cultivation	530.59 (19.77)	434.40 (12.84)	545.91 (14.48)	570.97 (16.40)
2. Seeds and sowing	419.85 (15.65)	877.97 (25.96)	432.78 (11.48)	569.96 (16.37)
3. Weeding	167.68 (6.25)	165.33 (4.89)	492.27 (13.06)	373.03 (10.72)
4. Plant protection	244.62 (9.12)	241.43 (7.14)	352.42 (9.35)	166.40 (4.78)
5. Irrigation	Nil	Nil	394.39 (10.46)	359.11 (10.32)
6. Manuring	362.72 (13.52)	510.78 (15.10)	107.86 (2.86)	229.25 (6.59)
7. Fertilizer application	284.00 (10.58)	303.19 (8.96)	540.40 (14.34)	366.72 (10.53)
8. Harvesting	537.40 (20.03)	688.48 (20.36)	734.47 (19.50)	688.71 (19.78)
9. Depreciation	14.48 (0.54)	13.74 (0.41)	12.93 (0.34)	11.80 (0.34)
10. Interest on working capital	89.50 (3.34)	116.31 (3.44)	127.60 (3.39)	121.20 (3.48)
11. Interest on fixed capital	32.33 (1.20)	30.30 (0.90)	27.91 (0.74)	24.15 (0.69)
Total Cost	2683.16 (100.00)	3381.93 (100.00)	3768.94 (100.00)	3481.30 (100.00)

(Figures in parentheses represent percentages to total)

preparatory cultivation and seeds and sowing. The proportion of expenditure on seeds and sowing was highest for Mundakan accounting for 25.96 per cent followed by local varieties in Punja (16.37 per cent), Viruppu (15.65 per cent) and 11.48 per cent for high yielding varieties in Punja. The expenditure on weeding was highest for high yielding varieties which contributed 13.06 per cent of total cost.

Extent of use of resources

In this section an attempt has been made to quantify the various inputs used in paddy cultivation such as human labour, bullock labour, fertilizers, seeds etc. Wherever possible the actual levels of use of inputs are compared with recommended levels.

The extent of labour, seed material and fertilizer used for Viruppu is presented in Table 6.9. On an average the per hectare human labour hours used for Viruppu were 102.15 male labour hours, 680 female labour hours. The use of bullock pair hours was 53.10 and that of tractor 1.22 hours. It was observed that family and hired labour contributed equally to total male labour use whereas family labour contributed only 18.86 per cent to total female labour. A decreasing trend was noticed in the case of family labour utilised and an increasing trend for hired labour with increase in size of holding. The tractor utilisation was more in S_3 (1.22 hours per hectare) where bullock labour utilisation was less than the average by 15.44 percent. The

Table 6.9. Utilisation of inputs per hectare for Viruppu - Size group-wise

		S_1	S_2	S_3	S_4	S_5	Average
Family labour (hrs)	Male	66.27	80.37	49.03	43.01	24.31	51.26
	Females	159.06	192.90	117.67	103.22	84.42	128.22
Hired labour (hrs)	Male	58.95	36.41	60.19	41.36	55.43	50.89
	Females	494.74	443.80	561.56	520.03	708.72	551.78
Bullock labour (hrs)		46.43	61.00	44.90	55.97	58.86	53.10
Tractor (hrs)		0.74	0.63	1.22	0.95	1.18	1.22
Seed rate(kg)	*80-100	135.88	134.71	133.13	136.26	131.24	133.98
Fertilizers (kg)	*N-40	28.65	24.84	15.65	25.63	35.43	24.82
	P-20	13.64	16.51	11.51	12.21	16.51	13.88
	K-20	20.65	15.80	10.21	21.13	18.32	13.62

* Recommendations as per the Package of Practices

Table 6.10. Utilisation of inputs per hectare for Viruppu - Income group-wise.

		I_1	I_2	I_3	I_4	I_5	Average
Family labour (hrs)	Male	45.58	51.36	66.51	53.63	39.71	51.26
	Females	282.58	123.26	159.63	128.72	73.99	128.22
Hired labour	Male	74.31	61.21	56.18	47.57	81.45	50.89
	Females	524.72	592.80	568.84	516.36	539.35	551.78
Bullock labour (hrs)		48.03	54.06	61.30	42.15	58.62	53.10
Tractor (hrs)		0.65	0.42	2.21	1.35	1.58	1.22
Seed rate (kg)	*80-100	134.94	131.86	153.37	121.97	135.99	133.98
Fertilizers (kg)	*N-40	26.53	19.28	20.38	22.56	36.99	24.82
	P-20	18.13	9.35	11.35	10.35	24.00	13.88
	K-20	15.23	12.25	12.75	14.21	15.05	13.62

* Recommendations as per the Package of Practices.

quantity of seeds actually used was estimated and compared with the recommended seed rate as per Package of Practices. On an average the seed rate was found to be 133.98 kg per hectare which was 33.98 per cent higher even when the upper limit of the recommended seed rate (80-100 kg per hectare) is considered. The seed rate remained more or less the same in different size groups. The average level of N,P,K utilization was 24.82, 13.88 and 13.62 kg per hectare as against the recommendation of 40, 20 and 20 kg per hectare of N,P and K respectively. The actual utilization was only 62.05 per cent of recommendation for nitrogen, 69.4 per cent for phosphorus and 68.10 per cent for potassium. S_5 utilised larger quantity of fertilizer when compared with other size groups.

Input utilization according to income groups is presented in Table 6.10. As income increased the per hectare utilization of family labour decreased. The use of hired female labour was highest for I_2 (592.8 hours) while the lowest was recorded in I_4 (516.36 hours). The highest utilization of bullock labour was in I_3 (61.3 bullock pair hours). The tractor labour use was highest for I_3 (2.21 hours). Highest rate of fertilizers were used by I_5 which was 36.99 kg nitrogen, 24 kg phosphorus and 15.05 kg potassium per hectare which was 92.48 per cent, 120 per cent and 75.25 per cent of N, P, K recommended.

For Mundakan the per hectare utilisation of labour was found to be 133.96 male labour hours, 871.89 female labour

Table 6.11. Utilisation of inputs per hectare for Mundakan - Size groupwise

		S_1	S_2	S_3	S_4	S_5	Average
Family labour (hrs)	Male	91.16	65.19	60.02	40.82	27.52	50.66
	Female	218.78	156.47	144.05	97.97	100.90	132.95
Hired labour (hrs)	Male	62.06	98.73	83.79	62.13	91.67	83.30
	Female	726.16	703.09	791.14	670.60	755.63	738.94
Bullock labour (hrs)		50.31	45.86	47.13	53.78	50.10	49.23
Tractor (hrs)		0.58	1.21	0.95	1.02	1.34	1.13
Seed rate *60-85		137.54	120.31	128.37	150.44	136.37	134.07
Fertilizers (kg)	*N-40	25.65	26.88	24.76	26.98	37.69	29.77
	P-20	23.54	15.32	20.99	12.60	11.31	15.84
	K-20	21.63	15.80	17.58	16.71	24.76	19.91

*Recommendations as per the Package of Practices

Table 6.12. Utilisation of inputs per hectare for Mundakan - Income groupwise

		I_1	I_2	I_3	I_4	I_5	Average
Family labour (hrs)	Male	120.16	107.18	50.56	23.56	26.40	50.66
	Female	779.23	257.62	121.34	56.40	31.89	132.95
Hired labour (hrs)	Male	45.41	31.46	77.51	112.18	104.52	83.30
	Female	108.98	587.76	784.68	746.06	859.18	738.94
Bullock labour (hrs)		63.52	41.07	55.37	36.43	53.01	49.23
Tractor (hrs)		-	1.72	0.98	2.41	0.69	1.13
Seed rates *60-85 (kg)		135.87	145.45	138.67	124.54	129.39	134.07
Fertilizers*	N- 40	42.34	26.45	24.54	23.22	36.47	29.77
	P- 20	21.53	12.63	11.77	20.94	17.19	15.84
	K-20	22.93	19.93	20.33	15.54	21.23	19.91

*Recommendations as per the Package of Practices

hours, 49.23 bullock pair hours and 1.13 tractor hours. An increase in the hired labour and decrease in the family labour was noticed as the size of holding increased. The bullock labour utilisation was highest for S_4 (53.78 bullock pair hours). The tractor use was highest in S_5, 1.34 hours. The quantity of seeds used was 134.07 kg per hectare which was 57.73 per cent higher than the upper limit recommended for transplanted local varieties (60-85 kg per hectare). The seed rate was found to be highest for S_4, 150·44 kg per hectare and lowest for S_2, 120.31 kg per hectare. The per hectare utilisation of nitrogen, phosphorus and potassium was found to be 29.77 kg, 15.84 kg and 19.91 kg per hectare on an average which were 74.43 per cent, 79.20 per cent and 99.55 per cent of the recommended dose for these elements. The utilisation of nitrogen and potassium were highest for S_5 which were 37.69 kg and 24.76 kg per hectare respectively, while the highest use of phosphorus was found in S_1, 23.54kg/ hectare. The data are presented in Table 6.11.

The income class wise distribution of the inputs used for Mundakan is given in Table 6.12. The family labour use both male and female showed a decreasing trend with increase in income, while hired labour showed an increasing trend. The highest bullock labour utilisation was recorded by I_1 (63.52 bullock pair hours) while the lowest for I_4 (36.43 bullock pair hours). The highest tractor use was found

Table 6.13. Utilisation of inputs per hectare for Punja (HYV) - Size groupwise

		S_1	S_2	S_3	S_4	S_5	Average
Family labour (hrs)	Male	143.74	101.49	65.82	76.33	46.28	70.35
	Female	344.97	243.58	157.97	182.20	111.08	168.84
Hired labour (hrs)	Male	64.56	89.45	76.14	88.64	109.90	95.23
	Female	744.95	759.64	765.07	886.46	838.98	817.20
Bullock labour (hrs)		61.60	50.00	55.36	42.74	61.99	58.18
Tractor (hrs)		0.92	1.21	2.56	2.35	1.52	1.61
Seed rate *80-100 (kg)		112.04	110.63	115.00	95.96	110.73	111.14
Fertilizers* (kg)	N-70	52.95	44.68	45.21	36.24	44.35	44.82
	P-35	31.73	27.63	25.63	23.78	28.81	28.26
	K-35	38.78	34.52	36.21	28.34	24.31	28.90

* Recommendations as per Package of Practices.

Table 6.14. Utilisation of inputs per hectare for Punja (HYV) - Income groupwise

		I_1	I_2	I_3	I_4	I_5	Average
Family labour (hrs)	Male	163.86	105.71	81.81	48.15	30.72	70.35
	Female	393.27	253.70	196.34	115.56	73.72	168.84
Hired labour (hrs)	Male	28.98	63.16	57.62	129.52	142.21	95.23
	Female	554.21	652.68	669.14	1075.84	985.50	817.20
Bullock labour (hrs)		66.15	68.23	61.45	52.57	50.07	58.18
Tractor (hrs)		-	2.12	1.65	2.10	1.41	1.61
Seed rate *80-100 (kg)		109.09	98.45	125.55	112.20	105.84	111.44
Fertilizers* (kg)	N-70	43.25	32.43	54.60	47.14	45.92	44.82
	P-35	24.36	22.74	48.17	28.78	25.08	28.26
	K-35	25.87	24.52	31.23	23.73	32.20	28.90

*Recommendations as per Package of Practices.

in I_4 (2.41 hours). The highest utilisation of fertilizers was observed in the group I_1 with 42.34 kg nitrogen with 21.53 kg phosphorus and 22.93 kg potassium per hectare.

The high yielding varieties grown in Punja were more labour intensive compared with Viruppu and Mundakan. It was observed that the per hectare labour utilisation was 165.58 male labour hours, 986.04 female labour hours, 58.18 bullock pair hours and 1.61 tractor hours. The actual seed rate followed by cultivators was 111.14 kg per hectare which is 11.14 per cent higher than the upper limit of recommended seed rate. For high yielding varieties the utilisation of nitrogen, phosphorus and phtassium was estimated to be 44.82 kg, 28.26 kg and 28.90 kg per hectare respectively. It may be noted that the use of N, P, K compared to the recommendation were only 64.03 per cent nitrogen, 80.74 per cent phosphorus and 82.57 per cent potassium. The lowest size group of farmers were found to use more fertilizers (52.95 kg nitrogen, 31.73 kg phosphorus and 38.78 kg potassium per hectare) which was 75.64 per cent, 90.66 per cent and 110.80 per cent respectively of recommended dose. Table 6.13 presents the size group wise utilization of inputs for high yielding varieties in Punja.

The input utilisation for high yielding varieties in Punja according to income group was worked out and presented in Table 6.14. The per hectare utilisation of female labour was highest for I_4 (1191.40 hours) followed by I_5 (1059.22 hours).

Table 6.15. Utilisation of input per hectare of Punja(Local) - Size groupwise

		S_1	S_2	S_3	S_4	S_5	Average
Family labour (hrs)	Male	66.92	78.18	55.58	46.09	29.68	49.10
	Female	160.06	187.63	133.40	110.62	96.55	129.97
Hired labour	Male	14.19	101.56	89.06	42.23	102.73	95.05
	FeMale	574.67	882.04	853.42	341.12	713.98	744.88
Bullock labour (hrs)		68.86	61.25	62.61	46.59	53.62	57.83
Tractor (hrs)		--	1.45	0.78	2.32	1.27	1.19
Seed rate (kg)	*80-100	111.97	95.30	133.56	112.43	132.48	122.07
Fertilizers	*N-40	42.21	34.38	25.76	22.71	35.38	33.09
	P-20	18.32	16.43	19.89	15.21	15.43	16.71
	K-20	26.51	22.23	15.38	14.83	24.87	22.06

*Recommendation as per Package of Practices

Table 6.16. Utilisation of inputs per hectare for Punja (Local) - Income groupwise

		I_1	I_2	I_3	I_4	I_5	Average
Family labour	Male	88.90	74.34	52.94	45.51	33.44	49.10
	Female	533.37	178.41	127.05	109.22	45.26	129.97
Hired labour	Male	37.76	109.36	58.75	77.44	137.17	95.05
	Female	442.85	813.69	621.29	696.35	896.22	744.88
Bullock labour (hrs)		50.94	61.90	39.13	72.61	56.41	57.83
Tractor (hrs)		0.43	0.86	2.32	0.58	1.34	1.19
Seed rate (kg)	*80-100	100.31	114.17	146.25	123.42	114.98	122.07
Fertilizers (kg)	*N-40	22.15	45.13	20.15	21.50	48.16	33.09
	P-20	15.23	19.45	12.50	13.80	20.83	16.71
	K-20	19.36	21.45	15.80	25.25	23.71	22.06

*Recommendation as per package of practices.

More male labour was utilised more by I_1, with 192.84 hours per hectare. Bullock labour was used more by I_2 (68.23 bullock pair hours) followed by I_1 (66.15 bullock pair hours). The tractor use was maximum for I_2, 2.12 hours. The maximum use of fertilizers was observed in group I_3 with 54.6 kg nitrogen, 48.17 kg phosphorus and 31.23 kg potassium per hectare.

For local varieties in Punja the per hectare utilisation of labour was 144.15 male labour hours, 874.85 female labour hours, 57.83 bullock pair hours and 1.19 tractor hours on an average. Highest level of labour use was found in S_2 (179.74 male labour hours and 1069.67 female labour hours). The bullock labour was highest in S_1, 68.86 bullock pair hours. The tractor use was maximum in S_4, 2.32 hours. The overall seed use was found to be 122.07 kg per hectare. The highest quantity of seeds was used in S_3 (133.56 kg per hectare) while the lowest in S_2 (95.3 kg per hectare). The N, P, K utilisation were 33.09 kg, 16.71 kg and 22.06 kg respectively. The highest level of utilisation of fertilizers was noticed in S_1 where 42.21 kg nitrogen, 18.32 kg phosphorus and 26.51 kg potassium per hectare. Table 6.15 presents the data pertaining to the input utilisation by various size group of holdings.

An analysis of the inputs utilised according to income groups is given in Table 6.16. It revealed that the per hectare utilisation of family labour decreased with increase in the income. For both males and females the

hired labour showed an increasing trend with increase in the income. The bullock labour utilisation was highest for I_4, 72.61 bullock pair hours, 25.56 per cent higher than the average. The tractor use was highest in I_3, 2.32 hours. The N, P, K use was highest in I_5, 48.16, 20.83 kg and 23.71 kg per hectare respectively.

Yield and output of paddy

The yield of paddy obtained was estimated in quintals. As it was difficult to quantify the by-product (straw) its value in rupees was considered for estimating the total output from paddy cultivation.

The average yield per hectare in Viruppu was found to be 20.61 quintals valued at Rs.3534.04. The average value of total output per hectare recorded was Rs.5216.05. The yield of paddy and value of the total output were highest in S_3. The lowest level of yield and value of total output was recorded by S_4. On an average the value of by product constituted 32.25 per cent of total receipts and it worked out to Rs.1682.01 per hectare. Table 6.17 shows the yield and output among the size classes in Viruppu.

Among the income groups the yield and value of output were highest for I_5 with 27.18 quintals and Rs.6262.53 per hectare respectively. The proportional contribution of main product towards total receipt was also high in I_5 which worked

out to 74.39 per cent. The lowest yield per hectare of 16.58 quintals was recorded by I_1 with a total receipt of Rs.4007.70 The information on yield and output for Viruppu of the various income classes are shown in Table 6.18.

Table 6.17. Yield and output of paddy per hectare in Viruppu - Size group wise

	S_1	S_2	S_3	S_4	S_5	Average
Yield						
Main product						
i. Quantity (Qtls.)	18.07	20.80	22.81	17.60	21.49	20.61
ii. Value (Rs)	3099.06	3566.52	3910.05	3018.35	3685.71	3434.04
	(68.16)	(69.00)	(66.43)	(66.94)	(69.17)	(67.75)
By product						
i. Value(Rs)	1447.52	1602.37	1976.07	1490.82	1642.86	1682.01
	(31.84)	(31.00)	(33.57)	(33.06)	(30.83)	(32.25)
Total output (Rs)	4546.58	5168.69	5886.12	4509.17	5328.57	5216.05
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

(Figures in parentheses represent percentages to total)

Table 6.18. Yield and output of paddy per hectare in Viruppu - Income group wise

	I_1	I_2	I_3	I_4	I_5	Average
Yield						
Main product						
i) Quantity (Qtls.)	16.58	20.19	18.08	17.37	27.18	20.60
ii)Value (Rs)	2841.83	3460.40	3100.00	2978.20	4658.92	3534.04
	(70.91)	(67.49)	(61.10)	(63.58)	(74.39)	(67.75)
By product						
i)Value (Rs)	1165.87	1667.05	1973.66	1705.81	1603.61	1682.01
	(29.09)	(32.51)	(38.90)	(36.42)	(25.61)	(32.25)
Total output	4007.70	5127.45	5073.66	4684.01	6262.53	5216.05
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

(Figures in parentheses represent percentages to total)

The local varieties in Mundakan recorded an average yield of 24.5 quintals valued for Rs.4219.55. Table 6.19 shows the size group wise yield and output in Mundakan. The highest yield and output was obtained in S_3. with 25.73 quintals of grains and Rs.6573.24 per hectare respectively. While the lowest yield was 22.69 quintals and total output of Rs.5963.47 for S_4. No clear cut relationship between the yield of paddy and size of holding could be observed.

Table 6.19. Yield and output of paddy per hectare in Mundakan - Size group wise

	S_1	S_2	S_3	S_4	S_5	Average
Yield						
Main product						
i) Quantity (Qtls)	25.14	23.14	25.73	22.69	24.79	24.50
ii) Value(Rs)	4226.79 (68.89)	3966.04 (66.75)	4496.51 (68.41)	3917.82 (65.70)	4288.83 (69.80)	4219.55 (68.23)
Byproduct i) Value(Rs)	1908.68 (31.11)	1975.80 (33.25)	2076.73 (31.59)	2045.65 (34.30)	1855.78 (30.20)	1964.77 (31.77)
Total output (Rs.)	6135.47 (100.00)	5941.84 (100.00)	6573.24 (100.00)	5963.47 (100.00)	6144.61 (100.00)	6184.32 (100.00)

(Figures in parentheses represent percentages to total)

Table 6.20. Yield and output of paddy per hectare in Mundakan - Income group wise

	I_1	I_2	I_3	I_4	I_5	Average
Yield						
Main product						
i) Quantity (Qtls.)	21.55	24.71	24.55	20.98	27.01	24.50
ii) Value (Rs)	3700.29 (66.53)	4238.90 (67.43)	3979.37 (66.64)	3678.79 (65.03)	4694.21 (71.06)	4219.65 (68.23)
By product						
i) Value (Rs)	1861.51 (33.47)	2047.79 (32.57)	1991.37 (33.36)	1978.55 (34.97)	1911.21 (28.94)	1964.77 (31.77)
Total output (Rs)	5561.80 (100.00)	6286.69 (100.00)	5971.33 (100.00)	5657.34 (100.00)	6605.42 (100.00)	6184.32 (100.00)

(Figures in parentheses represent percentages to total)

Table 6.20 shows the yield and output for Mundakan for the various income groups. As in the case of holding size groups here also no clear cut relationship could be observed between yield of paddy and value of total output on the one hand and income of the households on the other. However the highest level of yield and output was found in the highest income group.

Tables 6.21 and 6.22 shows the yield and value of total output per hectare of high yielding and local varieties in Punja. The average yield was 31.14 quintals per hectare for high yielding varieties which is 25.01 per cent higher than the average yield for local varieties (24.91 quintals per hectare).

On comparison it was found that the contribution of the main product to the total value of output was 80.86 per cent for high yielding varieties and 74.65 per cent for local varieties. The 25.01 per cent increase in the yield for high yielding varieties was not reflected in the total receipts which showed a 3.82 per cent decrease. This is mainly due to the lower contribution of the by product (19.14 per cent) to the total receipts and the low prices prevailing for high yielding variety paddy. Among the size classes S_4 recorded highest yield (35.37 quintals per hectare) for high yielding varieties which is 13.58 per cent higher than average yield. No relationship could be observed between the yield of paddy and straw on the one hand and size of holding on the other.

Table 6.21. Yield and output of paddy per hectare in Punja (HYV) - Size group wise

	S_1	S_2	S_3	S_4	S_5	Average
Yield						
Main product i)Quantity (Qtls.)	31.33	27.82	30.80	35.37	30.68	31.14
ii)Value (Rs)	4476.32 (79.22)	3975.00 (78.13)	4400.85 (80.22)	5052.86 (84.38)	4382.65 (80.95)	4448.93 (80.86)
By product						
i)Value (Rs)	1174.30 (20.78)	1112.50 (21.87)	1085.00 (19.78)	935.28 (15.62)	1031.50 (19.05)	1053.00 (19.14)
Total output (Rs)	5650.62 (100.00)	5087.50 (100.00)	5485.83 (100.00)	5988.14 (100.00)	5414.13 (100.00)	5501.93 (100.00)

(Figures in parentheses represent percentages to total)

Table 6.22. Yield and output of paddy per hectare in Punja(Local)- Size group wise

	S_1	S_2	S_3	S_4	S_5	Average
Yield						
Main product						
i. Quantity (Qtls.)	28.67	31.26	27.59	14.00	20.60	24.91
ii. Value (Rs)	4914.85	5359.06	4729.43	2400.00	3531.22	4270.59
	(77.31)	(82.57)	(71.34)	(57.61)	(71.47)	(74.65)
By product						
i. Value (Rs)	1442.81	1131.63	1899.94	1766.30	1409.65	1450.10
	(22.69)	(17.43)	(28.66)	(42.39)	(28.53)	(25.35)
Total output (Rs)	6357.66	6490.69	6629.37	4166.30	4940.87	5720.69
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

(Figures in parentheses represent percentages to total)

Table 6.23. Yield and output of Paddy per hectare in Punja(HYV) - Income group wise

	I_1	I_2	I_3	I_4	I_5	Average
Yield						
Main product						
i. Quantity (Qtls.)	28.16	30.15	24.75	39.66	33.73	31.14
ii. Value (Rs)	4023.96	4307.24	3565.35	5666.00	4819.86	4448.93
	(78.67)	(80.63)	(79.08)	(84.93)	(80.85)	(80.86)
By product						
i. Value (Rs)	1090.80	1034.60	943.01	1005.00	1141.58	1053.00
	(21.33)	(19.37)	(20.92)	(15.07)	(19.15)	(19.14)
Total output (Rs)	5114.76	5341.84	4508.36	6671.00	5961.93	5501.93
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

(Figures in parentheses represent percentages to total)

Table 6.24. Yield and output of Paddy per hectare in Punja(Local)- Income group wise

	I_1	I_2	I_3	I_4	I_5	Average
Yield						
Main product						
i)Quantity (Qtls)	28.94	31.98	21.01	22.75	25.72	24.91
ii)Value (Rs)	4961.76 (75.30)	5483.56 (82.80)	3602.25 (72.98)	3901.32 (72.25)	4409.95 (74.22)	4270.59 (74.65)
By product						
i)Value (Rs)	1627.74 (24.70)	1139.44 (17.20)	1333.75 (27.02)	1498.30 (27.75)	1531.76 (25.78)	1450.10 (25.35)
Total output	6589.50 (100.00)	6623.00 (100.00)	4936.00 (100.00)	5399.62 (100.00)	5941.71 (100.00)	5720.69 (100.00)

(Figures in parentheses represent percentages to total)

The comparison between high yielding and local varieties in the income groups are made based on the Tables 6.23 and 6.24. For high yielding varieties the highest yield was recorded in I_4 with 39.66 quintals per hectares which is 27.36 per cent higher than the average yield. The value of output per hectare of I_4 was worked out to Rs.6671.00 which was found to be 21.25 per cent higher than the average. For local varieties the highest yield was recorded by I_2, 31.98 quintals per hectare which is 28.38 per cent higher than the average yield for local varieties. The per hectare yield which is slightly more than the average yield for high yielding varieties may be due to the natural improvements brought about in traditional varieties. Here also

it was not possible to observe any clear cut relationship between the level of income of the households and yield of paddy.

Cost of production of paddy

The cost of production per quintal of paddy was worked out at cost C and total cost excluding rental value of land. The cost of production per quintal of grains was worked out for the net quantity the farmer received on the net cost incurred. Net cost was arrived at by deducting from cost C the value of grains given as wages and that of the by product.

Table 6.25 shows cost of production for different holding size groups. The average cost of production for Viruppu at cost C was Rs.87.70 per quintal and at total cost excluding rental value was Rs.46.57 per quintal. The lowest cost per quintal was recorded by S_3. The average cost of production for Mundakan was worked out to Rs.97.31 at cost C which is 10.96 per cent higher than the average for Viruppu. S_5 records the highest cost of production of Rs.107.24 for Mundakan while the lowest was Rs.83.88 for S_3. The average cost of production of high yielding varieties in Punja is about 1 per cent lower than that of local varieties. But the cost per quintal excluding rental value was higher for high yielding varieties.

Table 6.25. Cost of production per quintal - Size group-wise

(in Rs)

	S_1	S_2	S_3	S_4	S_5	Average
1. Viruppu						
i. At cost C	113.74	100.14	64.08	103.60	88.01	87.70
ii. At Cost excluding rental value	72.58	33.45	22.95	62.45	46.86	46.57
2. Mundakan						
i. At cost C	102.95	95.37	83.88	98.20	107.24	97.31
ii. At cost excluding rental value	60.21	54.23	41.94	56.76	62.98	54.93
3. Punja-HYV						
i. At cost C	141.95	146.37	114.08	100.76	114.45	118.76
ii. At cost excluding rental value	107.67	112.07	79.79	66.48	80.16	84.47
4. Punja-Local						
i. At cost C	118.40	128.23	86.50	101.76	133.08	119.78
ii. At cost excluding rental value	77.25	87.08	45.36	60.59	91.94	78.64

Table 6.26. Cost of production per quintal - Income group wise

	I_1	I_2	I_3	I_4	I_5	Average
1. Viruppu						
i. At total cost	154.64	88.15	88.56	86.94	77.03	87.70
ii. Cost excluding rental value	117.66	47.03	47.72	45.81	35.89	46.57
2. Mundakan						
i. At total cost	156.85	94.12	90.55	99.36	94.09	97.31
ii. Cost excluding rental value	88.62	52.94	51.65	57.27	52.35	54.93
3. Punja -HYV						
i. At total cost	139.79	123.94	140.52	108.49	106.56	118.76
ii. Cost excluding rental value	105.50	89.66	105.95	74.20	72.27	84.47
4. Punja-Local						
i. At total cost	90.49	128.51	93.44	122.76	133.33	119.78
ii. Cost excluding rental value	49.35	87.36	52.24	81.61	92.81	78.64

For all seasons except for local varieties in Punja, the lowest income group recorded the highest cost of production as shown in Table 6.26. But in the case of local varieties in Punja the highest cost per hectare was recorded by I_5 and the lowest cost of production in I_1. Apart from these, there was no consistent relationship between cost of production and level of income of families.

Income from paddy cultivation:

There are different measures of income applied to evaluate net returns. (1) The net income at cost C (2) Farm business income (3) Family labour income, (4) Farm investment income. These measures were worked out for different size and income groups. Net income on cost excluding rental value was also worked out so as to have a correct idea of the income obtained over actual expenses.

The profitability of the crop can be judged better from net income. The net income is calculated by deducting from gross income the total expenses for production. The net income on cost C excluding rental value of land is also computed. The farm business income is the gross income minus out of pocket expenditure or cost A. The family labour income is calculated as gross income minus total expenses for production excluding wages of family labour. It is profit at cost B. The farm investment income is calculated by deducting the wages of family labour from farm business income.

Table 6.27. Measures of Income for Paddy in Viruppu - Size group wise

(in Rs)

	S_1	S_2	S_3	S_4	S_5	Average
1. Net income at cost C	944.64	1385.51	2170.42	972.66	1388.00	1489.89
2. Net income at cost C excluding rental value	1853.96	2419.29	3347.64	1874.49	2453.71	2532.89
3. Farm business income	2283.16	2927.20	3667.68	2195.62	2685.01	2885.62
4. Family labour income	1342.28	1867.75	2464.59	1230.70	1599.04	1810.29
5. Farm investment income	1885.52	2444.96	3373.51	1937.58	2473.97	2565.20

Table 6.28. Measures of income for Paddy in Viruppu - Income group wise

(in Rs)

	I_1	I_2	I_3	I_4	I_5	Average
1. Net income at cost C	271.78	1419.42	1218.40	1216.51	2345.62	1489.89
2. Net income at cost C excluding rent value	1073.32	2444.91	2233.13	2153.31	3598.13	2532.89
3. Farm business income	1596.88	2782.43	2671.96	2513.99	3864.27	2885.62
4. Family labour income	761.75	1727.57	1623.25	1538.51	2583.89	1810.29
5. Farm investment income	1109.91	2474.28	2272.88	2192.19	3626.00	2565.20

The various income measures of Viruppu according to size classes are presented in Table 6.27. The average net income was found to be Rs.1489.89 per hectare at cost C. The net income excluding rental value of land recorded was Rs.2532.89 per hectare which was 70.01 per cent higher than the net income at cost C. The per hectare net income at cost C was lowest in S_1 (Rs.944.64) and highest in S_3 (Rs.2170.42). On the whole the per hectare farm business income received was Rs.2885.62. Among the size groups the farm business income was highest for S_3 (Rs.3667.68) and lowest for S_4 (Rs.2195.62). The per hectare family labour income was estimated to be Rs.1810.29 on an average. Among the different size groups of holdings the per hectare family labour income ranged from Rs.1230.70 to Rs.2464.59. At the average the farm investment income for Viruppu was Rs.2565.20. It was found to be maximum in S_3 with Rs.3373.51 and minimum in S_1 with Rs.1885.52.

A further analysis of the profit for the income groups revealed that the highest per hectare net income was received by I_5 (Rs.2345.62) and the lowest by I_1 (Rs.271.78). For all the measures the maximum was recorded by I_5 and minimum by I_1 and no definite trend seen in between classes. The data are presented in Table 6.28.

On comparison with Viruppu, Mundakan crop obtained a 3.55 per cent higher net income per hectare. The average net income worked out to Rs.1542.81. Among the various size of

Table 6.29. Measures of income for Paddy in Mundakan - Size group wise.

(in Rs)

	S_1	S_2	S_3	S_4	S_5	Average
1. Net income at cost C	1348.51	1544.61	1960.51	1409.04	1358.14	1542.81
2. Net income at cost C excluding rental value	2625.60	2732.98	3275.16	2601.73	2644.06	2802.39
3. Farm business income	3204.11	3149.82	3661.15	2909.75	2913.63	3165.12
4. Family labour income	1895.46	1935.78	2320.63	1653.97	1604.45	1875.20
5. Farm investment income	2657.16	2758.65	3501.03	2664.82	2661.38	2832.73

Table 6.30. Measures of income for Paddy in Mundakan - Income group wise

(in Rs)

	I_1	I_2	I_3	I_4	I_5	Average
1. Net income at cost C	269.78	1660.76	1378.43	1345.85	1853.75	1542.81
2. Net income at cost C eclu-ding rental value	1867.40	2918.10	2572.70	2477.32	3175.63	2802.39
3. Farm business income	3235.50	3590.52	2910.03	2641.11	3365.35	3165.12
4. Family labour income	1604.29	2303.81	1681.78	1486.86	2012.14	1875.20
5. Farm invest-ment income	1900.99	2947.47	2606.68	2500.10	3206.96	2832.73

holdings net income per hectare was lowest for S_1, Rs.1348.51 and highest for S_3, Rs.1960.51. On an average net income exclusive of rental value was Rs.2802.39. The average farm business income per hectare was Rs.3165.12, the highest being recorded in S_3 (Rs.3661.15) which is 15.67 per cent higher than the average. The highest family labour income per hectare was received by S_3 Rs.2320.63 which is 23.75 per cent higher than the average (Rs.1875.20). The farm investment income per hectare was found to be Rs.2832.73 on an average. It was observed that S_3 recorded the maximum profit at all costs.

From the distribution of the profits on various cost concepts was observed that the maximum was recorded by I_5 for all measures except family labour income and farm business income. The measures of profit for Mundakan is presented in Table 6.30.

In the case of high yielding varieties in Punja season there is a reduction in the profit when the different measures of income were considered. The average net income was only Rs.632.60 per hectare. Among the size groups S_2 incurred a loss of Rs.98.86 at cost C while the profit was only Rs.32.38 in case of S_1. As shown in Table 6.31 the profit excluding rental value was Rs.1732.99 per hectare on an average and it was lowest in S_2, Rs.918.64. It was observed that without considering the inputed rental value the cultivation of high

Table 6.31. Measures of income for Paddy in Punja (HYV) - size group wise

(in Rs)

	S_1	S_2	S_3	S_4	S_5	Average
1. Net income at cost C	32.38	-98.86	744.44	1240.42	737.52	632.60
2. Net income at cost C excluding rental value	1162.50	918.64	1841.61	2438.05	1820.35	1732.99
3. Farm business income	2056.49	1553.06	2262.40	2959.14	2118.31	2183.09
4. Family labour income	894.81	509.89	1139.36	1698.42	1015.22	1054.79
5. Farm investment income	1194.06	944.11	1867.48	2501.14	1840.61	1760.09

Table 6.32. Measures of income for Paddy in Punja (HYV) - Income group wise

(in Rs)

	I_1	I_2	I_3	I_4	I_5	Average
1.Net income at cost C	137.33	566.33	2.86	1124.20	1019.09	632.60
2.Net income at Cost C excluding rental value	1160.28	1634.70	904.53	2458.40	2211.38	1732.99
3.Farm business income	2177.04	2298.33	1429.36	2770.07	2419.28	2183.09
4.Family labour income	1120.50	1200.59	493.71	1413.09	1203.88	1054.79
5.Farm investment income	1193.87	1664.07	938.51	2481.18	2234.99	1760.09

varieties did not involve loss for the different size groups of farmers. The farm business income per hectare was maximum for S_4 Rs.2959.14 which is 35.55 per cent higher than average (Rs.2183.09). On an average the per hectare family labour income was Rs.1054.79. The average per hectare farm investment income was Rs.1760.09. It was observed that nominal profits or even losses were incurred in lower size groups whereas the larger size groups were in a better position. The highest profit for all measures was recorded by S_4 followed by S_3 and S_5.

Information on net income for various income groups for high yielding varieties in Punja is given in Table 6.32. The group I_3 obtained only nominal profit (Rs.2.86 per hectare) at cost C. When the rental value was excluded the level of profit was Rs.904.53 per hectare for the group I_3. I_4 recorded highest profits at all costs followed by I_5, I_2, I_1 and I_3 in the order of profits obtained by them.

For local varieties in Punja the measures of income are presented in Table 6.33 for the different sizes of holding. The net income per hectare was found to be Rs.1095.19 on an average. The highest profit at all measures was recorded by S_3. When the rental value is excluded the per hectare income was Rs.2239.38 on an average, the highest being Rs.3267.03 for S_3 followed by S_1 and S_2 with Rs.2538.47 and Rs.2518.99 respectively The farm business income per hectare was highest for S_3(Rs.3626.3

Table 6.33. Measures of income for Paddy in Punja (Local) - Size group wise

(in Rs)

	S_1	S_2	S_3	S_4	S_5	Average
1. Net income at cost C	1266.94	1220.85	1941.16	913.16	655.77	1095.19
2. Net income at cost C excluding rental value	2538.47	2518.99	3267.03	1746.42	1643.94	2239.38
3. Farm business income	2971.55	3013.74	3626.39	2086.05	1904.94	2587.54
4. Family labour income	1668.46	1689.93	2274.65	1189.70	896.51	1419.20
5. Farm investment income	2570.03	2544.66	3292.90	1809.51	1663.56	2263.54

Table 6.34. Measures of income for Paddy in Punja (Local) - Income group wise

(in Rs)

	I_1	I_2	I_3	I_4	I_5	Average
1. Net income at cost C	1938.79	1369.63	1366.66	935.60	807.93	1095.19
2. Net income at cost C excluding rental value	3256.69	2694.23	2353.86	2015.52	1996.27	2239.38
3. Farm business income	4223.97	3169.62	2705.46	2311.34	2213.12	2587.54
4. Family labour income	2872.21	1815.65	1684.28	1208.64	1008.56	1419.20
5. Farm investment income	3290.55	2723.55	2387.84	2038.30	2012.49	2263.54

followed by S_2 (Rs.3013.74) and S_1 (Rs.2971.55) with an average of Rs.2587.54. The saverage family labour income was Rs.1419.20, the highest being recorded by S_3 followed by S_2 and S_1. The average farm investment income was Rs.2263.54 per hectare.

The income group wise distribution of profit revealed that the highest profit at all costs was realised by I_1 followed by I_2. The income measures showed a decreasing trend in profits with an increase in income. Table 6.34 shows the different income measures for local varieties in Punja. The highest net income was recorded by I_1 with Rs.1938.79 and lowest was Rs.807.93 in I_5 at cost C. Exclusive of the rental value the highest net income was recorded in I_1 (Rs.3256.69) and the lowest in I_5 (Rs.1996.27).

The measures of profit shows that the cultivation of high yielding varieties was less remunerative when compared with the local varieties. Even though higher yields were obtained for high yielding varieties, they did not compensate the lower prices obtained for high yielding varieties in the markets. More over the quantity of strain obtained is also much less and that the cost of cultivation incurred for high yielding varieties are high compared to local varieties.

Benefit cost ratio:

Benefit cost ratio is a measure of efficiency of the farm business. This gives an idea of the returns per rupee

invested. It was worked out for the different seasons separately and presented in Table 6.35 and 6.36. Among the different seasons the benefit cost ratio was highest for Viruppu (1.40) followed Mundakan (1.33), Punja cultivating local varieties (1.24) and high yielding varieties in Punja (1.13).

Table 6.35. Benefit cost ratios - Size groupwise

Seasons	S_1	S_2	S_3	S_4	S_5	Average
Viruppu	1.26	1.37	1.58	1.28	1.35	1.40
Mundakan	1.28	1.35	1.43	1.31	1.28	1.33
Punja (HYV)	1.01	0.98	1.16	1.26	1.16	1.13
Punja (Local)	1.25	1.23	1.41	1.28	1.15	1.24

Table 6.36. Benefit cost ratios - Income groupwise

Seasons	I_1	I_2	I_3	I_4	I_5	Average
Viruppu	1.07	1.38	1.32	1.35	1.60	1.40
Mundakan	1.05	1.36	1.30	1.31	1.39	1.33
Punja (HYV)	1.03	1.12	1.00	1.20	1.21	1.13
Punja (Local)	1.42	1.26	1.38	1.21	1.16	1.24

The benefit cost ratios did not show any consistent relationship with size of holding or with the farmers income. However it was found that generally the benefit-cost ratio was the lowest in the lowest income group.

Resource use efficiency:

Linear and log linear production functions were fitted to evaluate the efficiency of resources for paddy cultivation. The resources considered were land area, bullock labour, men labour, women labour, nitrogen, phosphorus, potassium, plant protection chemicals, organic manures and income.

Linear model can be represented as

$$Y = b_0 + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 + b_6 x_6 + b_7 x_7 + b_8 x_8 + b_9 x_9 + b_{10} x_{10}$$

Log linear model

$$Y = b_0 \; b_1^{x_1} \; b_2^{x_2} \; b_3^{x_3} \; b_4^{x_4} \; b_5^{x_5} \; b_6^{x_6} \; b_7^{x_7} \; b_8^{x_8} \; b_9^{x_9} \; b_{10}^{x_{10}}$$

Y = Yield (kg)

x_1 = Area (cents)

x_2 = Bullock labour (Rs)

x_3 = Male labour (Hrs)

x_4 = Female labour (Hrs)

x_5 = Nitrogen (kg)

x_6 = Phosphorus (kg)

x_7 = Potassium (kg)

x_8 = Plant protection chemicals (Rs)

x_9 = Organic manures (Rs)

x_{10} = Gross income (Rs)

$b_0, b_1, b_2 \ldots b_{10}$ are regression co-efficients.

Eventhough linear and log linear functions were tried the R^2 was not significant. Many reasons can be attributed to this. It may be that there is not much variation in the inputs used and hence there could not be much variation in yield, caused by those inputs. The variation in yield can be due to other factors like soil, climate etc. It may also perhaps be due to the fact that the farmers had reached a stage where slight changes in the input may not reflect in the output. Alternatively there could be influence of inputs on yield, but it may be in some other form of relationship.

Economics of coconut, arecanut and banana

Coconut and arecanut are grown as mixed crops. These being established perennial crops, the cost of maintenance and the annual returns per hectare alone were estimated. For banana the cost of cultivation and returns have been computed.

By and large coconut gardens in the area, are established ones. Hence only the maintenance of such gardens were studied. Regular inter-cultivation operations are done with the onset of monsoon. The land is either ploughed or dug by the onset of south-west monsoon. Later basins are prepared around palms for application of manures. Fertilizers are generally not applied while manuring with cowdung and green leaves are practised. Green manure is used to the extent of its availability. Irrigation channels are prepared by January. Irrigation

is given twice or thrice in a week during the summer months. Plant protection measures are not adopted except for controlling rhinoceros beetle and bud rot.

The most common variety grown is west coast tall. The hybrid varieties are not popular in this area. Inter-cropping and mixed cropping is common in coconut gardens. Under planting is seen carried out in many of the coconut gardens.

Arecanut is grown as a mixed crop with coconut. The intercultural operations start with the onset of monsoon. Organic manures are applied at the basins and covered. By January, channels are made to facilitate irrigation. Fertilizers are not commonly used. The sale of the produce is by contract. The harvesting and plant protection are carried out by contractors, the cost of which are deducted from the payments for the produce.

Usually banana is cultivated as an intercrop is garden lands. To some extent it is also grown as a pure crop. The planting of suckers are during April-May for rainfed crop while in August-September for irrigated crop. No definite spacing is seen adopted. Suckers are planted in pits of .5m x .5m x .5 m filled with green leaf and farm yard manures. Fertilizers are also applied by farmers. Irrigation is given twice a week where facilities exist. Plant protection measures are not seen adopted. By the time the

plant put forth bunches they are propped to avoid damages. Bunches are ready for harvest in 12-14 months.

Coconut is the most important crop in garden land. It occupied 42.57 per cent of garden land on the sample farms. The average area under coconut, arecanut and banana for the different size classes worked out and presented in Table 6.37. The average area under coconut worked out to 0.22 hectare, while it was 0.15 hectare for arecanut and 0.03 hectare for banana. The average area under coconut was highest in S_5 (0.39 hectare) while the lowest was recorded in S_1 (0.12 hectare). For arecanut and banana the average area was highest for S_4 (0.25 hectare and 0.05 hectare respectively). For coconut an increasing trend in the average area is noticed as the total farm size increased.

The income group-wise distribution of area for the sample farmers are presented in Table 6.38. The average area under coconut showed an increasing trend from I_1 (0.11 hectare) to I_5 (0.34 hectare). For arecanut the average area was lowest for I_1 (0.07 hectare) while it was highest for I_5 (0.20 hectare). It may also be noted that the average area under banana was highest in I_1 (0.05 hectare).

The average cost of maintenance per hectare of coconut worked out to Rs.9027.81. The cost of maintenance of arecanut was Rs.4575.74 per hectare. The cost of cultivation at cost C for banana was found to be Rs.26069.45. The total cost

Table 6.37. Size group wise distribution of area under coconut, arecanut and banana

(Area in hectares)

		Coconut	Arecanut	Banana
S_1	No. of farmers	20	13	7
	Total area	3.00	0.89	0.13
	Average area	0.12	0.07	0.02
S_2	No. of farmers	20	16	6
	Total area	3.87	2.70	0.20
	Average area	0.19	0.17	0.03
S_3	No. of farmers	23	14	9
	Total area	4.40	2.25	0.19
	Average area	0.19	0.16	0.02
S_4	No. of farmers	11	10	6
	Total area	2.55	2.50	0.28
	Average area	0.23	0.25	0.05
S_5	No. of farmers	20	19	9
	Total area	7.78	2.79	0.27
	Average area	0.39	0.15	0.03
	Total No.of farmers	100	72	37
	Total area	21.60	11.13	1.07
	Average area	0.22	0.15	0.03

Table 6.38 Income group wise distribution of area under coconut, arecanut and banana

(Area in hectares)

		Coconut	Arecanut	Banana
I_1	No. of farmers	12	11	4
	Total area	1.28	0.82	0.19
	Average area	0.11	0.07	0.05
I_2	No. of farmers	29	18	12
	Total area	5.15	3.35	0.22
	Average area	0.18	0.19	0.02
I_3	No. of farmers	20	16	9
	Total area	4.65	2.02	0.27
	Average area	0.23	0.13	0.03
I_4	No. of farmers	15	9	3
	Total area	2.34	1.38	0.10
	Average area	0.16	0.15	0.03
I_5	No. of farmers	24	18	9
	Total area	8;19	3.56	0.29
	Average area	0.34	0.20	0.03
	Total No.of farmers	100	72	37
	Total area	21.60	11.13	1.07
	Average area	0.22	0.15	0.03

excluding rental value of land is also given in Table 6.39. When the rental value of land was excluded there was 31.66 percent reduction in the cost for maintenance of coconut. The reduction was 33.24 per cent for arecanut and 29.55 per cent for banana. The total cost per hectare in respect of these crops did not show any relationship with size of holding. However in the case of arecanut and to some extent in the case of coconut there was negative association between holding size and cost per hectare.

Table 6.40 shows the cost of maintenance per hectare incurred for coconut and arecanut and cost of cultivation of banana in the income classes. As well be seen from the table cost per hectare did not show any relationship with gross income of families.

The input wise split up of the cost of maintenance per hectare for coconut, arecanut and the cost of cultivation of banana are shown in Table 6.41. It was observed that the major cost item for coconut was rental value of land which accounted for 31.66 per cent. Manures contributed 18.97 per cent and hired labour accounted 18.8 per cent. For arecanut 33.24 per cent of the total cost was accounted for rental value of land 27.5 per cent on manures and 13.45 per cent on hired human labour. For banana 29.55 per cent of the total cost accounted for rental value, while hired labour and manures accounted for 16.99 per cent and 12.23 per cent respectively.

Table 6.39. Per hectare cost of maintenance of cocoonut, arecanut and cost of cultivation for banana - Size group wise

(in Rs)

1.	S_1	S_2	S_3	S_4	S_5	Average
1. Coconut						
i. Total Cost	8999.53	9250.41	9039.18	8583.05	9067.32	9027.81
ii. Total Cost excluding rental value	6415.67	6201.43	6048.04	5886.22	6221.49	6169.95
2. Arecanut						
i. Total Cost	4678.59	4921.51	4673.54	4321.40	4355.98	4575.74
ii. Total cost excluding rental value	3200.34	3158.04	3102.53	3018.85	2900.94	3054.83
3. Banana						
i. Cost C	24720.65	24481.61	27016.99	24750.02	28597.12	26069.45
ii. Cost C excluding rental value	17770.67	17265.02	19547.31	17101.60	19953.29	18367.14

Table 6.40. Per hectare cost of maintenance coconut, arecanut and cost of cultivation of banana - Income group wise

(Figures in rupees)

	I_1	I_2	I_3	I_4	I_5	Average
1. Coconut						
i. Total Cost	8902.57	8964.04	9248.42	8853.75	9034.01	9027.81
ii. Total Cost excluding rental value	6272.35	6151.33	6213.56	6085.06	6180.25	6169.95
2. Arecanut						
i. Total Cost	4836.12	4181.85	4865.31	5334.65	4428.55	4575.74
ii. Total Cost excluding rental value	3408.09	2890.77	3183.43	3440.30	2906.08	3054.83
3. Banana						
i. Cost C	25901.17	25492.09	24115.16	25449.36	28650.31	26069.45
ii. Cost C excluding rental value	17570.67	18016.47	17245.75	18189.36	20259.81	18367.14

Table 6.41. Input wise cost of maintenance of coconut, aracanut and cultivation of banana per hectare

(in Rs)

Items	Coconut	Arecanut	Banana
1. Hired human labour	1697.31 (18.80)	615.50 (13.45)	4428.99 (16.99)
2. Seed material	..	..	1879.40 (7.21)
3. Plant protection chemicals	43.01 (0.48)	..	..
4. Irrigation	585.43 (6.48)	262.56 (5.74)	1403.69 (5.38)
5. Manures	1712.70 (18.97)	1258.10 (27.50)	3188.40 (12.23)
6. Fertilizers	388.76 (4.31)	..	1346.49 (5.16)
7. Propping	..	..	1320.18 (5.06)
8. Miscellaneous	..	..	447.26 (1.72)
9. Depreciation	112.50 (1.25)	120.96 (2.64)	120.93 (0.46)
10. Interest on working capital	544.55 (6.03)	270.09 (5.90)	1696.21 (6.51)
Cost A	5084.26 (56.32)	2527.21 (55.23)	15831.55 (60.72)
11. Rental value	2857.86 (31.66)	1520.91 (33.24)	7702.30 (29.55)
12. Interest on fixed capital	217.50 (2.40)	233.11 (5.09)	233.78 (0.90)
Cost B	8159.62 (90.38)	4281.23 (93.56)	23767.63 (91.17)
13. Family labour charges	868.19 (9.62)	294.51 (6.44)	2301.82 (8.83)
Total Cost	9027.81 (100.00)	4575.74 (100.00)	26069.45 (100.00)

(Figures in parentheses represent percentages to total)

Table 6.42. Operation wise cost of maintenance of coconut, arecanut and cost of cultivation of banana per hectare

(in Rs)

Items	Coconut	Arecanut	Banana
1. Preparatory cultivation	..	..	2664.09 (10.22)
2. Seeds and sowing	..	..	2870.19 (11.01)
3. Weeding and inter-cultural operations	312.86 (3.47)	599.94 (13.11)	1183.30 (4.54)
4. Plant protection	106.74 (1.18)	..	..
5. Irrigation	973.75 (10.79)	344.23 (7.52)	1403.69 (5.38)
6. Manuring	2212.87 (24.51)	1486.50 (32.49)	4430.19 (16.99)
7. Fertilizer application	515.33 (5.71)	..	1584.71 (6.08)
8. Harvesting	1173.85 (13.00)	..	..
9. Propping	..	..	1732.78 (6.64)
10. Miscellaneous	..	..	447.27 (1.72)
11. Depreciation	112.50 (1.25)	120.96 (2.64)	120.93 (0.46)
12. Interest on working capital	544.55 (6.03)	270.09 (5.90)	1696.21 (6.51)
13. Rental value	2857.86 (31.66)	1520.91 (33.24)	7702.31 (29.55)
14. Interest on fixed capital	217.50 (2.40)	233.11 (5.10)	233.78 (0.90)
Total Cost	9027.81 (100.00)	4575.74 (100.00)	26069.45 (100.00)

(Figures in parentheses represent percentages to total)

The break up of the cost per hectare distributed between the operations is shown in Table 6.42. For coconut the major share was contributed by manuring which accounts for 24.51 per cent. Next to it comes harvesting accounting for 13.00 per cent. For aracanut, manuring incurred 32.48 per cent of total cost and 13.11 per cent for intercultural operations. 16.99 per cent of the total cost of cultivation of banana is on manuring, 11.01 per cent on planting and 10.22 per cent on preparatory cultivation.

The cost was worked without considering the rental value of land and found that in coconut 27.76 per cent of the total cost incurred was on manures, 27.51 per cent on hired human labour and 14.07 per cent on family labour. In the case of arecanut 41.18 per cent by manures and 20.15 per cent by hired human labour. For banana 24.11 per cent of the total cost of cultivation excluding rent incurred on hired human labour, 17.36 per cent on manures and 12.53 per cent as family labour charges. Table 6.43 shows the input wise distribution of total cost excluding imputed rental value.

A further analysis of the cost based on operations excluding rental value illustrated that the major operation in terms of cost incurred was manuring which accounts for 35.87 per cent of total cost and 19.03 per cent on harvesting for cocoonut. Manuring in arecanut involved 48.66 per cent of total cost and 19.64 per cent for weeding and intercultural

Table 6.43. Input wise cost of maintenance of coconut, arecanut and cost of cultivation of banana per hectare excluding rental value

(in Rs)

	Coconut	Arecanut	Banana
1. Hired human labour	1697.31 (27.51)	615.50 (20.15)	4428.99 (24.11)
2. Seed material	-	-	1879.40 (10.23)
3. Plant protection chemicals	43.01 (0.70)	-	-
4. Irrigation	585.43 (9.49)	262.56 (8.60)	1403.69 (7.64)
5. Manures	1712.70 (27.76)	1258.10 (41.18)	3188.40 (17.36)
6. Fertilizers	388.76 (6.30)	-	1346.49 (7.33)
7. Propping	-	-	1320.18 (7.19)
8. Miscellaneous	-	-	447.26 (2.44)
9 Depreciation	112.50 (1.82)	120.96 (3.96)	120.93 (0.66)
10. Interest on working capital	544.55 (8.83)	270.09 (8.84)	1696.21 (9.24)
11. Interest on fixed capital	217.50 (3.52)	233.11 (7.63)	233.78 (1.27)
12. Family labour charges	868.19 (14.07)	294.51 (9.64)	2301.82 (12.53)
Total Cost	6169.95 (100.00)	3054.83 (100.00)	18367.14 (100.00)

(Figures in parentheses represent percentages to total)

Table 6.44. Operation wise cost of maintenance of coconut, arecanut and cost of cultivation of banana per hectare excluding rental value

(in Rs)

	Coconut	Aracanut	Banana
1. Preparatory cultivation	-	-	2664.09 (14.50)
2. Seeds and sowing	-	-	2870.19 (15.63)
3. Weeding and inter-cultural operations	312.86 (5.07)	599.04 (19.64)	1183.30 (6.44)
4. Plant protection	106.74 (1.73)	-	-
5. Irrigation	973.75 (15.78)	344.23 (11.27)	1403.69 (7.64)
6. Manuring	2212.87 (35.87)	1486.50 (48.66)	4430.19 (24.12)
7. Fertilizer application	515.33 (8.35)	-	1584.71 (8.63)
8. Harvesting	1173.85 (19.03)	-	-
9. Propping	-	-	1732.78 (9.43)
10. Miscellaneous	-	-	447.26 (2.44)
11. Depreciation	112.50 (1.82)	120.96 (3.96)	120.93 (0.66)
12. Interest on working capital	544.55 (8.83)	270.09 (8.84)	1696.21 (9.24)
13. Interest on fixed capital	217.50 (3.52)	233.11 (7.63)	233.78 (1.27)
Total	6169.95 (100.00)	3054.83 (100.00)	18367.14 (100.00)

(figures in parentheses represent percentages to total)

operations. For arecanut the sale of the produce is on contract and value of the produce obtained excludes harvesting charges. Hence harvesting charges are not taken into account separately. Harvesting charges for banana had been included along with the miscellaneous item as it is not incurred separately. As shown in Table.44 the proportional distribution of costs among the various operations for banana was 24.12 per cent for manuring and 14.50 per cent for preparatory cultivation and 15.63 per cent on planting.

Extent of use of resources:

An attempt was made to understand the extent of use of labour and fertilizers for major crops. The pattern of use of these inputs for coconut, arecanut and banana are discussed separately.

The extent of use of labour and fertilizer for coconut by various size groups are presented in Table 6.45. The total labour hours used for the annual maintenance of coconut per hectare were 688.65 male labour hours and 250.12 female labour hours. It was observed that the family labour contributed 289.60 male labour hours which was 42.05 per cent of total male labour required for coconut. The entire female labour was hired. The utilisation of male labour was found to be 774.94 hours for S_5 which was the highest and the lowest was 611.52 hours in S_3. The extent of fertilizers used were 25.03 kg nitrogen, 20.67 kg phosphorus and 71.64 kg potassium on an average per hectare as

Table 6.45. Extent of use of labour and fertilizers per hectare for cocoonut - Size group wise

Item		S_1	S_2	S_3	S_4	S_5	Average
Family labour (hrs)	Male	561.49	347.64	320.19	254.31	150.15	289.60
	Female	-	-	-	-	-	-
Hired labour (hrs)	Male	105.63	299.06	291.33	399.43	624.79	399.05
	Female	373.69	294.35	234.16	176.67	214.34	250.12
Fertilizers (kg)	*N 68	9.20	21.00	54.05	5.28	23.20	25.03
	P 34	4.30	16.12	49.15	3.02	18.93	20.67
	K 136	17.74	78.40	128.41	2.33	79.67	71.64

*Recommendation as per Package of Practices

Table 6.46. Extent of use of labour and fertilizers per hectare for cocoonut - Income group wise

Item		I_1	I_2	I_3	I_4	I_5	Average
Family labour (hrs)	Male	604.24	329.36	360.68	282.33	176.90	289.60
	Female	-	-	-	-	-	-
Hired labour (hrs)	Male	117.93	290.44	367.24	351.95	544.30	399.80
	Female	329.46	252.43	231.18	319.06	227.77	250.12
Fertilizers (kg)	*N 68	16.88	18.16	13.18	29.15	36.14	25.03
	34	11.88	10.91	13.66	24.15	31.15	20.67
	K 136	45.63	46.77	50.34	35.15	113.75	71.64

* Recommendation as per package of Practices

against the recommendation for average management of 68 kg nitrogen, 34 kg phosphorus and 136 kg potassium per hectare. The utilisation of N,P,K, by sample farmers compared with the standard recommendation were 36.87 per cent of nitrogen, 60.79 per cent of phosphorus and 52.68 per cent of Potassium. The highest N,P,K utilisation was found in S_3 with 54.05 kg nitrogen, 49.15 kg phosphorus and 128.41 kg potassium per hectare which was 79.49 per cent of the nitrogen, 144.56 per cent of the phosphorus and 94.42 per cent of the potassium of the recommendation. Only meagre quantities of N,P,K, were used by S_4. Thus fertilizer use per hectare was not influenced by the size of holdings.

Table 6.46 shows the input utilisation of coconut for the income groups. The total family labour utilised was highest for I_1 which recorded 604.24 male hours and lowest by I_5 which was 176.9 male hours per hectare. The family labour utilisation showed a decreasing trend with increase in income. The highest of total male labour utilised was found to be 727.92 male hours per hectare in I_3. There was no definite trend in the utilisation of labour between the income groups. The N,P,K utilisation was highest for I_5 with 36.14 kg nitrogen, 31.15 kg phosphorus and 113.75 kg potassium which was 53.15 per cent of Nitrogen, 91.62 per cent of Phospherus and 83.64 per cent of Potassium of the recommended dose.

Table 6.47. Labour utilisation per hectare of arecanut - Size group wise

Items		S_1	S_2	S_3	S_4	S_5	Average
Family labour (hrs)	Male	120.33	98.52	99.33	90.59	108.35	101.11
	Female	-	-	-	-	-	-
Hired labour (hrs)	Male	100.50	118.17	112.86	149.82	100.65	118.40
	Female	210.24	118.31	128.70	47.04	127.76	114.12

Fertilizers were not generally applied for arecanut. Labour utilisation alone is shown in Table 6.47. The total labour used was 219.51 male labour hours and 114.12 female labour hours per hectare on an average. Family labour showed a decreasing trend with increase in the size groups. The hired male labour per hectare was highest for S_4 with 149.82 hours and lowest for S_1 with 100.5 hours. The female labour utilised was maximum in S_1 with 210.24 hours and minimum in S_4 with 47.04 hours. Labour for harvesting could not be included as it is incurred by the contractor.

Information on input use according to income groups is presented in Table 6.48. The male labour utilised was maximum for I_1 with 276.46 hours per hectare and lowest in I_2 with 219.96 hours. Female labour utilisation showed a decreasing trend with increase in income. The female labour utilised

was highest for I_1 which recorded 221.03 hours and lowest for I_4 with 88.04 hours.

Table 6.48. Labour utilisation per hectare of arecanut - Incomewise groups

Items		I_1	I_2	I_3	I_4	I_5	Average
Family labour (hrs)	Male	230.42	96.61	108.89	96.47	101.43	101.11
	Female	-	-	-	-	-	-
Hired labour (hrs)	Male	46.04	123.35	116.49	164.79	146.95	118.40
	Female	221.03	104.81	151.93	88.04	120.84	114.12

Table 6.49. Extent of use of labour and fertilizers per hectare for banana - Size groups wise

Items		S_1	S_2	S_3	S_4	S_5	Average
Family labour (hrs)	Male	661.35	849.03	906.22	680.97	749.45	767.27
	Female	-	-	-	-	-	-
Hired labour (hrs)	Male	901.74	634.93	945.56	1113.49	1639.77	1101.29
	Female	334.41	604.96	398.33	287.71	468.63	417.98
Fertilizer (kg) *	N 475	226.46	108.00	228.94	58.79	181.93	149.65
	P 287.5	150.97	72.00	152.63	39.19	121.28	99.76
	K 750	320.66	141.02	184.20	117.57	263.85	195.37

*Recommendation as per Package of Practices.

Table 6.50. Extent of use of labour and fertilizers per hectare of banana - Income group wise

Items		I_1	I_2	I_3	I_4	I_5	Average
Family labour (hrs)	Male	1656.50	607.76	644.85	388.12	550.41	767.27
	Female	-	-	-	-	-	-
Hired labour (hrs)	Male	309.34	1190.06	880.19	1782.37	1523.81	1101.29
	Female	376.99	151.40	520.84	443.26	542.59	417.98
Fertilizers (Kg)	* N 475	174.74	160.82	100.89	149.23	170.28	149.65
	P 287.5	116.49	107.17	67.26	100.92	113.04	99.76
	K 750	249.48	221.64	101.78	156.40	240.55	195.37

*Recommendations as per Package of Practices

Input use for banana is shown in Table 6.49. Total human labour utilised was 1868.56 male labour hours and 417.98 female labour hours per hectare on an average. The highest male labour use of 2389.22 hours was found in S_5. Female labour was highest in S_2 with 604.96 hours per hectare. Fertilizer use per hectare was found to be 149.65 kg nitrogen, 99.76 kg phosphorus and 195.37 kg potassium against the recommended dose of 475 kg Nitrogen, 287.5 kg Phosphorus and 750 kg Potassium per hectare. The utilisation was only 31.51 per cent nitrogen, 34.7 per cent phospherus and 26.05 per cent potassium of the recommended dose. The highest use of N,P,K was noticed in S_1 with 226.46 kg, 150.97 kg and 320.66 kg

respectively which was 47.68 per cent nitrogen, 52.51 per cent phosphorus and 42.75 per cent potassium of the recommended dose.

Table 6.50 shows the utilisation of inputs in different income groups for banana. The family labour utilised was highest in I_1 with 1656.50 male hours and lowest in I_4 with 388.12 male hours per hectare. The hired female labour used was maximum for I_5 with 542.59 hours and minimum in I_2 with 151.4 hours per hectare. The total male hours utilised was highest for I_4 which recorded 2170.49 hours per hectare while the lowest was in I_3 with 1525.04 hours per hectare. The N,P,K utilisation was highest for I_1 with 174.74 kg, 116.49 kg and 249.48 kg respectively which was 36.79 per cent nitrogen 40.52 per cent of phospherus and 33.26 per cent of potassium of the recommendation. Thus there was very little association between input use and levels of family income.

Returns from coconut, arecanut and banana:

On an average the gross returns from coconut obtained for the year under study was found to be Rs.14289.32 per hectare, of which 89.15 per cent was contributed through the sale of coconuts. (Table 6.51). Aracanut yielded an average return of Rs.7604.54 per hectare. Both for coconut and arecanut gross returns did not show any relationship with size of holding. The overall returns obtained from banana was of the order of Rs.38511.69 per hectare. Of which 88.76 per cent

Table 6.51. Returns per hectare from coconut, arecanut and banana - Size group wise

(in Rs)

	S_1	S_2	S_3	S_4	S_5	Average
1. Coconut						
Main product	11419.49 (88.39)	13729.67 (90.06)	13440.19 (89.87)	12021.23 (89.15)	12593.28 (88.50)	12738.85 (89.15)
By product	1499.83 (11.61)	1515.25 (9.94)	1515.49 (10.13)	1462.90 (10.85)	1635.88 (11.50)	1550.47 (10.85)
Total receipt	12919.32 (100.00)	15244.92 (100.00)	14955.68 (100.00)	13484.13 (100.00)	14229.16 (100.00)	14289.32 (100.00)
2. Arecanut						
Total receipt	7391.25	8817.37	7855.37	6512.73	7275.19	7604.54
3. Banana						
i. Main product	30695.71 (88.33)	31582.96 (87.53)	33256.85 (89.04)	32484.60 (87.56)	39166.67 (90.62)	34183.60 (88.76)
ii. By product	4057.20 (11.67)	4500.00 (12.47)	4091.54 (10.96)	4757.50 (12.44)	4052.50 (9.38)	4328.09 (11.24)
Total receipt	34752.91 (100.00)	36082.96 (100.00)	37348.39 (100.00)	38242.10 (100.00)	43219.17 (100.00)	38511.69 (100.00)

(Figures in parentheses represent percentages to total)

Table 6.52. Returns per hectare of coconut, arecanut and banana - Income group wise

(in Rs)

	I_1	I_2	I_3	I_4	I_5	Average
1. Coconut						
Main product	11726.62 (89.17)	12781.14 (90.88)	13407.16 (88.35)	12394.86 (89.54)	12619.96 (88.44)	12738.85 (89.15)
By product	1424.46 (10.83)	1282.52 (9.12)	1767.16 (11.65)	1448.60 (10.46)	1648.85 (11.56)	1550.47 (10.85)
Total receipt	13151.08 (100.00)	14063.71 (100.00)	15174.32 (100.00)	13843.46 (100.00)	14268.81 (100.00)	14289.32 (100.00)
2. Arecanut						
Total receipt	7140.13	6455.41	8409.41	9471.77	9612.35	7604.54
3. Banana						
Main product	36902.52 (88.60)	33759.12 (90.32)	30147.06 (87.77)	32500.00 (89.53)	37062.54 (88.34)	34183.60 (88.76)
By product	4750.00 (11.40)	3620.00 (9.68)	4200.00 (12.23)	3800.00 (10.47)	4890.19 (11.66)	4328.09 (11.24)
Total receipt	41652.52 (100.00)	37379.12 (100.00)	34347.06 (100.00)	36300.00 (100.00)	41953.13 (100.00)	38511.69 (100.00)

(Figures in parentheses represent percentages to total)

was contributed by bunches while 11.24 per cent by sale of suckers and leaves. The returns per hectare showed an increasing trend with increase in holding size groups. It was Rs.34752.91 per hectare for S_1 and Rs.43219.17 per hectare for S_5. The receipt for S_5 was 12.22 per cent higher than the average.

Table 6.52 shows the distribution of total receipts for the different income groups from coconut, arecanut and banana. In the case of coconut no consistent relationship between per hectare returns and gross family income was noticed. The returns from arecanut showed an increasing trend with income groups with the exception of group I_2. For banana though the highest returns were received by I_5, the gross returns did not show any consistent relationship with gross family income.

Income from coconut, arecanut and banana.

The measures of income for coconut was worked out size groupwise and presented in Table 6.53. The overall net income from coconut per year at total cost was found to be Rs.5261.49 per hectare. Without taking into account the imputed value of rent on land as an item of cost the net income per hectare was Rs.8119.35. None of the measures of income was found to have any consistent relationship with holding size of the families.

Table 6.53. Measures of income for Coconut - Size group_wise

(in Rs)

	S_1	S_2	S_3	S_4	S_5	Average
1. Net income at cost C	3919.79	5994.51	5916.50	4901.08	5161.84	5261.49
2. Net income at cost C excluding rental value of land.	6503.65	9043.49	8907.64	7597.91	8007.67	8119.35
3. Farm business income	8458.81	10359.23	10108.89	8638.58	8593.06	9205.06
4. Family labour income	5604.27	7037.42	6877.08	5664.02	5610.61	6129.68
5. Farm investiment income	6774.33	9316.32	9148.31	7875.64	8144.29	8336.27

Table 6.54. Measures of income for Coconut - Income groupwise

	I_1	I_2	I_3	I_4	I_5	Average
1. Net income at cost C	4248.51	5099.64	5925.90	4989.71	5234.80	5261.49
2. Net income at cost C excluding rental value of land	6878.73	7912.38	8960.76	7758.40	8088.56	8119.37
3. Farm business income	8970.62	9152.83	10247.71	8859.99	8802.27	9205.06
4. Family labour income	6061.23	6087.72	7006.94	5836.69	5765.50	6129.68
5. Farm investment income	7157.89	8164.75	9165.67	8013.01	8271.57	8336.27

Table 6.55. Measures of income for Arecanut - Size groupwise

(in Rs)

	S_1	S_2	S_3	S_4	S_5	Average
1. Net income at cost C	2712.66	3896.00	3181.49	2191.33	2919.21	3028.80
2. Net income at cost C excluding rental value	4190.91	5659.47	4752.50	3493.88	4374.25	4549.71
3. Farm business income	4822.58	6191.37	5291.16	4043.37	4835.81	5077.14
4. Family labour income	3073.65	4155.07	3479.48	2463.09	3244.25	3323.31
5. Farm investment income	4461.59	5932.16	4993.17	3771.61	4510.77	4782.63

Table 6.56. Measures of income for Aracanut - Incomewise

(in Rs)

	I_1	I_2	I_3	I_4	I_5	Average
1. Net income at cost C	2304.01	2273.56	3544.10	4137.12	3183.80	3028.80
2. Net income at cost C excluding rental value of land	3732.04	3564.64	5225.98	6031.47	4706.27	4549.71
3. Farm business income	4702.45	4106.85	5758.56	6575.49	5109.02	5077.14
4. Family labour income	2995.26	2563.40	3870.77	4426.53	3375.06	3323.31
5. Farm investment income	4011.20	3817.01	5431.89	6286.08	4917.76	4782.83

Information on income groupwise distribution of net income from coconut is given in Table 6.54. There was no consistent relationship between net income and the gross income of families. However both family labour income and farm business income were lowest in I_5. The data is illustrated in Table 6.54.

As can be seen from Tables 6.55 and 6.56 arecanut yielded an overall net income of Rs.3028.80 per hectare at total cost. Excluding of rental value of land the net income was Rs. 4549.71. The income at all measures was highest for S_2. The farm business income was Rs.5077.14 on an average. None of the income measures was found to be associated with holding size or gross income of families.

Table 6.57 and 6.58 shows net income measures in respect of banana. The overall net income from banana was Rs.12442.24 per hectare at cost C. Excluding of rental value of land it was found to be Rs.20144.55 per hectare. Thus net income was the highest in the case of banana. The average farm business income was found to be Rs.22680.19, family labour income was Rs.14744.10 and farm investiment income was Rs.20378.37. All measures of income were found to be highest for S_5 and lowest for S_1.

Net income at all measures was found to be highest in I_1. The net income excluding rental value was Rs.24081.85 per hectare for I_1 which was 19.55 per cent higher than the average.

Table 6.57. Measures of income for Banana - Size groupwise

(in Rs)

	S_1	S_2	S_3	S_4	S_5	Average
1. Net income at cost	10032.26	11601.35	10331.40	13492.08	14622.05	12442.24
2. Net income at cost C excluding rental value of land	16982.84	18817.94	17801.08	21140.50	23265.88	20144.55
3. Farm business income	19238.05	21637.86	20760.42	23461.74	25650.38	22680.19
4. Family labour income	12016.79	14148.44	13050.07	15534.99	16869.93	14744.10
5. Farm investment income	17253.52	19090.77	18041.75	21418.23	23402.50	20378.37

Table 6.58. Measures of income for Banana - Income groupwise

(in Rs)

	I_1	I_2	I_3	I_4	I_5	Average
1. Net income at cost C	15751.35	11886.83	10231.90	10850.64	13302.82	12442.24
2. Net income at cost C excluding rental value	24081.85	19362.65	17101.31	18110.64	21693.32	20144.55
3. Farm business income	29330.72	21438.31	19241.77	19529.61	23553.27	22680.19
4. Family labour income	20721.06	13710.12	12166.45	12015.00	14954.04	14744.10
5. Farm investment income	24361.21	19615.02	17307.22	18365.25	21902.05	20378.37

Economics of livestock

Livestock with the farmers consisted of milch cows and draught animals mainly. Among the sample households 64 per cent of farmers were maintaining cows. The draught animals are not maintained throughout the year. They are purchased before a crop season and later sold after use. Discussion in this chapter confines only to milch animals which forms the major share in the livestock possessed by farmers. None of the farmers possessed buffuloes.

The status of milch animals for different farm sizes is presented in Table 6.59. The total number of cows possessed by the sample was 80. The overall average number of cows worked out to 0.80 per farm. Of the total, 38 were cross bred which accounts for 47.50 per cent of cows possessed. At the time of investigation 45 per cent of the cows were dry. The average number of cows per farm was highest in S_5 with 1.25 and lowest in S_1 with 0.54. The average number of cross bred cows was 0.75 for S_5 while for desi cows, it was 0.50. S_5 possessed 31.25 per cent of the total number of cows in the sample.

The distribution of milch animals among the income groups is shown in Tabl 6.60. More number of cows were maintained by I_5 (25) which constituted 31.25 per cent of total number of cows. The average number of cows per farm

Table 6.59. Milch animals with the farmers according to their status - Size groupwise

(in numbers)

		S_1	S_2	S_3	S_4	S_5	Overall
Cows in milk							
1. Cross bred	Total	5	5	3	3	10	26
	Average	0.19	0.25	0.13	0.27	0.50	0.26
2. Desi	Total	4	2	6	1	5	18
	Average	0.15	0.10	0.26	0.09	0.25	0.18
Cows dry							
1. Cross bred	Total	1	3	3	-	5	12
	Average	0.04	0.15	0.13		0.25	0.12
2. Desi	Total	4	7	5	3	5	24
	Average	0.15	0.35	0.22	0.27	0.25	0.24
	Total	14	17	17	7	25	80
	Average	0.54	0.85	0.74	0.64	1.25	0.80

Table 6.60. Milch animals with the farmers according to their status - Income groupwise

(in numbers)

		I_1	I_2	I_3	I_4	I_5	Average
Cows in milk							
1. Cross bred	Total	2	3	6	3	12	26
	Average	0.17	0.10	0.30	0.20	0.50	0.26
2. Desi	Total	1	3	6	1	7	18
	Average	0.08	0.10	0.30	0.07	0.29	0.18
Cows dry							
1. Cross bred	Total	-	-	5	4	3	12
	Average			0.25	0.26	0.12	0.12
2. Desi	Total	2	2	5	12	3	24
	Average	0.17	0.08	0.25	0.80	0.13	0.24
	Total	5	8	22	20	25	80
	Average	0.42	0.28	1.10	1.33	1.04	0.80

was lowest in I_2 which was found to be 0.28. The average number of cows increased as the gross income increased.

Cost of maintenance of livestock

The maintenance cost varied with the breed and status of the animals. The maintenance cost per day was worked out for cross bred and desi cows both during lactation and dry period and presented in Table 6.61, according to the farm size. The average maintenance cost was Rs.5.99 and Rs.3.53 per day per animal during lactation for cross bred and desi cows respectively.

Table 6.61. Maintenance cost per animals per day - Size groupwise

(in rupees)

	S_1	S_2	S_3	S_4	S_5	Average
A. Cross bred cows						
In milk	6.25	7.35	6.53	3.86	5.51	5.99
Dry	4.35	3.63	4.48	2.14	4.61	4.10
B. Desi						
In milk	3.58	3.67	3.39	3.67	3.42	3.53
Dry	2.13	2.45	2.32	2.59	2.25	2.32

For cross bred cows the maintenance cost was 69.69 per cent higher than desi cows on an average. During the dry period the maintenance cost was Rs. 4.10 per day per animal for cross bred cows which was 76.72 per cent higher than desi cows (Rs.2.32 per day per animal). The maintenance cost during lactation is 46.1 per cent higher than in dry period for cross bred cows while it is 52.16 per cent higher for other cows. The highest maintenance cost was found in S_2 with Rs.7.35 per day per animal for cross bred cows during lactation. For desi cows the highest maintenance cost was Rs.3.67 per day per animal for S_2 and S_4.

The distribution of the maintenance cost in different income groups is presented in Table 6.62.

Table 6.62. Maintenance cost per animal per day - (Income groupwise) (in rupees)

	I_1	I_2	I_3	I_4	I_5	Average
A. Cross bred cows						
In milk	5.43	6.26	5.56	6.20	6.20	5.99
Dry	3.13	4.58	3.48	3.97	4.52	4.10
B. Desi						
In milk	3.26	3.85	3.49	3.15	3.47	3.53
Dry	1.95	2.15	2.52	2.75	2.28	2.32

The highest maintenance cost was recorded by I_2 (Rs.6.26) for cross bred animals during lactation which was 4.50 per cent higher than the average maintenance cost of an animal for a day.

For desi cows the highest was also found in I_2 with Rs.3.85 per day per animal which is 9.07 per cent higher than the average.

Milk yield

The calving interval was found to be 470 days, during which about 270 days the cows were in milk and the remaining 200 days they were dry. To compute the annual milk yield the lactation and dry periods for the year were considered in the proportion in which they occur in a complete calving interval. In total, 200 days were considered as lactation period and 165 days as dry period a year.

The average milk yield per animal per day of lactation was worked out and presented in Table 6.63.

Table 6.63. Milk yield per animal in milk per day of lactation - Size groupwise

(in litres)

	S_1	S_2	S_3	S_4	S_5	Average
1. Cross bred	4.62	5.99	4.34	4.22	4.73	4.88
2. Desi	2.92	2.59	2.42	2.07	2.99	2.64

The average milk yield was 4.88 litres for cross bred and 2.64 litres for desi cows. The average milk yield was highest for S_2 (5.99 litres) and lowest in S_4 (4.22 litres) for cross

bred cows. For desi cows the highest milk yield was 2.99 litres for S_5 and lowest in S_4 with 2.07 litres. The overall average milk yield for cross bred cows was found to be 84.85 per cent higher than that for desi cows.

The distribution of milk yield per animal per day among the income classes is presented in Table 6.64.

Table 6.64. Milk yield per animal in milk per day of lactation - Income groupwise

(in litres)

	I_1	I_2	I_3	I_4	I_5	Average
1. Cross bred	4.46	4.49	4.81	4.66	5.33	4.88
2. Desi	2.75	2.08	2.91	2.18	3.04	2.64

For cross bred animals the highest milk yield was recorded in I_5 with 5.33 litres and lowest in I_1 with 4.46 litres per animal per day. The highest milk yield recorded for desi cows was 3.04 litres per animal per day in I_5 which was 15.15 per cent higher than the average. While the lowest milk yield obtained in I_2 with 2.08 litres per animal per day.

Returns and cost from livestock enterprise

The cost and returns from cross bred as well as desi cows are worked out and presented. Table 6.65 shows the maintenance cost and net income from cross bred animals

Table 6.65. Cost and returns from cross bred animals - Size groupwise

	S_1	S_2	S_3	S_4	S_5	Average
1. Maintenance (Rs)						
Total cost	11806.50	16551.60	12271.28	4536.37	27939.75	73105.50
Per farm	454.10	827.58	533.53	412.40	1396.99	731.06
Per animal	1967.75	2068.95	2045.20	1134.12	1862.65	1874.50
2. Milk produced (litres)						
Total	5544.00	9584.00	5220.00	3376.00	14340.00	38064.00
Per farm	213.23	479.20	226.96	306.91	717.00	380.64
Per animal	924.00	1198.00	870.00	844.00	956.00	976.00
3. Income from milk (Rs)						
Total	17208.00	28080.00	15168.00	8836.00	38768.00	108160.00
Per farm	661.85	1404.00	659.48	812.36	1938.40	1081.60
Per animal	2868.00	3510.00	2528.00	2234.00	2584.53	2773.33
4. Income from dung (Rs)						
Total	990.00	1440.00	870.00	600.00	2030.00	5930.00
Per farm	38.08	72.00	37.83	54.55	101.49	59.30
Per animal	165.00	180.00	145.00	150.00	135.32	152.05
5. Total receipt (Rs)	18198.00	29520.00	16038.00	9536.00	40798.00	114090.00
Per farm	699.93	1476.00	697.31	866.91	2039.89	1140.90
Per animal	3033.00	3690.00	2673.00	2384.00	2719.35	2925.38
6. Net income (Rs.)						
Total	6391.50	12968.40	3766.72	4999.63	12858.25	40984.50
Per farm	245. 83	648.42	163.78	454.51	642.90	409.84
Per animal	1065.35	1621.05	627.80	1249.88	857.20	1050.88

Table 6.66. Cost of returns from cross bred animals - Income groupwise

	I_1	I_2	I_3	I_4	I_5	Overall
1. Maintenance(Rs)						
Total cost	3204.90	16061.60	18548.20	9475.25	25815.55	73105.50
Per farm	267.08	553.85	927.41	631.68	1975.64	731.06
Per animal	1602.45	2007.70	1686.20	1895.05	1985.80	1874.50
2. Milk produced(litres)						
Total	1784.00	7184.00	10582.00	4660.00	13854.00	38064.00
Per farm	148.67	247.72	529.10	310.67	577.42	380.64
Per animal	892.00	898.00	962.00	932.00	1086.00	976.00
3. Income from milk (Rs)						
Total	5926.00	20864.00	30844.00	14490.00	36036.00	108160.00
Per farm	493.83	719.45	1542.20	966.00	1501.50	1081.60
Per animal	2963.00	2608.00	2804.00	2898.00	2772.00	2773.33
4. Income from dung (Rs)						
Total	310.00	1120.00	2145.00	600.00	1755.00	5930.00
Per farm	25.83	38.62	107.25	40.00	73.13	59.30
Per animal	155.00	140.00	195.00	120.00	135.00	152.05
5. Total receipt (Rs.)	6236.00	21984.00	32989.00	15090.00	37791.00	114090.00
Per farm	519.66	758.07	1649.45	1006.00	1574.63	1140.90
Per animal	3118.00	2748.00	2999.00	3018.00	2907.00	2925.38
6. Net income (Rs)						
Total	3031.10	5922.40	14440.80	5614.75	11975.45	40984.50
Per farm	252.58	204.22	722.04	374.32	498.99	409.84
Per animal	1515.55	740.30	1312.80	1122.95	921.20	1050.88

according to size groups. The average maintenance cost of a cow was found to be Rs.1874.50 for an year. The average milk yield was 976 litres for a lactation. The total returns from a cross bred cow was found to be Rs.2925.38 in a year, of which 94.8 per cent from milk. The average net income per animal profit recorded was Rs.1050.88. The highest income was obtained in S_2 with Rs.1621.05 per animal for a year which is 54.26 per cent higher than the average. The lowest being recorded in S_3 with Rs.627.8 which is 40.26 per cent less than the average. It can be noted that the highest maintenance cost, total returns and net income are in S_2.

An analysis of the maintenance cost and returns according to income groups is presented in Table 6.66. The highest net income was obtained in I_1 (Rs.1515.55) which is 44.22 per cent higher than the average, where the maintenance cost is 14.51 per cent less than the average. For I_1 the annual milk yield is 8.61 per cent less than the average and the profit in I_1 is more due to low maintenance cost incurred. The highest milk yield was obtained in I_5 which is 11.27 per cent higher than the average. No definite trend is seen between the income classes.

The maintenance cost and returns for a year were worked for desi cows and presented in Table 6.67. The overall average maintenance cost was Rs.1088.80 which is 41.92 per cent less

Table 6.67. Cost and returns from desi animals - Size groupwise

	S_1	S_2	S_3	S_4	S_5	Overall
1. Maintenance (Rs)						
Total cost	8539.60	10277.28	11668.80	4645.40	8420.92	43552.00
Per farm	328.45	513.86	507.34	422.31	421.05	435.52
Per animal	1067.45	1141.92	1060.80	1161.35	1052.62	1088.80
2. Milk Produced (litres)						
Total	4672.00	4662.00	5324.00	1656.00	4798.00	21212.00
Per farm	179.69	233.10	231.48	150.55	239.90	211. 12
Per animal	584.00	518.00	483.99	413.99	599.75	527.80
3. Income from milk (Rs)						
Total	14000.00	13230.00	16588.00	5224.00	11280.00	60322.00
Per farm	538.46	661.50	721.22	474.90	564.00	603.22
Per animal	1750.00	1470.00	1508.00	1306.00	1410. 00	1508.00
4. Income from dung (Rs)						
Total	1360.00	1305.00	1715.00	740.00	1080.00	6200.00
Per farm	52.31	65.25	74.57	67.27	54.00	62.00
Per animal	170.00	145.00	156.00	185.00	135.00	155.00
5. Total receipt (Rs)	15360.00	14535.00	18303.00	5964.00	12360.00	66522.00
Per farm	590.77	726.75	795.79	542.17	618.00	665.20
Per animal	1920.00	1615.00	1664.00	1491.00	1545.00	1663.00
6. Net income (Rs)						
Total	6820.40	4257.72	6634.20	1318.60	3939.08	22970.00
Per farm	262.32	212.89	288.45	119.86	196.95	229.68
Per animal	852.55	473.08	603.20	329.65	492.38	574.20

Table 6.68. Cost and returns from desi animals - Income groupwise

	I_1	I_2	I_3	I_4	I_5	Overall
1. Maintenance (Rs)						
Total cost	2921.25	12372.25	10024.20	4335.00	13899.30	43552.00
Per farm	243.44	426.63	501.21	289.00	579.14	435.52
Per animal	973.75	1124.75	1113.80	1083.75	1069.18	1088.80
2. Milk produced (litres)						
Total	1650.00	4576.00	5238.00	1744.00	7904.00	21112.00
Per farm	137.50	157.79	261.90	116.27	329.33	211.12
Per animal	550.00	416.00	582.00	436.00	608.00	527.80
3. Income from milk (Rs)						
Total	4668.00	15774.00	16398.00	5464.00	18018.00	60322.00
Per farm	389.00	543.93	819.90	364.27	750.75	603.22
Per animal	1556.00	1434. 00	1822.00	1366.00	1390.85	1508.00
4. Income from dung (Rs)						
Total	435.00	1815.00	1125.00	680.00	2145.00	6200.00
Per farm	36.25	62.59	56.25	45.33	89.38	62.00
Per animal	145.00	165.00	125.00	170.00	165.00	155.00
5. Total receipt(Rs)	5103.00	17589.00	17523.00	6144.00	20163.00	66522.00
Per farm	425.25	606.52	876.15	409.60	840.13	665.22
Per animal	1701.00	1599.00	1947.00	1536.00	1555.85	1663.00
6. Net income (Rs)						
Total	2181.75	5216.75	7498.80	1809.00	6263.70	22970.00
Per farm	181.81	178.89	374.94	120.60	260.99	229.68
Per animal	727.25	474.25	833.20	452.25	486.67	574.20

than the maintenance cost for cross bred animals. The average milk production estimated was 527.8 litres for a lactation which is 45.92 per cent less than that of cross bred cows. The net income was Rs.574.2 for desi cow in a year which is 45.36 per cent less than that of cross bred cows. For desi cows the highest net income was recorded in S_1 with Rs.852.55 which is 48.48 per cent higher than the average. The lowest net income was obtained by S_4 (Rs.329.65) where the maintenance cost is highest (Rs.1161.35), which is 6.66 per cent higher than the average maintenance cost. The milk yield is highest in S_5 with 599.75 litres and lowest in S_4 with 413.99 litres.

The distribution of maintenance cost and returns according to income groups is presented in Table 6.68. The highest cost of maintenance was recorded in I_2 (Rs.1124.75) followed by I_3 (Rs.1113.80). The highest net income recorded was in I_3 with Rs.833.20 per animal followed by I_1 with Rs.727.25 which are 45.12 per cent and 26.65 per cent higher than the average respectively.

Farm stead analysis

In farm stead analysis a farm as a whole is considered as a separate unit comprising of crop and livestock enterprises. This is attempted to get an idea of the viability of of farm units.

On an average each farm unit have an area of 1.35 hectares under different crops. Among the various crops grown Punja paddy is seen to be the main crop area-wise. in wet land with an average area of 0.40 hectare which is 29.63 per cent of the total area and coconut in garden land with 0.22 hectare which is 16.3 per cent of total area. The total cost incurred for agricultural activities was found to be Rs.5892.57 per farm for a year on an average. Of this 19.8 per cent accounted for livestock production. The cultivation of Punja accounting for 24.75 per cent and coconut by 23.04 per cent of the total cost incurred in the farm. The overall net income from the farm was worked out to Rs.5632.97. Of this 15.76 per cent was attributed to income from livestock and poultry.

A comparison of the total expenditure per household and the income from cultivation is made to see the extent to which agricultural activities support the farmers. The total money expenditure per household (including cost of cultivation of crops and household expenditure was Rs.15661.10 on an average (Table 7.6). The income from crop and livestock enterprises was Rs.10625.31 which accounts for 67.85 per cent of the total expenditure. It is evident that, the income from agricultural activities do not suffice to meet the entire family expenditure. The data pertaining to the area put under different crops per farm, cost of cultivation and income from different crops in the various size groups is presented in Table 6.69.

In order to have an understanding of the extent of area one should have under the present cropping system in Puzhakkal block. An exercise is made to estimate the minimum area required by a farm family to meet its entire family expenditure at the existing level from agricultural activities alone. The coverage of the different crops in one hectare, the cost of each and their respective incomes have been computed and presented in Table 6.70 according to farm size. In the situation existing in the block a farm of one hectare area would consist of 0.62 hectare of wet land and 0.38 hectare of garden land. The wet land would be distributed among three crops such as Viruppu (0.10 hectare) Mundakan (0.22 hectare) and Punja (0.30 hectare). In the garden land 0.16 hectare may be occupied by coconut, 0.08 hectare by arecanut, 0.01 hectare by banana, 0.05 hectare by cashew and other crops cover an area of 0.08 hectare. The total cost of cultivation for a hectare is estimated to be Rs.4364.86 on an average. The net income on an average would work out to Rs.4172.59 from one hectare.

The total cultivation and living expenditure per family on an average at the present level of expenses worked out to Rs.15661.10 per annum (Table 7.6). The average gross income from one hectare under the present cropping pattern is Rs.8537.45 which covers only 54.51 per cent of the total expenses. In order to meet the total cultivation and living expenses from the income obtained from agriculture alone the area required shall be 1.83 hectares.

The cropping pattern of such a farm shall consist of the following:

	Crops	Area (hectare)
1.	Paddy	
	a. Viruppu	0.18
	b. Mundakan	0.40
	c. Punja (HYV)	0.31
	d. Punja (Local)	0.24
2.	Coconut	0.29
3.	Arecanut	0.15
4.	Banana	0.02
5.	Cashew	0.09
6.	Others	0.15
	Total	1.83

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HOUSEHOLD ECONOMY

HOUSE HOLD ECONOMY

The household income from various sources including the net income from agricultural enterprises determines the purchasing power of farm households. The level of income influences the food habits and decides the standard of living. In this chapter the income pattern, the pattern of food consumption, expenses on different items of house hold, in relation to holding size group and income groups are discussed.

The farm families live with the income from farm, wage earnings income from service, business etc. The income from different sources and household expenditure according to size of holding is presented in Table 7.1. The total income per family on an average worked out to Rs.22132.51. Of this income 42.79 per cent from crop production and 39.75 per cent from service. The other activities altogether contributed 17.46 per cent. The income from crop production increased with the increase in size of holding. It was Rs.4264.41 for S_1 and Rs.16599.91 for S_5. The percentage share of crops was highest in S_4 (64.21 per cent) followed by S_5 (53.87 per cent). The proportion of income from service was highest in S_1 (50.73 per cent) and it

Table 7.1. The income, expenditure and net savings per farm - Size groupwise

(in Rs)

	S_1	S_2	S_3	S_4	S_5	Average
1. Crop production	4264.41	8653.89	8950.33	11363.77	16599.91	9471.17
	(27.09)	(38.99)	(37.55)	(64.21)	(53.87)	(42.79)
2. Livestock including poultry	1316.70	2378.95	1674.98	1579.63	3299.09	2044.77
	(8.37)	(10.72)	(7.02)	(8.93)	(10.71)	(9.24)
3. Wages from labour	1221.15	157.50	752.17	-	458.36	613.67
	(7.76)	(0.71)	(3.16)		(1.49)	(2.77)
4. Income from trade	-	-	-	909.07	600.00	220.00
				(5.14)	(1.95)	(1.00)
5. Income from profession	951.92	-	1565.22	1090.91	1290.00	985.50
	(6.05)		(6.57)	(6.16)	(4.18)	(4.45)
6. Income from service	7984.62	11002.00	10891.30	2754.55	8565.00	8797.40
	(50.73)	(49.58)	(45.70)	(15.56)	(27.80)	(39.75)
Total income	15738.80	22192.34	23834.00	17697.95	30812.36	22132.51
Income per capita/	2366.74	3494.86	3783.17	2949.66	4969.74	3485.43
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

(Contd....)

Table 7.1 (Contd....)

	S_1	S_2	S_3	S_4	S_5	Overall
Expenditure						
1. Crop production	2357.97 (19.48)	4179.87 (26.33)	4002.95 (26.28)	5536.97 (36.21)	8805.44 (42.30)	4725.99 (30.18)
2. Livestock production	782.55 (6.46)	1341.44 (8.45)	1040.87 (6.84)	834.71 (5.45)	1818.04 (8.73)	1166.58 (7.45)
3. Household expenditure	8965.46 (74.06)	10351.48 (65.22)	10186.44 (66.88)	8956.04 (58.43)	10194.95 (48.97)	9768.53 (62.37)
Total expenditure	12105.98 (100.00)	15872.79 (100.00)	15230.26 (100.00)	15327.72 (100.00)	20818.43 (100.00)	15661.10 (100.00)
Expenditure per capita	1820.45	2499.65	2417.50	2554.62	3357.81	2466.31
Savings	3632.82	6319.55	8603.74	2370.23	9993.93	6471.41
Savings per capita	546.29	995.20	1365.67	395.04	1611.92	1019.21

(Figures in parentheses represent percentages to total)

showed a decreasing trend to an increase in size. The livestock including poultry contributed 9.24 per cent to the total income.

The total expenditure on crops and the household worked out to Rs.15661.10 per year on an average. The net saving was worked out to Rs.6471.41 per family and Rs.1019.12 per capita. The savings was highest in S_5 with Rs.9993.93 per family and Rs.1611.92 per capita. The saving showed an increasing trend with increase in size of holding except in S_4.

The income group wise distribution of income, expenditureand saving is given in Table 7.2. The gross farm income was Rs.7455.67 in I_1 and Rs.42410.22 in I_5. The income per family showed a steady increasing trend with income groups. The proportional income from crop production showed a decreasing trend from I_1 (68.91 per cent) to I_5 (32.58 per cent) while the income from services showed an increasing trend from 10.50 per cent for I_1 to 53.43 per cent for I_5.

The expenditure on family and crop production showed an increasing trend with increase in income. The lower income groups I_1 and I_2 had net dissavings of Rs.1347.82 and 699.65 per family respectively. The per capita dissaving was Rs.199.68 for I_1 and 112.12 for I_2. The highest saving recorded in I_5 with Rs.21439.92 per family and Rs.2973.64 per capita.

Table 7.2. The income, expenditure and net savings per farm - Income groupwise

(in Rs)

	I_1	I_2	I_3	I_4	I_5	Average
Income						
1. Crop production	5137.43 (68.91)	7396.77 (55.32)	9740.01 (51.35)	9493.73 (42.30)	13816.37 (32.58)	9471.17 (42.79)
2. Livestock including poultry	1101.58 (14.78)	1111.21 (11.30)	2641.10 (13.92)	1760.08 (7.84)	2842.18 (6.70)	2044.67 (9.24)
3. Wages from labour	433.33 (5.81)	831.04 (6.22)	145.00 (0.77)	1944.48 (8.66)	-	613.67 (2.77)
4. Income from trade	-	-	-	-	916.67 (2.16)	220.00 (1.00)
5. Income from profession	-	413.79 (3.10)	547.50 (2.88)	1560.00 (6.95)	2175.00 (5.13)	985.50 (4.45)
6. Income from service	783.33 (10.50)	3217.25 (24.06)	5895.00 (31.08)	7686.67 (34.25)	22660.00 (53.43)	8797.40 (39.75)
7. Total income	7455.67 (100.00)	13370.06 (100.00)	18968.61 (100.00)	22444.96 (100.00)	42410.02 (100.00)	22132.51 (100.00)
Income per capita	1104.54	2142.64	3512.71	3661.49	5882.14	3485.43

Continued

Table 7.2 (Contd.....)

	I_1	I_2	I_3	I_4	I_5	Average
Expenditure						
1. Crop production	2772.42 (31.49)	3546.04 (25.20)	4904.44 (31.71)	4836.50 (30.23)	6918.88 (32.99)	4725.99 (30.18)
2. Livestock production	510.52 (5.80)	980.48 (6.97)	1428.62 (9.24)	920.68 (5.75)	1654.78 (7.89)	1166.58 (7.45)
3. Household expenditure	5520.55 (62.71)	9543.19 (67.83)	9134.45 (59.05)	10243.20 (64.02)	12396.64 (59.12)	9768.53 (62.37)
Total expenditure	8803.49 (100.00)	14069.71 (100.00)	15467.51 (100.00)	16000.38 (100.00)	20970.30 (100.00)	15661.10 (100.00)
Expenditure per capita	1304.22	2254.76	2864.35	2610.18	2908.50	2466.31
Savings	-1347.82	-699.65	3501.10	6444.58	21439.92	6471.41
Savings per capita	-199.68	-112.12	648.35	1051.32	2973.64	1019.12

(Figures in parentheses represent percentages to total)

Subsequently the details on household expenditure is discussed. The consumption of food items consists of cereals, pulses and protective foods. Food rich in proteins, vitamins and minerals are termed as protective foods.

The expenditure on important items of protective foods per family and per adult unit for different size groups of holding is presented in Table 7.3. It was observed that the expenditure per family on protective food item was Rs.3325.69 per year and Rs.600.61 per adult per year. Among the items of protective food, the expenditure on grocery and coconuts was the maximum (26.03 per cent) followed by milk (19.57 per cent), fish (14.20 percent) and vegetables and fruits (12.49 per cent). Among the different size groups the expenditure on protective foods increased with increase in the farm size.

The total expenditure incurred per family was Rs.9768.53 and Rs.1763.27 per adult unit for the sample as a whole. Item wise break up of the total family expenditure is given in Table 7.4. The total expenditure on food grains was worked out to Rs.6462.17 per family and 1167.05 per adult unit which was 66.15 per cent of the total family expenditure. Among the food items, cereals constituted of of 30.26 per cent and 34.04 per cent constituted by protective foods. Next to food item, clothing constituting 15.67 per cent.

Table 7.3. Constituents of expenditure on protective foods - Size group wise

(in Rs)

		S_1	S_2	S_3	S_4	S_5	Average
1. Sugar	Per family	122.77	142.80	127.83	259.95	194.48	157.37
	Per adult unit	21.20	25.59	23.85	48.81	35.48	28.42
	% to total	4.06	4.18	3.61	8.74	5.44	4.73
2. Edible oils	Per family	252.42	266.40	287.96	248.55	259.20	264.32
	Per adult unit	43.58	47.73	53.72	46.66	47.29	47.74
	% to total	8.35	7.80	8.14	8.34	7.25	7.95
3. Milk	Per family	515.90	694.00	730.98	521.36	761.94	650.78
	Per adult unit	89.07	124.35	136.37	97.88	139.01	117.53
	% to total	17.03	20.32	20.67	17.49	21.31	19.57
4. Meat	Per family	320.00	302.00	314.78	234.55	405.38	322.88
	Per adult unit	55.25	54.11	58.72	44.03	73.96	58.31
	% to total	10.58	8.84	8.90	7.87	11.34	9.70
5. Fish	Per family	464.62	443.00	525.57	414.55	494.00	474.68
	Per adult unit	80.22	79.38	98.05	77.83	90.13	85.73
	% to total	15.37	12;97	14.86	13.91	13.82	14.20
6. Egg	Per family	43.54	86.40	142.61	75.64	164.80	102.68
	Per adult unit	7.52	15.48	26.60	14.20	30.07	18.54
	% to total	1.44	2.53	4.03	2.54	4.61	3.79

Continued

Table 7.3 (Contd....)

Items		S_1	S_2	S_3	S_4	S_5	Average
7. Vegetables and fruits	Per family	404.23	442.75	456.09	348.18	392.50	415.35
	Per adult unit	69.79	79.33	85.08	65.37	71.61	75.01
	% to total	13.37	12.96	12.89	11.68	10.96	12.49
8. Grocery	Per family	446.15	480.00	484.78	381.82	410.00	436.00
	Per adult unit	77.03	86.01	81.11	71.68	74.80	78.74
	% to total	14.75	14.05	12.29	12.81	11.47	12.49
9. Coconuts	Per family	409.23	503.00	458.26	454.55	440.00	450.40
	per adult unit	70.66	90.13	85.49	85.34	80.28	81.34
	% to total	13.56	14.73	12.96	15.25	12.31	13.54
10. Others	Per family	45.00	54.90	58.26	40.91	53.25	51.23
	Per adult unit	7.77	9.84	10.87	7.68	9.72	9.25
	% to total	1.49	1.61	1.65	1.37	1.49	1.54
Total	Per family	3023.86	3415.25	3537.12	2980.06	3575.55	3325.69
	Per adult unit	522.09	611.95	659.86	559.48	652.35	600.61
	% to total	100.00	100.00	100.00	100.00	100.00	100.00

Table 7.4. Constituents of total family expenditure - Size groupwise

(in Rs)

Sl. No.	Items		S_1	S_2	S_3	S_4	S_5	Average
1.	Cereals	Per family	2978.00	2890.18	2780.05	3135.68	3093.38	2955.73
		Per adult unit	514.16	518.04	518.62	588.71	564.38	533.80
		% to total	33.22	27.93	27.29	35.01	30.34	30.26
2.	Pulses	Per family	150.96	207.50	189.15	190.91	177.50	180.75
		Per adult unit	26.06	37.18	35.23	35.84	32.38	32.64
		% to total	1.68	2.01	1.86	2.13	1.74	1.85
3.	Protective foods	Per family	3023.86	3415.25	3537.12	2980.06	3575.55	3325.69
		Per adult unit	522.09	611.95	659.86	559.48	652.35	600.61
		% to total	33.73	32.99	34.72	33.27	35.07	34.04
4.	Total food	Per family	6152.82	6513.93	6506.30	6306.65	6846.43	6462.17
		Per adult unit	1062.31	1167.17	1213.71	1184.03	1249.11	1167.05
		% to total	68.63	62. 93	63.87	70.41	67.16	66.15
5.	Clothing	Per family	1203.85	1835.00	1752.17	1295.45	1525.00	1530.50
		Per adult unit	207.85	328.79	326.87	243.22	278.23	276.41
		% to total	13.43	17.73	17.20	14.46	14.96	15.67
6.	Fuel & lighting	Per family	357.82	358.54	360.77	338.14	341.74	353.26
		Per adult unit	61.78	64.26	67.30	63.48	62.35	63.80
		% to% total	3.99	3.46	3.54	3.78	3.35	3.62

Continued

Table 7.4 (Contd.....)

Sl. No.	Items		S_1	S_2	S_3	S_4	S_5	Average
7.	Education	Per family	436.54	645.00	573.91	336.36	530.00	517.50
		Per adult unit	75.37	115.57	107.06	63.15	96.70	93.46
		% to total	4.87	6.23	5.63	3.76	5.20	5.30
8.	Medicine	Per family	292.69	3332.50	308.70	236.36	310.00	307.10
		Per adult unit	50.53	59.58	57.59	53.76	56.56	55.46
		% to total	3.26	3.21	3.03	3.20	3.04	3.14
9.	Travel	Per family	328.85	397.50	413.03	209.09	357.50	354.50
		Per adult unit	56.78	71.22	77.05	39.26	65.23	64.02
		% to total	3.67	3.84	4.06	2.33	3.51	3.63
10.	Recreation	Per family	128.85	190.00	193.48	113.64	187.50	166.00
		Per adult unit	22.25	34.04	36.09	21.33	34.21	29.17
		% to total	1.44	1.84	1.90	1.27	1.84	1.70
11.	Others	Per family	64.04	79.01	78.07	70.35	96.78	77.50
		Per adult unit	11.05	14.16	14.56	13.21	17.66	14.00
		% to total	0.71	0.76	0.77	0.79	0.95	0.79
Total		Per family	8965.46	10351.48	10186.44	8956.04	10194.95	9768.53
		Per adult unit	1548.44	1855.10	1900.46	1680.31	1860. 39	1763.27
		% to total	100.00	100.00	100.00	100.00	100.00	100.00

The expenses on fuel and lighting, education, recreation, medicines etc. formed less than 20 per cent of total expenditure.

It was observed that percentage expenditure on food was highest in S_4 with 70.41 per cent followed by S_1 with 68.63 per cent. While it was lowest in S_2 with 62.93 per cent. The total family expenditure was highest in S_2 with Rs.10351.48 per family and Rs.1855.10 per adult unit. The lowest family expenditure incurred in S_4 with Rs.8956.04 per family.

The constituents of expenditure on protective foods according to income groups is presented in Table 7.5. The expenditure on protective foods showed an increasing trend for an increase in income, the highest was recorded in I_5 with Rs.4327.45 per family and Rs.683.19 per adult unit which is 30.12 per cent higher than the average. The lowest was worked out to Rs.1784.86 per family and Rs.299.6 per adult unit in I_1 which is 46.33 per cent lower than the average. The absolute amount spent on different items was highest in I_5.

Total family expenditure for the income groups is presented in Table 7.6. The per family and per adult expenditure increased with increase in the income groups. The highest family expenditure incurred in I_5 (Rs.12396.64) and per adult expenditure of Rs.1933.95 which was 64.73 per cent

Table 7.5. Constituent of expenditure on protective foods - Income groupwise

(in Rs.)

Items		I_1	I_2	I_3	I_4	I_5	Average
1. Sugar	Per family	73.50	233.34	118.50	122.50	161.75	157.37
	Per adult unit	12.34	43.13	25.36	23.53	25.53	28.42
	% to total	4.12	7.69	3.55	3.58	3.74	4.73
2. Edible oil	Per family	197.92	271.00	241.15	283.27	286.92	264.32
	Per adult unit	33.22	50.09	51.60	54.45	46.32	47.74
	% to total	11.09	8.93	7.22	8.29	6.86	7.95
3. Milk	Per family	103.02	478.78	661.55	807.42	1025.69	650.79
	Per adult unit	17.29	88.50	141.57	155.21	160.01	117.53
	% to total	5.77	15.78	19.80	23.62	23.70	19.57
4. Meat	Per family	201.67	307.16	344.00	281.33	410.83	322.87
	Per adult unit	33.85	56.78	73.61	54.08	64.09	58.31
	% to total	11.30	10.12	10.30	8.23	9.49	9.70
5. Fish	Per family	318.33	431.72	506.00	440.53	550.00	474.68
	per adult unit	53.43	79.80	108.28	84.69	98.60	85.73
	% to total	17.84	14.23	15.14	12.88	12.71	14.20
6. Egg	Per family	30.00	31.72	109.60	66.67	241.50	102.68
	Per adult unit	5.04	5.86	23.45	12.82	37.68	18.54
	% to total	1.68	1.05	3.28	1.95	5.58	3.79

Continued

Table 7.5 (Contd....)

Items		I_1	I_2	I_3	I_4	I_5	Average
7. Vegetables and fruits	Per family	240.00	414.83	452.75	432.67	461.67	415.35
	Per adult unit	40.29	76.68	96.89	83.17	72.02	75.01
	% to total	13.44	13.67	13.55	12.65	10.67	12.49
8. Grovery	Per family	341.62	417.24	430.00	426.67	516.67	436.00
	Per adult unit	57.35	77.12	92.02	82.02	80.60	78.74
	% to total	19.14	13.75	12.87	12.48	11.94	12.49
9. Coconuts	Per family	239.17	402.17	434.50	506.67	592.50	450.40
	Per adult unit	40.15	74.32	92.98	97.40	92.43	81.34
	% to total	13.40	13.26	13.00	14.80	13.69	13.54
10. Others	Per family	39.58	46.21	43.00	51.33	69.92	51.23
	Per adult unit	6.64	8.54	9.20	9.87	10.91	9.25
	% to total	2.22	1.52	1.29	1.50	1.62	1.54
Total	Per family	1784.86	3034.07	3341.05	3419.06	4327.45	3325.69
	Per adult unit	299.60	560.82	714.96	657.24	683.19	600.61
	% to total	100.00	100.00	100.00	100.00	100.00	100.00

Table 7.6. Constituents of total family expenditure per year - Income groupwise -

(in Rs)

Sl. No.	Items		I_1	I_2	I_3	I_4	I_5	Average
1.	Cereals	Per family	2235.63	3403.93	2586.94	2909.83	3110.21	2955.73
		Per adult unit	375.26	629.19	553.59	559.37	485.21	533.80
		% to total	40.50	35.67	28.32	28.41	25.09	30.26
2.	Pulses	Per family	93.75	179.31	153.75	181.69	247.92	180.75
		Per adult unit	15. 74	33.14	32.90	34.92	38.68	32.64
		% to total	1. 70	1.88	1.68	1.77	2.00	1.85
3.	Protective food	Per family	1784.86	3034.07	3460.80	3339.26	4327.45	3325.69
		Per adult unit	299.60	560.82	702.12	641.86	675.39	600.61
		% to total	32.33	31.79	37.89	32.60	34.91	34.04
4.	Total food	Per family	4114.24	6617.31	6201.49	6430.76	7685.58	6462.17
		Per adult unit	690.60	1223.15	1288.61	1236.15	1199.28	1167.05
		% to total	74.50	69.34	67.89	62.78	62.00	66.15
5.	Clothing	Per family	415.00	1306.90	1252.50	2041.33	2270.83	1530.50
		Per adult unit	69.66	241.57	268.03	392.41	354.26	276.41
		% to total	7.52	13.69	13.71	19.93	18.32	15.67
6.	Fuel and lighting	Per family	242.41	342.22	406.53	338.31	387.01	353.26
		Per adult unit	40.69	63.26	87.00	65.03	60.38	63.80
		% to total	4.39	3.59	4.45	3.30	3.12	3.62
7.	Education	Per family	316.67	437.93	430.00	443.33	833.33	517.50
		Per adult unit	53.15	80.95	92.02	85.22	130.01	93.46
		% to total	5.74	4.59	4.71	4.33	6.72	5.30

Continued

Table 7.6 (Contd.....)

Items		I_1	I_2	I_3	I_4	I_5	Average
8. Medicine	Per family	112.50	333.10	285.00	326.67	379.47	307.10
	Per adult unit	18.88	61.57	60.99	62.80	59.15	55.46
	% to total	2.04	3.49	3.12	3.19	3.06	3.14
9. Travel	Per family	154.17	291.38	357.50	433.33	479.17	354.50
	Per adult unit	25.87	53.86	76.50	83.30	74.75	64.02
	% to total	2.79	3.05	3.91	4.23	3.86	3.63
10. Recreation	Per family	100.00	136.21	130.00	160.00	268.75	166.00
	Per adult unit	16.79	25.81	27.82	30.76	41.93	29.88
	% to total	1.82	1.43	1.43	1.56	2.17	1.70
11. Others	Per family	65.56	78.14	71.43	69.47	92.80	77.50
	Per adult unit	11.00	14.44	15.29	13.35	14.48	14.00
	% to total	1.19	0.82	0.78	0.68	0.75	0.79
Total	Per family	5520.55	9543.19	9134.45	10243.20	12396.64	9768.53
	Per adult unit	926.27	1763.99	1955.99	1969.85	1933.95	1763.27
	% to total	100.00	100.00	100.00	100.00	100.00	100.00

higher than the average. The lowest was worked out to Rs.5520.55 per family and 926.27 per adult which was 55.07 per cent less than the average. The percentage expenditure on food items showed a decreasing trend to an increase in income. The expenditure on food items contributed 74.5 per cent of the total expenses in I_1 while it was only 62.00 per cent in I_5. The absolute amount spent is highest for I_5 for almost all times.

The investment on house hold articles may give an idea of the standard of living. The important items considered are radio, sewing machine, bicycle, fan, electric iron, furniture and utensils. The total investment per family and per capita of these items in different size groups at the time of investigation is given in Table 7.7. The average total investment on these items was Rs.3086.10 per family and 557.35 per adult. Of the total investment the major investment was on furniture (50.52 per cent followed by utensils (18.34 per cent) and radio (15.44 per cent). Between the size classes the highest investment was found in S_5 with Rs.3872 per family and Rs.706.44 per adult which was 25.47 per cent higher than the average. The lowest was recorded in S_1 with Rs.2469.62 per family and Rs.426.39 per adult which was 19.98 per cent lower than the average. The average number of house hold articles per family were 0.81 radio, 0.12 sewing machine, 0.36 bicycle, 0.73 fan and 0.14 electric iron.

Table 7.7. Investment on household items + Size groupwise

(in Rs)

	S_1		S_2		S_3		S_4		S_5		Average	
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
1. Radio												
Per family	0.69	398.08	0.75	490.00	1.00	586.96	0.64	243.18	0.90	566.25	0.81	476.50
Per adult unit		68.73		87.80		109.50		45.66		103.31		86.06
% to total		16.12		19.03		16.96		8.38		14.62		15.44
2. Sewing Machine Per family	0.12	69.23	0.05	25.00	0.13	81.74	0.09	79.55	0.20	115.00	0.12	73.55
Per adult unit		11.95		4.48		15.25		14.94		20.98		13.28
% to total		2.80		0.97		2.36		2.74		2.97		2.38
3. By-cycle Per family	0.27	151.35	0.45	19.66	0.26	128.26	0.36	286.36	0.50	226.75	0.36	188.95
Per adult unit		26.13		3.52		23.93		53.76		41.37		34.12
% to total		6.13		0.76		3.70		8.87		5. 86		6.12
4. Fan Per family	0.35	80.77	0.35	81.25	1.09	296.52	0.73	225.45	1.20	334.75	0.73	197.75
Per adult unit		13.95		14.56		55.32		42.33		61.07		35.71
% to total		3.27		3.16		8.57		7.77		8.64		6.39
5. Elec-tric Per family	0.04	4.81	0.10	18.75	0.26	55.43	0.09	11.82	0.20	29.25	0.14	24.90
iron Per adult unit		0.83		3.36		10.34		2.22		5.34		4.50
% to total		0.20		0.73		1.60		0.41		0.76		0.81
6. Furni-ture Per family		1251.92		1345.00		1734.78		1454.55		2027.50		1559.00
Per adult unit		216.15		241.00		323.63		273.08		369.91		281.55
% to total		50.69		52.24		50.11		50.14		52.36		50.52
7. Uten-sils Per family		513.46		595.00		578.26		600.00		572.50		566.00
Per adult unit		88.65		106.61		107.88		112.65		104.45		102.22
% to total		20.79		23.11		16.70		20.69		14.79		18.34

(Contd.....)

Table 7.7 (Contd....)

		S_1		S_2		S_3		S_4		S_5		Average	
		No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
Total	Per family		2469.62		2574.66		3461.95		2900.91		3872.00		3086.10
	Per adult unit		426.39		461.33		645.83		544.63		706.44		557.35
	% to total		100.00		100.00		100.00		100.00		100.00		100.00

Table 7.8. Investment on household items - Income groupwise

(in Rs)

		I_1		I_2		I_3		I_4		I_5		Average	
		No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
1;Radio	Per family	0.50	200.00	0.76	327.59	0.80	307.50	0.87	461.67	1.00	944.79	0.81	476.50
	Per adult unit		35.57		60.55		65.80		88.75		147.39		86.06
	% to total		9.29		13.94		9.74		15.88		21.02		15.44
2. Sewing machine	Per family	-	-	0.14	96.72	0.10	47.50	0.07	53.33	0.21	116.67	0.12	73.55
	Per adult unit				17.88		10.16		10.25		18.20		13.28
	% to total				4.11		1.50		1.83		2.60		2.38
3. Bycycle	Per family	0.25	1ø4.17	0.34	172.41	0.50	241.25	0.20	126.67	0.42	246.67	0.30	188.95
	Per adult unit		17.49		31.87		51.63		24.35		38.48		34.12
	% to total		4.84		7.34		7.64		4.36		5.49		6.12
4. Fan	Per family	0.25	54.17	0.17	41.38	0.95	284.75	0.53	141.67	1.58	418.75	0.73	197.75
	Per adult unit		9.09		7.65		60.94		27.23		65.33		35.71
	% to total		2.51		1.76		9.02		4.87		9.32		6.38
5. Electric iron	Per family		-		-	0.20	32.00	0.13	20.00	0.21	64.58	0.14	24.90
	Per adult unit						6.85		3.84		10.07		4.50
	% to total						1.01		0.69		1.44		0.81
6. Furniture	Per family		1266.67		1246.55		1655.00		1606.67		1972.92		1559.00
	Per adult unit		212.62		230.42		354.16		308.86		307.79		281.55
	% to total		58.80		53.04		52.41		55.28		43.90		50.52
7. Utensils	Per family		529.17		465.52		590.00		496.67		729.17		566.00
	Per adult unit		88.82		86.05		126.26		95.48		113.76		102.22
	% to total		24.56		19.81		18.68		17.09		16.23		18.34
Total	Per family		5254.18		2350.17		3158.00		2906.68		4495.55		3086.10
	Per adult unit		361.59		434.41		675.80		558.76		701.02		557.35
	% to total		100.00		100.00		100.00		100.00		100.00		100.00

The investment on house hold articles according to income groups is presented in Table 7.8. Among the different income groups the total investment on these items per family and per adult increased with increase in the income groups. The highest investment in I_5 (Rs.4493.55) was 45.61 per cent more than the average and lowest expenditure in I_1 (Rs.2154.18) which was 30.2 per cent less than the average.

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SUMMARY

SUMMARY

The socio-economic study of farmers in puzhakkal block, forming a part of the command area of Peechi irrigation project, was conducted in 1982. The main objectives of the investigation were - to study the methods and practices followed for cultivation, understand social and economic conditions of farm, farm business structure and infrastructural facilities. Hundred farmers from the block were selected and informations were gathered through personal interview. The salient findings of the investigation are summaried below.

It was observed that 69 per cent of sample farmers owned an area below one hectare and average size of holding worked out to 1.04 hectares. The average family size was found to be 6.35. The family members consisted of 51.18 per cent males and 48.82 per cent females; 96.53 per cent of the total members of the respondents family were literates. The main occupation of 57 per cent of heads of the families was agriculture

while 33 per cent were employed in Government service. Out of the total income earners only 38.28 per cent were employed in agriculture while 49.28 per cent in Government service. The availability of net cropped area per farm was 0.99 hectare. The cropping intensity worked out to 135.68. The overall total cropped area was found to 1.35 hectares per farm. The area irrigated was 68.94 per cent of the net area owned. The average investment on the assets such as land, livestock, buildings etc. was worked out to Rs.146,534.20 per farm. Among the livestock milch animals assumed a lion share accounting for 74.23 per cent of the total worth. On an average an amount of Rs.1338.17 was invested per farm on farm implements and machinery.

The details regarding the methods and practices followed, cost structure, utilization of resources and profitability were studied for the important crops. It was observed that local varieties were grown during Viruppu and Mundakan. Punja is the major paddy crop grown in Kole lands. High yielding varieties occupy majority of the area under Punja.

The cost of cultivation (Cost C) per hectare of Virippu was Rs.3726.16 with an output of 20.61 quintals. The net income from this crop was Rs.1489.89 and cost of production per quintal worked out to Rs.87.70. On an average

the labour hours required per hectare were 102.15 male hours, 680 female hours, 53.1 bullock pair hours and 1.22 tractor hours. The seed rate actually followed was found to be 133.98 kg per hectare. The N, P, K utilisation was 24.82 kg, 13.88 kg and 13.62 kg per hectare respectively which is 62.05 per cent nitrogen, 69.4 per cent phosphorus and 68.10 per cent potassium of the recommended dose.

For mundakan the cost of cultivation was Rs.4641.51 (Cost C) with an output of 24.5 quintals per hectare. The cost of production worked out to Rs.97.31 per quintal with a net profit of Rs.1542.81. The utilisation of labour was found to be 133.96 male hours, 871.89 female hours, 49.23 bullock pair hours and 1.13 tractor hours. The seed rate was found to be 134.07 kg per hectare. The N, P, K utilisation was found to be 29.77 kg, 15.84 kg and 19.91 kg per hectare which is 74.43 per cent nitrogen, 79.20 per cent phosphorus, 99.55 per cent potassium of the recommended dose.

The high yielding varieties in punja recorded a cost of cultivation of Rs.4869.33 per hectare (Cost C) with an average production of 31.14 quintals. The cost of production worked out to Rs.118.76 per quintal with a net income of Rs.632.6 per hectare. The labour utilisation per hectare was 165.58 male hours 986.04 female hours, 58.18 bullock pair hours and 1.61 tractor hours. The seed rate followed was

111.14 kg per hectare. The utilisation of N, P, K was 44.82 kg, 28.26 kg and 28.9 kg per hectare respectively which is 64.03 per cent nitrogen, 80.74 per cent phosphorus and 82.57 per cent potassium of the recommended dose.

For local varieties in punja the cost of cultivation worked out to Rs.4625.5 (Cost C) with a production of 24.91 quintals per hectare. The cost of production worked out to Rs.119.78 per quintal with a net income of Rs.1095.19. The utilisation of labour per hectare was 144.15 male hours, 874.85 female hours, 57.83 bullock pair hours and 1.19 tractors hours on an average. The seed rate was found to be 122.07 kg per hectare. The N, P, K utilisation was 33.09 kg, 16.71 kg and 22.06 kg respectively which is 82.73 per cent nitrogen, 83.55 per cent phosphorus and 110.3 percent potassium of the recommended dose.

The high yielding varieties in punja record the highest cost of cultivation and yield. The cost of production was lowest in viruppu followed by Mundakan. Between the local and high yielding varieties in Punja the cost of production is about one per cent lower for high yielding varieties. In terms of net returns from paddy cultivation, Mundakan stood first with Rs.1542.81 per hectare. High

yielding varieties produced maximum yield per hectare but the income per hectare was low. The reasons could be the low recovery of straw and low price offered for high yielding varieties in the markets. In the case of utilisation of resources like labour, and fertilizers the high yielding varieties in Punja ranks first. The benefit cost ratio was 1.4 for Viruppu, 1.33 for Mundakan, 1.24 for high yielding in Punja and 1.13 for local varieties in Punja.

The average cost of maintenance of coconut per hectare was Rs.9027.81 with a net profit of Rs.5261.49 per hectare. The labour used for maintenance was 688.65 male hours and 250.12 female hours. The extent of fertilizers used were 25.03 kg nitrogen, 20.67 kg phosphorus and 71.64 kg potassium per hectare which is 36.87 per cent nitrogen, 60.79 per cent phosphorus and 52.68 per cent potassium of the recommended dose.

For arecanut the maintenance cost was Rs.4575.74 per hectare on an average with a net income of Rs.3028.80 per hectare. The total labour used was 219.51 male hours and 114.12 female hours. Fertilizers are not generally applied for arecanut.

The cost of cultivation of banana worked out to Rs.26069.45 with a profit Rs.12442.24 per hectare. The labour utilisation per hectare was highest for banana with

1868.56 male hours and 417.98 female hours. The N, P, K utilisation per hectare was found to be 149.65 kg nitrogen, 99.76 kg phosphorus and 195.37 kg potassium which is 31.51 per cent nitrogen, 34.70 per cent phosphorus and 26.05 per cent potassium of the recommendation.

The cost of maintenance of crossbred animals was worked out to Rs.1874.5 per animal per year and it was Rs.1088.8 for desi cows. The milk yield was 976 litres for cross bred cows and 527.80 litres for desi cows on an average per year. The net income recorded was Rs.1050.88 for cross bred and 574.2 for desi cows per year.

Under the existing cropping scheme of Puzhakkal block the minimum area required by typical farmers to maintain his family at the present level of conveniences had been estimated as 1.83 hectares.

The total family expenditure worked out to Rs.9768.53 per annum. Of this more than half (Rs.6462.18) is constituted by food items. The expenditure per adult was Rs.1763.27 per annum of which the food items contributed Rs.1167.05. The total income of the family on an average was Rs.22132.51. Of which 42.79 per cent from crops and 39.75 per cent from service. The total savings per year worked out to Rs.6471.41 per family which was Rs.1019.12 per capita on an average. Among the lower

income groups no savings were recorded. They were spending more than their income.

The primary co-operatives and commercial banks were seen rendering services in the block area. Peechi and Vazhani are the two major projects providing irrigation facilities.

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APPENDICES

APPENDIX I

COPY OF THE SCHEDULE

SOCIO-ECONOMIC STUDY OF FARMERS
IN PUZHAKKAL BLOCK IN
COMMAND AREA OF PEECHI
IRRIGATION PROJECT

DATE:

IDENTIFICATION.

1. Name and Address:
2. Religion :
3. Village :

Code No.

FAMILY DETAILS:

Sl. No.	Name of the members	Sex	Age	Relation to the head.	Educational	Occupation Main	Occupation Sub	Income Main	Income Aub	Remarks

MEMBERSHIP IN CO-OPERATIVE SOCIETIES:

Sl. No.	Name of persons who are members	Name of the society	Year of becoming member	No. of shares	Total amount of shares	Remarks

LAND HOLDING:

Fragment No.	Distance from Residence	Total area (in cents)	Area under Buildings, roads etc. (in cents)	Area irrigated (in cents)	Sources of irrigation canal/well/ rank	Type of tenure	Present value of land	Rent	Crops grown	Remarks

CROPS GROWN (PADDY)

Season	Fragement No.	Area	Variety	Irrigated/ rainfed	Yield(Kg)		Quantity		Quantity sold		Rate		Total amount		Remarks
					MP	BP	MP	BP	MP	BP	MP	BP	MP	BP	

OTHER CROPS

Crop	Fragment No.	Area	No.of plants/ palms	No.of palms yielding	Total yield		Value		Remarks
					MP	BP	MP	BP	
Seasonal									
Annual									
Perennial									

BUILDINGS AND OTHER STRUCTURES

Sl. No.	Particulars	Specification floor area	Year of construction/ purchase (Rs)	value of construction/purchase (Rs)	Expected life (yrs)	Annual maintenance expenditure (Rs)	Present value (Rs)	Remarks
1.	Residential buildings							
2.	Farm shed							
3.	Cattle shed							
4.	Store							
5.	Water tank							
6.	Pond							
7.	Compound wall							

FARM IMPLEMENTS & MACHINERY

Item	Specification	No.	Yr. of purchase	Purchase value	Expected life	Annual maintenance cost(Rs)	Remarks
I. Implements							
1. Country plough							
2. Improved plough							
3. Levelling plank							
II. Hand tools							
1. Spade							
2. Pickaxe							
3. Sickle							
III. Machinery							
1. Tracter							
2. Power tiller							
IV. Transport							
1. Bullock carts							
2. Hand carts							
V. Plant protection							
1. Hand sprayers							
2. Power sprayers							
3. Dusters							
VI. Dairy equipments							
1. Feed tray							
2. Milk cans							
VII. Temporary							
1. Baskets							
2. Bamboo mats							
3. Muram							
4. Coir ropes							

IRIGATION STRUCTURE & EQUIPMENT

Sl. No.	Item	No.	Fragment No.	Specification	Year of construction	Value at construction/ purchase (Rs)	Annual maintenance cost (Rs)	Remarks
1.	Well							
2.	Tubewell							
3.	Pump set							
4.	Pump shed							
5.	Pond							
6.	Channels							

OPERATIONAL COSTS

Sl. No.	Item	No.of hrs./ day	No.of days/ week	No.of month in a year	Fuel cost	Maintenance cost/yr		Remarks
						Major repairs last year	Annual maintenance cost	
1.	Tractor							
2.	Power tiller							
3.	Pump set							

INCOME FROM RENTING OUT

Sl. No.	Item	Hours rented out	Rate/hours (Rs)	Total rent (Rs)	Remarks
1.	Tractor				
2.	Power tiller				
3.	Pumpset				
4.	Sprayer				
5.	Drought animals				
6.	Bullock cart				
7.	Hand cart				

LIVE STOCK

Description	Breed	Age	Home bred/ purchased	Yr. of purchase/ birth	Purchase price/ market value	Present worth	Remarks
I. Milch animals							
1. Buffaloes							
2. Cows							
II. Young stock							
1. Heifers							
a) Male							
b) Female							
2. Buffaloes							
a) Male							
b) Female							
III. Drought animals							
IV. Goats							
V. Poultry							

MAINTENANCE CHARGES OF LIVESTOCK/DAY/ANIMAL:

Type of animal	No.of animals	Green fodder				Dry fodder				Concentrates				Mineral mixture				Veterinary expenses	Remarks
		Qty.		Value		Qty.		Value		Qty.		Value		Qty.		Value			
		*HP	P	HP	P	HP	P	HP	P	HP	P	HP	P	HP	P	HP	P		

*HP = Home produced P = Purchased

STATUS OF MILCH ANIMALS

Milch animals	present status	No.of completed lactations	Date or previous calving	Date of present calving	Total lactation period	Milk yield (in litres)			Milk consumed (in litres)	Milk Sold		Converted to other products			Present worth of animals	Remarks
						1st 1/3	2nd 1/3	3rd 1/3		Qty. (lbs)	Value (Rs)	Used	Sold	Value		

INCOME FROM BIRDS

Sl. No.	Type	No.of birds laying eggs	Total eggs	No.of eggs consumed	No.of eggs sold	Value

INCOME FROM DUNG

Approximate quantity available	Used within the farm	Quantity sold	Total amount

HOUSEHOLD ARTICLES:

Sl. No.	Items	Year of purchase	Purchase price	Maintenance cost	Present work	Remarks
1.	Radio					
2.	Sewing machine					
3.	Bicycle					
4.	Motor cycle					
5.	Scooter					
6.	Motor car					
7.	Fan					
8.	Pressure cooker					
9.	Electric iron					
10.	Almirah					
11.	Boxes					
12.	Furniture					
13.	Utensils					
14.						
15.						

SOURCES OF POWER

Sl. No.	Purpose	Device	Material	Expense/month	Remarks
1.	Cooking				
2.	Lighting				
3.	Irrigation				
4.	Transport of product				

MARKETING OF FARM PRODUCE

Sl. No.	Item	Quantity sold	To whom sold	where sold	Distance to the nearest market	Mode of trans-port	Marketing problems if any

CONSUMPTION PATTERN OF THE FAMILY

Sl. No.	Particulars	Quantity in Kg. per Day/Week/Month/Year	Rate per unit	Total amount per year	Remarks
A.	Food				
1.	Rice				
2.	Tapioca				
3.	Wheat				
4.	Pulses				
5.	Sugars				
6.	Oils				
7.	Milk				
8.	Meat				
9.	Fish				
10.	Egg				
11.	Vegetables				
B.	Clothing & Footwear				

Continued

CONSUMPTION PATTERN OF THE FAMILY (Contd...)

Sl. No.	Particulars	Quantity in Kg. per Day/Week/Month/Year	Rate per unit	Total amount per year	Remarks
C.	Rent				
D.	Fuel & lighting				
E.	Education				
F.	Medicine				
G.	Travel				
H.	Recreation				
I.	Beverages				
J.	Taxes				
K.	Tobacco				
L.	Liquor				
M.	Others, if any				

LOANS AND SAVINGS

1. Loans obtained

Sl. No.	Agency	Date of borrowing	Purpose	Amount	Interest rate	Amount outstanding	Amount due

ii. Savings like loans advanced, jewellary, shares, cash in bank, cash in hand, deposits etc.

Sl. No.	Form of saving	Year	Present value	Remarks

SAVINGS AND INVESTMENTS:

A. Acquisition of real estate, buildings, vehicles

Sl. No.	Month	Acquisition/ improvement	Acquisition/ improvement cost	Remarks

DISPOSAL

Sl. No.	Item	Year	Disposal value	Remarks

INPUT AND OUTPUT USE DURING 1981-82

Sl. No.	Name of crop	Variety	Area (in cents) Irrigation	Area (in cents) Unirrigated	No. of plants or trees for annual or perennial	Preparatory cultivation: Bullocks pairs Number	Bullocks pairs days	Bullocks pairs Amount	Men: Family Number	Men: Family days	Men: Family Amount	Men: Hired Number	Men: Hired Days	Men: Hired Amount	Women: Family Number	Women: Family Days	Women: Family Amount	Women: Hired Number	Women: Hired Days	Women: Hired Amount
I.	Seasonal																			
1.																				
2.																				
3.																				
4.																				
5.																				
6.																				
7.																				
II.	Annual																			
1.																				
2.																				
3.																				
4.																				
5.																				
6.																				
7.																				
III.	Perennial																			
1.																				
2.																				
3.																				
4.																				
5.																				
6.																				
7																				

Sl. No.	Name	Qty.	Value	SEEDS AND SOWING										Type of operation	AFTER CULTIVATION OPERATIONS									
				Men						Women					Men						Women			
				Family			Hired			Family			Hiared		Family			Hired			Family			Hired	
				Number	Days	Amount	Number	Days	Amount	Number	Days	Amount	Number	Days	Amount	Number	Days	Amount	Number	Days	Amount	Number	Days	Amount	Number	Days	Amount
I. SEASONAL																										
1.																										
2.																										
3.																										
4.																										
5.																										
6.																										
7.																										
II. ANNUAL																										
1.																										
2.																										
3.																										
4.																										
5.																										
6.																										
7.																										
III. PERENNIAL																										
1.																										
2.																										
3.																										
4.																										
5.																										

Sl. No.	Name of crop	Name of chemical	Qty.	Value	PLANT PROTECTION				IRRIGATION			
					Labour for application							
					Men		Women		Men		Women	
					Family	Hired	Family	Hired	Family	Hired	Family	Hired
I.	SEASONAL											
1.												
2.												
3.												
4.												
5.												
6.												
7.												
II.	ANNUAL											
1.												
2.												
3.												
4.												
5.												
6.												
7.												
III.	PERENNIAL											
1.												
2.												
3.												
4.												
5												

FERTILIZERS AND MANNURES AND THEIR APPLICATION:

Sl. No.	Name of crop.	Fertilizers			Manures			Application											
								Men						Women					
								Family			Hired			Family			Hired		
		Name	Qty.	Value	Name	Qty.	Value	Number	Days	Amount	Number	Days	Amount	Number	Days	Amount	Number	Days	Amount
I.	SEASONAL																		
1.																			
2.																			
3.																			
4.																			
5.																			
6.																			
7.																			
II.	ANNUAL																		
1.																			
2.																			
3.																			
4.																			
5.																			
6.																			
7.																			
III.	PERENNIAL																		
1.																			
2.																			
3.																			
4.																			
5.																			
6.																			

Sl. No.	Name of crop	HARVESTING				KIND PAYMENTS		YIELD			
		Men		Women		Qty. (kg)	Value (Rs)	Main Product		By products	
		Family	Hired	Family	Hired			Quantity (in kgs)	Value (Rs)	Quantity (in kgs)	Value (in Rs)
I.	SEASONAL										
1.											
2.											
3.											
4.											
5.											
6.											
7.											
II.	ANNUAL										
1.											
2.											
3.											
4.											
5.											
6.											
7.											
III.	PERENNIAL										
1.											
2											
3.											
4.											
5.											

. CONSTRAINTS IN PRODUCTION

Sl. No.	Description	Rating in a scale according to magnitude of the problem
1.	Availability of fertilisers	
2.	High price of fertilizers	
3.	Lack of capital	
4.	Non-availability of credit	
5.	Lack of irrigation facilities	
6.	Non-availability of high yielding seeds	
7.	Lack of marketing facilities	
8.	Lack of communication facilities	
9.	Low price of farm produce	
10.	Small size of farms	
11.	Non-availability of labour	

Appendix IIa

Input-wise cost of cultivation per hectare of local varieties of Paddy - Viruppu - Size group-wise

(in Rs.)

Items	S_1	S_2	S_3	S_4	S_5	Average
1. Hired human labour	795.28 (22.08)	663.96 (17.55)	882.51 (23.75)	774.12 (21.89)	1055.19 (26.78)	842.98 (22.62)
2. Bullock labour	325.00 (9.02)	426.99 (11.29)	314.29 (8.46)	391.81 (11.08)	412.07 (10.46)	371.73 (9.98)
3. Seeds	270.00 (7.49)	388.65 (10.27)	347.85 (9.36)	349.37 (9.88)	337.5 (8.56)	344.76 (9.25)
4. Plant protection	205.19 (5.70)	131.17 (3.47)	154.75 (4.16)	251.1 (7.10)	64.9 (1.65)	156.06 (4.19)
5. Irrigation	Nil	Nil	Nil	Nil	Nil	Nil
6. Manures	312.8 (8.68)	285.56 (7.54)	224.28 (6.06)	223.62 (6.32)	262.5 (6.66)	254.55 (6.83)
7. Fertilizers	250.52 (6.96)	246.95 (6.53)	195.81 (5.27)	213.48 (6.04)	399.77 (10.14)	256.37 (6.88)
8. Depreciation	17.58 (0.49)	12.19 (0.32)	13.63 (0.36)	21.07 (0.60)	9.95 (0.25)	14.48 (0.39)
9. Interest on working capital	87.05 (2.41)	86.22 (2.28)	85.32 (2.30)	88.98 (2.527)	101.68 (2.58)	89.50 (2.40)
10. Cost A	2263.42 (62.84)	2241.69 (59.25)	2218.44 (59.70)	2313.55 (65.42)	2643.56 (67.09)	2330.43 (62.54)
10. Rental value	908.32 (25.25)	1033.78 (27.32)	1177.22 (31.68)	901.83 (25.50)	1065.71 (27.04)	1043.00 (27.99)
11. Interest on Fixed Capital	31.56 (0.88)	25.67 (0.68)	25.87 (0.70)	63.09 (1.78)	20.26 (0.51)	32.33 (0.87)
Cost B	3204.30 (88.96)	3301.14 (87.25)	3421.53 (92.03)	3278.47 (92.71)	3729.53 (94.64)	3405.76 (91.40)
12. Family labour charges	397.64 (11.04)	482.24 (12.75)	294.17 (7.92)	258.04 (7.29)	211.04 (5.36)	320.40 (8.60)
Cost C	3601.94 (100.00)	3783.38 (100.00)	3715.70 (100.00)	3536.51 (100.00)	3940.57 (100.00)	3726.16 (100.00)

(Figures in parentheses represent percentages to total)

Appendix IIb

Input-wise cost of cultivation per hectare of local varieties of Paddy in Viruppu - Income group-wise (in Rs)

Items	I_1	I_2	I_3	I_4	I_5	Average
1. Hired human labour	878.83 (23.52)	924.61 (24.94)	879.58 (22.82)	788.16 (22.73)	757.29 (19.33)	842.98 (22.62)
2. Bullock labour	336.18 (9.00)	376.40 (10.15)	429.08 (11.13)	295.08 (8.51)	410.62 (10.48)	371.73 (9.98)
3. Seeds	306.49 (8.20)	329.69 (8.89)	350.17 (9.08)	334.4 (9.64)	380.42 (9.71)	344.76 (9.25)
4. Plant protection	192.31 (5.15)	173.79 (4.69)	189.98 (4.93)	95.34 (2.75)	161.45 (4.19)	156.06 (4@.19)
5. Irrigation	Nil	Nil	Nil	Nil	Nil	Nil
6. Manures	318.5 (8.53)	245.12 (6.61)	210.23 (5.45)	325.82 (9.40)	210.84 (5.38)	254.55 (6.83)
7. Fertilizers	281.36 (7.53)	190.19 (5.13)	239.18 (6.20)	236.06 (6.81)	368.1 (9.40)	256.37 (6.88)
8. Depreciation	19.77 (0.53)	15.03 (0.41)	16.83 (0.44)	11.70 (0.34)	13.61 (0.35)	14.48 (0.39)
9. Interest on working capital	77.38 (2.07)	90.19 (2.43)	92.37 (2.40)	83.46 (2.41)	95.93 (2.45)	89.50 (2.40)
Cost A	2410.82 (64.53)	2345.02 (63.24)	2401.70 (62.30)	2170.02 (62.58)	2398.26 (61.23)	2330.43 (62.54)
10. Rental value	801.54 (21.45)	1025.49 (27.66)	1014.73 (26.32)	936.80 (27.02)	1252.51 (31.98)	1043.00 (27.99)
11. Interest on fixed capital	33.59 (0.90)	2..37 (0.79)	33.98 (0.88)	38.88 (1.12)	27.87 (0.71)	32.33 (0.87)
Cost B	3245.95 (86.88)	3399.88 (91.69)	3450.41 (89.55)	3145.70 (90.72(	3678.64 (93.92)	3405.76 (91.40)
12. Family labour charge	489.97 (13.12)	308.15 (8.31)	399.08 (10.45)	32.8 (9.23)	238.27 (6.08)	320.40 (8.6@)
Cost C	3735.92 (100.00)	3708.03 (100.00)	3855.26 (100.00)	3467.50 (100.00)	3916.91 (100.00)	3726.16 (100.00)

(Figures in parentheses represent percentages to total)

Appendix IIc

Operation-wise cost of cultivation per hectare of local varieties of Paddy in Viruppu - Size group-wise (in Rs)

Items	S_1	S_2	S_3	S_4	S_5	Average
1. Preparatory cultivation	501.94 (13.94)	604.80 (15.99)	481.75 (12.97)	531.35 (15.02)	547.73 (13.90)	530.81 (14.25)
2. Seeds and sowing	348.62 (9.68)	471.26 (12.46)	444.14 (11.95)	407.11 (11.51)	387.50 (9.83)	419.85 (11.27)
3. Weeding	200.60 (5.57)	176.01 (4.65)	203.34 (5.47)	137.61 (3.89)	114.29 (2.90)	167.68 (4.50)
4. Plant protection	316.22 (8.78)	234.91 (6.21)	227.75 (6.13)	352.06 (9.96)	135.71 (3.44)	244.62 (6.56)
5. Irrigation	Nil	Nil	Nil	Nil	Nil	Nil
6. Manuring	447.00 (12.41)	431.47 (11.40)	319.98 (8.61)	278.1 (7.86)	385.71 (9.79)	362.72 (9.73)
7. Fertiliser application	300.48 (8.34)	261.54 (6.91)	215.31 (5.79)	229.36 (6.49)	449.97 (11.42)	284.00 (7.62)
8. Harvesting	441.57 (12.26)	445.53 (11.78)	521.39 (14.03)	525.95 (14.87)	721.39 (18.31)	537.40 (14.42)
9. Depreciation	17.58 (0.49)	12.19 (0.32)	13.63 (0.37)	21.07 (0.60)	9. 95 (0.25)	14.48 (0.39)
10. Interest on working capital	87.05 (2.42)	86.22 (2.28)	85.32 (2.30)	88.98 (2.52)	101.68 (2.58)	89.50 (2.40)
11. Rental value	908.32 (25.25)	1033.78 (27.32)	1177.22 (31.68)	901.83 (25.50)	1065.71 (27.04)	1043.00 (27.99)
12. Interest on fixed capital	31.56 (0.88)	25.67 (0.68)	25.87 (0.70)	63.09 (1.78)	20.26 (0.51)	32.33 (0.87)
Cost C	3601.94 (100.00)	3783.38 (100.00)	3715.7 (100.00)	3536.51 (100.00)	3940.57 (100.00)	3726.16 (100.00)

(Figures in parentheses represent percentages to total)

Appendix IId

Operation-wise cost of cultivation per hectare of local varieties of Paddy in Viruppu - Income group-wise (in Rs)

Iteem	I_1	I_2	I_3	I_4	I_5	Average
1. Preparatory cultivation	716.46 (19.18)	530.9 (14.32)	591.00 (15.83)	463.50 (13.37)	509.41 (13.01)	530.58 (14.25)
2. Seeds and sowing	384.62 (10.30)	369.04 (9.95)	438.68 (11.38)	412.53 (11.90)	488.7 (12.48)	419.85 (11.27)
3. Weeding	209.22 (5.60)	210.53 (50.68)	211.57 (5.49)	148.31 (4.28)	90.36 (2.31)	167.68 (4.50)
4. Plant protection	307.59 (8.23)	303.9 (8.20)	335.21 (8.69)	171.61 (4.35)	161.45 (4.12)	244.62 (6.56)
5. Irrigation	Nil	Nil	Nil	Nil	Nil	Nil
6. Manuring	455.62 (12.20)	367.1 (9.90)	297.71 (7.72)	440.38 (12.70)	301.86 (7.71)	362.72 (9.73)
7. Fertilizer application	297.17 (7.95)	209.1 (5.64)	280.65 (7.28)	257.26 (7.42)	406.63 (10.38)	284.00 (7.62)
8. Harvesting	432.96 (11.59)	557.38 (15.03)	542.53 (14.07)	502.73 (14.50)	568.58 (14.52)	537.40 (14.42)
9. Depreciation	19.77 (0.53)	15.03 (0.41)	16.83 (0.44)	11.70 (0.34)	13.61 (0.35)	14.48 (0.39)
10. Interest on working capital	77.38 (2.07)	90.19 (2.43)	92.37 (2.40)	83.46 (2.41)	95.93 (2.45)	89.50 (2.40)
11. Rental value	80.54 (21.45)	1025.49 (27.66)	1014.73 (26.32)	936.8 (27.02)	1252.51 (31.98)	1043.00 (27.99)
12. Interest on fixed capital	33.59 (0.90)	29.37 (0.79)	33.98 (0.88)	38.98 (1.12)	27.87 (0.71)	32.33 (0.87)
Cost C	3735.92 (100.00)	3708.03 (100.00)	3855.26 (100.00)	3467.5 (100.00)	3916.91 (100.00)	3726.16 (100.00)

(Figures in parantheses represent percentages to total)

Appendix iii a

Input-wise cost of cultivation per hectare of local varieties of Paddy in Mundakan - Size groupwise

(in(Rs.)

Items	S_1	S_2	S_3	S_4	S_5	Average
1. Hired human labour	1093.91 (22.85)	1175.04 (26.72)	1240.29 (26.89)	1024.62 (22.50)	1264.74 (26.42)	1186.98 (25.57)
2. Bullock labour	352.17 (7.36)	321.04 (7.30)	329.94 (7.15)	376.43 (8.27)	350.70 (7.33)	344.66 (7.42)
3. Seeds	560.00 (11.70)	406.53 (9.25)	540.88 (11.73)	607.33 (13.33)	498.03 (10.40)	515.93 (11.11)
4. Plant protection	98.98 (2.07)	122.95 (2.80)	129.32 (2.80)	179.98 (3.95)	179.23 (3.74)	149.06 (3.21)
5. Irrigation	Nil	Nil	Nil	Nil	Nil	Nil
6. Manures	490.36 (10.24)	385.95 (8.78)	291.32 (6.32)	444.34 (9.76)	491.58 (10.27)	417.48 (8.99)
7. Fertilizers	205.62 (4.30)	262.48 (5.97)	294.51 (8.52)	282.5 (6.20)	315.97 (6.60)	275.04 (5.93)
8. Depreciation	17.58 (0.37)	12.19 (0.28)	13.63 (0.30)	21.07 (0.46)	9.95 (0.21)	13.74 (0.30)
9. Interest on working capital	112.74 (2.36)	107.39 (2.44)	112.00 (2.43)	117.45 (2.58)	124.27 (2.60)	116.31 (2.51)
10. Cost A	2931.36 (61.24)	2792.02 (63.49)	2912.09 (63.13)	3053.72 (67.05)	3230.18 (67.50)	3019.20 (65.04)
10. Rental value	1277.09 (26.68)	1188.37 (27.03)	1314.65 (28.50)	1192.69 (26.19)	1285.92 (26.87)	1259.58 (27.14)
11. Interest on fixed capital	31.56 (0.66)	25.67 (0.58)	25.87 (0.56)	63.09 (1.39)	20.26 (0.42)	30.34 (0.65)
Cost B	4240.01 (88.57)	4006.06 (91.10)	4252.61 (92.19)	4309.50 (94.62)	4540.16 (94.85)	4309.12 (92.84)
12. Family labour charges	546.95 (11.43)	391.17 (8.90)	360.12 (7.81)	244.93 (5.38)	252.29 (5.15)	332.39 (7.16)
Cost C	4786.96 (100.00)	4397.23 (100.00)	4612.73 (100.00)	4554.43 (100.00)	4786.47 (100.00)	4641.51 (100.00)

(Figures in parentheses represent percentages to total)

Appendix III b

Appendixxii Input-wise cost of cultivation per hecatre of local varieties of Paddy in Mundakan + Income group-wise (in Rs)

Items	I_1	I_2	I_3	I_4	I_5	Average
1. Hired human labour	272.46 (5.05)	829.08 (17.92)	1213.38 (26.42)	1269.11 (29.44)	1425.51 (30.00)	1186.98 (25.57)
2. Bullock labour	444.61 (8.25)	287.51 (6.22)	387.61 (8.44)	254.98 (5.91)	371.10 (7.81)	344.66 (7.42)
3. Seeds	477.41 (8.85)	572.93 (12.39)	588.61 (12.77)	464.34 (10.77)	465.56 (9.80)	515.93 (11.11)
4. Plant protection	127.55 (2.37)	119.95 (2.59)	166.57 (3.63)	71.32 (1.65)	189.65 (3.99)	149.06 (3.21)
5. Irrigation	Nil	Nil	Nil	Nil	Nil	Nil
6. Manure	461.22 (8.55)	495.96 (10.72)	308.36 (6.71)	594.6 (13.79)	368.18 (7.75)	417.48 (8.99)
7. Fertilisers	429.96 (7.97)	272.01 (5.88)	262.2 (5.71)	230.36 (5.35)	285.89 (6.02)	275.04 (5.93)
8. Depreciation	19.77 (0.37)	15.03 (0.32)	16.83 (0.37)	15.01 (0.35)	9.58 (0.20)	13.74 (0.30)
9. Interest on working capital	93.32 (1.73)	103.70 (2.24)	117.74 (2.56)	116.01 (2.69)	124.62 (2.62)	116.31 (2.51)
Cost A	2326.3 (45.00)	2696.17 (58.28)	3061.30 (66.65)	3066.23 (69.96)	3240.07 (68.19)	3019.20 (65.04)
10. Rental value	1397.62 (29.63)	1257.34 (27.18)	1194.27 (26.00)	1131.47 (26.24)	1321.88 (27.82)	1259.58 (27.14)
11. Interest on fixed capital	33.59 (00.62)	29.37 (0.64)	33.98 (0.74)	22.78 (0.53)	31.33 (0.66)	30.34 (0.65)
Cost B	3957.51 (76.25)	3982.88 (86.10)	4289.55 (93.39)	4170.48 (96.73)	4593.28 (96.67)	4309.12 (92.84)
12. Family labour charges	1334.51 (24.75)	643.05 (13.90)	303.35 (6.61)	141.01 (3.27)	158.39 (3.33)	332.39 (7.16)
Cost C	5292.02 (100.00)	4625.93 (100.00)	4592.90 (100.00)	4311.49 (100.00)	4751.67 (100.00)	4641.51 (100.00)

(Figures in paranthesis represent percentages to total)

Appendix III c

Operation-wise cost of cultivation per hectare of local varieties of Paddy in Mundakan - Size group-wise (in Rs)

Items	S_1	S_2	S_3	S_4	S_5	Average
1. Preparatory cultivation	460.03 (7.61)	414.25 (9.42)	395.95 (8.58)	458.9 (10.08)	453.77 (9.48)	434.40 (9.36)
2. Seeds and sowing	960.23 (20.06)	829.47 (18.86)	891.94 (19.34)	887.58 (19.49)	862.12 (18.01)	877.97 (18.92)
3. Weeding	137.29 (2.87)	169.84 (3.86)	185.55 (4.03)	76.82 (1.69)	199.86 (4.18)	165.33 (3.56)
4. Plant protection	185.82 (3.88)	214.09 (4.87)	216.38 (4.69)	291.04 (6.39)	269.17 (5.62)	241.43 (5.20)
5. Irrigation	Nil	Nil	Nil	Nil	Nil	Nil
6. Manuring	662.07 (13.83)	544.03 (12.37)	430.86 (9.34)	479.32 (10.52)	517.99 (10.82)	510.78 (11.00)
7. Fertilizer application	221.00 (4.62)	310.75 (7.07)	288.33 (6.25)	311.9 (6.85)	335.38 (7.01)	303.19 (6.53)
8. Harvesting	721.50 (15.07)	582.68 (13.25)	737.57 (15.99)	651.87 (14.31)	714.75 (14.93)	688.48 (14.83)
9. Depreciation	17.58 (0.37)	12. 19 (0.28)	13.63 (0.30)	21.07 (0.46)	9.95 (0.21)	13.74 (0.30)
10. Interest on working capital	112.74 (2.36)	107.39 (2.44)	112.00 (2.43)	117.45 (2.58)	124.27 (2.60)	116.31 (2.51)
11. Rental value	1277.09 (26.68)	1188.37 (27.03)	1314.65 (28.50)	1192.69 (26.19)	1295;92 (26.87)	1259.58 (27.14)
12. Interest on fixed capital	31.56 (0.66)	25.67 (0.58)	25.87 (0.56)	63.09 (1.39)	20.26 (0.42)	30.30 (0.65)
Cost C	4786.96 (100.00)	4397.23 (100.00)	4612.73 (100.00)	4554.43 (100.00)	4786.47 (100.00)	4641.51 (100.00)

Figures in parentheses represent percentages to total)

Appendix III d

Operation-wise cost of cultivation per hectare of local varieties of Paddy in Mundakan - Income groupwise -

(in Rs)

Items	I_1	I_2	I_3	I_4	I_5	Average
1. Preparatory cultivation	563.27 (10.64)	387.24 (8.37)	434.57 (9.46)	370.79 (8.60)	470.05 (9.89)	434.40 (9.36)
2. Seeds and sowing	794.9 (15.02)	950.99 (20.56)	912.67 (19.87)	752.21 (17.45)	886.15 (18.65)	877.37 (18.92)
3. Weeding	182.21 (3.44)	177.08 (3.83)	149.85 (3.26)	147.05 (3.41)	176.63 (3.72)	165.33 (3.56)
4. Plant protection	271.77 (5.14)	193.83 (4.19)	261.52 (5.69)	172.79 (4.01)	278.48 (5.86)	241.43 (5.20)
5. Irrigation	Nil	Nil	Nil	Nil	Nil	Nil
6. Manuring	623.61 (11.78)	580.08 (12.54)	436.25 (9.50)	700.73 (16.25)	427.54 (9.00)	510.78 (11.00)
7. Fertilizer application	498.4 (9.42)	290.96 (6.29)	286.9 (6.25)	286.61 (6.65)	302.98 (6.38)	303.19 (6.53)
8. Harvesting	613.56 (11.59)	640.31 (13.84)	748.32 (16.29)	596.04 (13.82)	722.45 (15.21)	688.48 (14.83)
9. Depreciation	19. 77 (0.37)	15.03 (0.32)	16.83 (0.37)	15.01 (0.35)	9.58 (0.20)	13.74 (0.30)
10. Interest on working capital.	93.32 (1.76)	103.70 (2.24)	117.74 (2.56)	116.01 (2.69)	124.62 (2.62)	116.31 (2.51)
11. Rental value	1597.62 (30.19)	1257.34 (27.18)	1194.27 (26.00)	1131.47 (26.24)	1321.88 (27.82)	1259.58 (27.14)
12. Interest on fixed capital	33.59 (0.63)	29.37 (0.63)	33.98 (0.74)	22.78 (0.53)	31.33 (0.66)	30.30 (0.65)
Cost C	5292.02 (100.00)	4625.93 (100.00)	4592.9 (100.00)	4311.49 (100.00)	4751.23 (100.00)	4641.51 (100.00)

(Figures in paranthoses represent percentages to total)

Appendix IV a

Input-wise cost of cultivation per hectare of high yielding varieties of Paddy in Punja - Size groupwise - (in Rs.)

Items	S_1	S_2	S_3	S_4	S_5	Average
1. Hired human labour	1124.87 (20.02)	1217.9 (23.48)	1184.76 (24.99)	1374.00 (28.94)	1373.50 (29.37)	1307.75 (26.86)
2. Bullock labour	431.23 (7.68)	350.00 (6.75)	387.5 (8.17)	299.19 (6.30	433.97 (9.2)	407.33 (8.37)
3. Seeds	368.94 (6.57)	338.75 (6.53)	391.66 (8.26)	331.96 (6.99)	306.26 (6.55)	329.66 (6.77)
4. Plant protection	365.37 (6.50)	527.50 (10.17)	165.00 (3.48)	226.17 (4.76)	190.89 (4.08)	241.87 (4.97)
5. Irrigation	447.28 (7.96)	392.72 (7.57)	403.02 (8.50)	334.40 (7.04)	391.14 (8.36)	394.39 (8.10)
6. Manures	141.63 (2.52)	100.00 (1.93)	91.66 (1.93)	-	54.2 (1.16)	68.14 (1.40)
7. Fertilizers	559.67 (9.96)	459.44 (8.86)	462.22 (9.75)	325.71 (6.86)	405.59 (8.67)	429.17 (8.81)
8. Depreciation	17.58 (0.31)	12.19 (0.24)	13.63 (0.29)	21.07 (0.44)	9.95 (0.21)	12.93 (0.26)
9. Interest on working capital	137.56 (2.45)	135.94 (2.62)	123.98 (2.61)	116.50 (2.45)	126.76 (2.71)	127.60 (2.62)
10. Cost A	3594.13 (63.97)	3534.44 (68.15(	3223.43 (67.98)	3029.00 (63.80)	3295.82 (70.48)	3318.84 (68.16)
10. Rental value	1130.12 (20.12)	1017.5 (19.62)	1097.17 (23.14)	1197.63 (25.23)	1082.83 (23.15)	1100.39 (22.60)
11. Interest on fixed capital	31.56 (0.56)	25.67 (0.49)	25.87 (0.55)	63.09 (1.33)	20.26 (0.43)	27.91 (0.57)
Cost B	4755.81 (84.65)	4577.61 (88.26)	4346.47 (91.68)	4289.72 (90.35)	4398.91 (94.06)	4447.14 (91.33)
12. Family labour charges	862.43 (15.35)	608.95 (11.74)	394.92 (8.33)	458.00 (9.65)	277.7 (5.94)	422.19 (8.67)
Cost C	5618.24 (100.00)	5186.56 (100.00)	4741.39 (100.00)	4747.72 (100.00)	4676.61 (100.00)	4869.33 (100.00)

(Figures in parentheses represent percentages to total)

Appendix IV b

Input-wise cost of cultivation per hectare of high yielding varieties of Paddy in Punja - Income groupwise (in Rs)

Items	I_1	I_2	I_3	I_4	I_5	Average
1. Hired human labour	779.68 (15.66)	1005.33 (21.05)	1009.28 (22.40)	1733.35 (31.25)	1658.6 (33.56)	1307.75 (26.86)
2. Bullock labour	463.08 (9.30)	477.64 (10.00)	430.14 (9.55)	368.00 (6.63)	350.51 (7.09)	407.33 (8.37)
3. Seeds	314.12 (6.31)	376.84 (7.89)	315.80 (7.01)	349.60 (6.30)	306.07 (6.19)	329.66 (6.77)
4. Plant Protection	390.54 (7.85)	268.39 (5.62)	205.88 (4.57)	309.44 (5.58)	201.56 (4.08)	241.87 (4.97)
5. Irrigation	292.87 (5.88)	310.08 (6.49)	351.47 (7.80)	506.50 (9.13)	459.74 (9.30)	394.39 (8.10)
6. Manures	87.44 (1.76)	96.20 (2.01)	84.55 (1.88)	60.00 (1.08)	39.14 (0.79)	68.14 (1.40)
7. Fertilizers	477.23 (9.59)	376.99 (7.89)	548.69 (12.18)	412.30 (7.43)	380.72 (7.70)	429.17 (8.81)
8. Depreciation	19.77 (0.40)	15.03 (0.31)	14.77 (0.33)	11.70 (0.21)	9 .58 (0.19)	12.93 (0.26)
9. Interest on working capital	112.99 (2.77)	117.06 (2.45)	118.42 (2.63)	150.04 (2.70)	136.24 (2.76)	127.60 (2.62)
Cost A	2937.72 (59.02)	3043.51 (63.73)	3079.00 (68.34)	3900.93 (70.33)	3542.16 (71.67)	3318.84 (68.16)
10. Rental value	1022.95 (20.55)	1068.37 (22.37)	901.67 (20.01)	1334.20 (24.05)	1192.29 (24.12)	1100.39 (22.60)
11. Interest on fixed capital	33.59 (0.67)	29.37 (0.62)	33.98 (0.75)	22.78 (0.41)	23.61 (0.48)	27.91 (0.57)
Cost B	3994.26 (80.25)	4141.25 (86.72)	4014.65 (89.11)	5257.91 (94.79)	4758.06 (96.27)	4447.14 (91.33)
12. Family labour charges	983.17 (19.75)	634.26 (13.28)	490.85 (10.89)	288.89 (5.21)	184.29 (3.73)	422.19 (8.67)
Cost C	4977.43 (100.00)	4775.51 (100.00)	4505.50 (100.00)	5546.80 (100.00)	4942.35 (100.00)	4869.33 (100.00)

(Figures in parantheses represent percentages to total)

Appendix IV c

Operationwise cost of cultivation per hectare of high yielding varieties of Paddy in Punja - Size groupwise -

(in Rs.)

Items	S_1	S_2	S_3	S_4	S_5	Average
1. Preparatery cultivation	615.56 (10.96)	484.38 (9.34)	545.83 (11.51)	528.63 (11.13)	538.17 (11.51)	545.91 (11.21)
2. Seeds and sowing	545.1 (9.70)	432.50 (8.34)	637.50 (13.45)	417.50 (8.79)	368.09 (7.87)	432.78 (8.89)
3. Weeding	434.05 (7.73)	687.50 (13.26)	275.04 (5.80)	238.62 (5.03)	576.34 (12.32)	492.27 (10.11)
4. Plant protection	610.85 (10.87)	670.00 (12.92)	243.75 (5.14)	281.57 (5.93)	278.29 (5.95)	352.42 (7.24)
5. Irrigation	447.28 (7.96)	392.72 (7.57)	403.02 (8.50)	334.40 (7.04)	391.14 (8.36)	394.39 (8.10)
6. Manuring	278.04 (4.95)	132.81 (2.56)	145.83 (3.08)	-	74.14 (1.59)	107.86 (2.22)
7. Fertilizer application	633.58 (11.28)	514.16 (9.91)	501.86 (10.58)	706.57 (14.88)	490.89 (10.50)	540.40 (11.10)
8. Harvesting	737.51 (13.13)	681.19 (13.13)	727.91 (15.35)	842.14 (17.74)	718.97 (15.37)	734.47 (15.08)
9. Depreciation	17.58 (0.31)	12.19 (0.24)	13.63 (0.29)	21.07 (0.44)	9.95 (0.21)	12.93 (0.26)
10. Interest on working capital	137.56 (2.45)	135.94 (2.62)	123.98 (2.61)	116.50 (2.45)	126.75 (2.71)	127.60 (2.62)
11. Rental value	1130.12 (20.12)	1017.50 (19.62)	1097.17 (23.14)	1197.63 (25.23)	1082.83 (23.15)	1100.39 (22.60)
12. Interest on fixed capital	31.56 (0.56)	25.67 (0.49)	25.87 (0.55)	63.09 (1.33)	20.26 (0.43)	27.91 (0.57)
Cost C	5618.24 (100.00)	5186.56 (100.00)	4741.39 (100.00)	4747.72 (100.00)	4676.61 (100.00)	4869.33 (100.00)

(Figures in parantheses represent percentages to total)

Appendix IV d

Operation wise cost of cultivation per hectare of high yielding varieties of Paddy in Punja - Income groupwise -

(in Rs)

Items	I_1	I_2	I_3	I_4	I_5	Average
1. Preparatory cultivation	654.15 (13.14)	599.47 (12.55)	687.5 (15.26)	522.00 (9.41)	410.05 (8.30)	545.91 (11.21)
2. Seeds and sowing	408.03 (8.20)	591.78 (12.39)	388.42 (8.62)	401.60 (7.24)	375.58 (7.60)	432.78 (8.89)
3. Weeding	537.56 (10.30)	478.60 (10.02)	277.57 (6.16)	724.00 (13.05)	561.92 (11.37)	492.27 (10.11)
4. Plant protection	616.58 (12.39)	389.82 (8.16)	307.54 (6.83)	371.44 (6.70)	304.48 (6.16)	352.42 (7.24)
5. Irrigation	292.87 (5.88)	310.03 (6.49)	351.47 (7.80)	506.50 (9.13)	459.79 (9.30)	394.39 (8.10)
6. Manuring	142.49 (2.86)	122.75 (2.57)	162.68 (3.61)	90.00 (1.62)	62.75 (1.27)	107.86 (2.22)
7. Fertilizer application	530.62 (10.66)	426.86 (8.94)	597.9 (13.27)	456.30 (8.23)	600.86 (12.16)	540.40 (11.10)
8. Harvesting	605.83 (12.17)	626.37 (13.12)	663.58 (14.73)	956.24 (17.24)	805.25 (16.29)	734.47 (15.08)
9. Depreciation	19.77 (0.40)	15.03 (0.31)	14.77 (0.33)	11.70 (0.21)	9.58 (0.19)	12.93 (0.26)
10. Interest on working capital	112.99 (2.27)	117.06 (2.45)	118.42 (2.63)	150.04 (2.70)	136.24 (2.76)	127.60 (2.62)
11. Rental value	1022.95 (20.55)	1068.37 (22.37)	901.67 (20.01)	1334.20 (24.05)	1192.29 (24.12)	1100.39 (22.60)
12. Interest on fixed capital	33.59 (0.67)	29.37 (0.62)	33.98 (0.75)	22.78 (0.41)	23.61 (0.48)	27.91 (0.57)
Cost C	4977.43 (100.00)	4775.51 (100.00)	4505.50 (100.00)	5546.80 (100.00)	4942.35 (100.00)	4869.33 (100.00)

(Figures in parantheses represent percentages to total)

Appendix V a

Input wise cost of cultivation per hectare of local varieties of Paddy in Punja - Size group-wise (in Rs)

Items	S_1	S_2	S_3	S_4	S_5	Average
1. Hired human labour	904.58 (17.77)	1407.23 (26.70)	1333.95 (28.45)	553.08 (17.00)	1206.90 (28.17)	1259.04 (27.22)
2. Bullock labour	482.03 (9.47)	428.74 (8.14)	438.28 (9.35)	326.09 (10.02)	375.31 (8.76)	404.79 (8.75)
3. Seeds	448.53 (8.81)	366.00 (6.95)	376.56 (8.03)	434.78 (13.36)	397.65 (9.28)	387.88 (8.39)
4. Plant protection	285.95 (5.62)	165.96 (3.15)	70.50 (1.50)	54.35 (1.67)	84.42 (1.97)	108.87 (2.35)
5. Irrigation	274.35 (5.39)	461.21 (8.75)	260.53 (5.56)	203.26 (6.25)	361.20 (8.43)	359.20 (7.77)
6. Manures	318.63 (6.26)	103.97 (1.97)	127.79 (2.73)	217.39 (6.68)	144.80 (3.38)	138.80 (3.00)
7. Fertilizers	512.69 (10.07)	397.92 (7.55)	266.24 (5.68)	190.22 (5.85)	338.32 (7.90)	341.50 (7.38)
8. Depreciation	17.58 (0.35)	12.19 (0.23)	13.63 (0.29)	21.07 (0.65)	9. 95 (0.23)	11.80 (0.26)
9. Interest on working capital	141.77 (2.78)	133.33 (2.53)	115.50 (2.46)	80.00 (2.46)	117.38 (2.74)	121.20 (2.62)
Cost A	3386.11 (66.52)	3476.95 (65.98)	3002.98 (64.05)	2080.25 (63.95)	3035.93 (70.85)	3133.15 (67.74)
10. Rental value	1271.53 (24.98)	1298.14 (24.63)	1325.87 (28.28)	833.26 (25.61)	988.17 (23.06)	1144.19 (24.74)
11. Interest on fixed capital	31.56 (0.62)	25.67 (0.49)	25.87 (0.55)	63.09 (1.94)	20.26 (0.47)	24.15 (0.52)
Cost B	4689.2 (92.11)	4800.76 (91.10)	4354.72 (92.89)	2976.60 (91.50)	4044.36 (94.38)	4301.49 (93.00)
12. Family labour charges	401.52 (7.89)	469.08 (8.90)	333.49 (7.11)	276.54 (8.50)	241.38 (5.62)	324.07 (7.00)
Cost C	5090.72 (100.00)	5269.84 (100.00)	4688.21 (100.00)	3253.14 (100.00)	4285.10 (100.00)	4625.50 (100.00)

(Figures in parantheses represent percentages to total)

Appendix V b

Input-wise cost of cultivation per hectare of local varieties of Paddy in Punja - Income group-wise

(in Rs)

Items	I_1	I_2	I_3	I_4	I_5	Average
1. Hired human labour	666.84 (14.34)	1345.19 (25.61)	952.86 (26.70)	1102.77 (24.70)	1654.74 (32.23)	1259.04 (27.22)
2. Bullock labour	356.58 (7.67)	433.33 (8.25)	273.88 (7.67)	508.26 (11.39)	394.89 (7.69)	404.79 (8.75)
3. Seeds	400.79 (8.62)	406.71 (7.74)	367.04 (10.28)	399.09 (8.94)	381.66 (7.43)	387.88 (8.39)
4. Plant protection	125.39 (2.70)	234.88 (4.47)	33.96 (0.95)	73.43 (1.64)	135.98 (2.65)	108.87 (2.35)
5. Irrigation	404.55 (8.70)	395.05 (7.52)	204.87 (5.74)	342.23 (7.67)	435.94 (8.49)	359.20 (7.77)
6. Manures	78.37 (1.69)	63.88 (1.22)	113.14 (3.17)	154.06 (3.45)	176.74 (3.44)	138.80 (3.00)
7. Fertilizers	223.28 (4.80)	426.76 (8.12)	187.75 (5.26)	378.37 (8.48)	395.66 (7.70)	341.50 (7.38)
8. Depreciation	19.77 (0.43)	15.03 (0.29)	11. 03 (0.31)	11.70 (0.26)	9.58 (0.19)	11.80 (0.26)
9. Interest on working capital	90.23 (1.94)	132.55 (2.52)	86.01 (2.41)	118.37 (2.65)	143.41 (2.79)	121.20 (2.62)
Cost A	2365.53 (50.86)	3453.38 (65.74)	2230.54 (62.49)	3088.28 (69.18)	3728.59 (72.63)	3133.08 (67.73)
10. Rental value	1317.90 (28.34)	1324.60 (25.21)	987.2 (27.66)	1079.92 (24.19)	1188.34 (23.13)	1144.19 (24.74)
11. Interest on fixed capital	33.59 (0.72)	29.37 (0.56)	33.98 (0.95)	22.78 (0.51)	16.21 (0.32)	24.15 (0.52)
Cost B	3717.29 (79.98)	4807.35 (91.51)	3251.72 (91.10)	4190.98 (93.88)	4933.15 (96.09)	4301.49 (93.00)
12. Family labour charges	933.42 (20.07)	446.02 (8.49)	317.62 (8.90)	273.04 (6.12)	200.63 (3.91)	324.07 (7.00)
Cost C	4650.71 (100.00)	5253.37 (100.00)	3569.34 (100.00)	4464.02 (100.00)	5133.78 (100.00)	4625.50 (100.00)

(Figures in parantheses represent percentages to total)

Appendix V c

Operation-wise cost of cultivation per hectare of local varieties of Paddy in Punja - Size groupwise - (in Rs)

Items	S_1	S_2	S_3	S_4	S_5	Average
1. Preparatory cultivation	645.42 (12.68)	676.4 (12.84)	599.34 (12.78)	461.95 (14.20)	502.17 (11.72)	571.00 (12.34)
2. Seeds and sowing	503.92 (9.90)	537.03 (10.19)	587.51 (12.53)	358.7 (11.03)	594.43 (13.87)	570.02 (12.32)
3. Weeding	375.82 (7.38)	418.22 (7.94)	376.28 (8.03)	271.74 (8.35)	353.96 (8.26)	373.03 (8.06)
4. Plant protection	386.44 (7.59)	265.72 (5.04)	109.89 (2.34)	103.26 (3.17)	124.43 (2.90)	166.40 (3.60)
5. Irrigation	274.35 (5.39)	461.21 (8.75)	260.53 (5.56)	203.26 (6.25)	361.2 (8.43)	359.11 (7.86)
6. Manuring	334.97 (6.58)	179.67 (3.41)	179.14 (3.82)	326.09 (10.02)	264.85 (6.18)	229.25 (4.96)
7. Fertilizer application	288.01 (5.66)	464.00 (8.80)	295.03 (6.29)	230.98 (7.10)	358.4 (8.36)	366.72 (7.93)
8. Harvesting	819.44 (16.10)	797.86 (15.14)	799.6 (17.06)	299.73 (9.21)	590.54 (13.78)	688.71 (14.89)
9. Depreciation	17. 58 (0.35)	12.19 (0.23)	13.63 (0.29)	21.07 (0.65)	9.95 (0.23)	11.80 (0.26)
10. Interest on working capital	141.77 (2.78)	133.73 (2.54)	115.5 (2.46)	80.00 (2.46)	116.74 (2.72)	121.20 (2.62)
11. Rental value	1271.53 (24.98)	1298.14 (24.63)	1325.87 (28.28)	833.26 (25.61)	988.17 (23.06)	1144.11 (24.73)
12. Interest on Fixed Capital	31. 56 (0.62)	25.67 (0.49)	25.87 (0.55)	63.09 (1.94)	20.26 (0.47)	24.15 (0.53)
Cost C	5090.72 (100.00)	5269.84 (100.00)	4688.21 (100.00)	3253.14 (100.00)	4285.1 (100.00)	4625.50 (100.00)

(Figures in parantheses represent percentages to total)

Appendix V d

Operation-wise cost of cultivation per hectare of local varieties of Paddy in Punja - Income group-wise (in Rs.)

Items	I_1	I_2	I_3	I_4	I_5	Average
1. Preparatory cultivation	474.14 (10.20)	730.55 (13.91)	383.11 (10.73)	648.34 (14.52)	583.59 (11.37)	571.00 (12.34)
2. Seeds and sowing	538.4 (11.58)	539.15 (10.26)	407.62 (11.42)	563.03 (12.61)	680.73 (13.26)	570.02 (12.32)
3. Weeding	313.48 (6.74)	494.44 (9.41)	405.74 (11.37)	273.77 (6.13)	413.25 (8.05)	373.03 (8.06)
4. Plant protection	191.22 (4.11)	356.25 (6.78)	62.68 (1.76)	108.66 (2.43)	205.69 (4.01)	166.40 (3.60)
5. Irrigation	404.55 (8.70)	395.05 (7.52)	204.87 (5.74)	342.23 (7.67)	435.94 (8. 49)	359.11 (7.76)
6. Manuaring	123.43 (2.65)	105.56 (2.01)	176.34 (4.94)	253.60 (5.68)	299.68 (5.84)	229.25 (4.96)
7. Fertilizer application	303.72 (6.53)	441.78 (8.41)	210.39 (5.89)	403.51 (9.04)	413.22 (8.05)	366.72 (7.93)
8. Harvesting	840.28 (18.07)	689.04 (13.12)	600.37 (16.82)	638.11 (14.20)	744.60 (14.50)	688.71 (14.89)
9. Depreciation	19.77 (0.43)	15.03 (0.29)	11.03 (0.31)	11.70 (0.26)	9.58 (0.19)	11.80 (0.26)
10. Interest on working capital	90.23 (1.94)	132.55 (2.52)	86.01 (2.41)	118.37 (2.65)	14341 (2.79)	121.20 (2.62)
11. Rental value	1317.9 (28.34)	1324.6 (25.21)	987.2 (27.66)	1079.92 (24.19)	1188.34 (23.15)	1144.11 (24.73)
12. Interest on fixed capital	33.59 (0.72)	29.37 (0.56)	33.98 (0.95)	22.78 (0.51)	16.21 (0.32)	24.15 (0.53)
Cost C	4650.71 (100.00)	5253.37 (100.00)	3569.34 (100.00)	4464.02 (100.00)	5133.78 (100.00)	4625.50 (100.00)

(Figures in parantheses represent percentages to total)

Appendix VI a

Input-wise cost of maintenance per hectare of coconut - Size group wise -

(in Rs)

Items	S_1	S_2	S_3	S_4	S_5	Average
1. Hired human labour	1064.26 (11.83)	1485.83 (16.06)	1342.32 (14.85)	1551.77 (18.08)	2295.10 (25.31)	1697.31 (18.80)
2. Plant protection chemicals	23.10 (0.26)	31.23 (0.34)	35.79 (0.40)	33.33 (0.39)	63.79 (0.70)	43.01 (0.48)
3. Irrigation	791.44 (8.79)	616.97 (6.67)	520.83 (5.76)	518.75 (6.04)	549.07 (6.06)	585.43 (6.48)
4. Manures	1792.13 (19.91)	1710.45 (18.49)	1711.01 (18.93)	1812.55 (21.12)	1651.45 (18.21)	1712.70 (18.97)
5. Fertilizers	173.03 (1.92)	371.56 (4.02)	594.27 (6.57)	267.73 (3.12)	402.84 (4.44)	388.76 (4.31)
6. Depreciation	138.64 (1.54)	146.18 (1.58)	123.27 (1.36)	142.25 (1.66)	69.98 (0.77)	112.56 (1.25)
7. Interest on working capital	477.91 (5.31)	523.47 (5.66)	519.30 (5.74)	519.20 (6.05)	603.87 (6.66)	544.55 (6.03)
8. Cost A	4460.51 (49.56)	4885.69 (52.82)	4846.79 (53.62)	4845.55 (56.45)	5636.10 (62.16)	5084.26 (56.32)
8. Rental Value	2583.86 (28.71)	3048.98 (32.96)	2991.14 (33.09)	2696.83 (31.42)	2845.83 (31.39)	2857.86 (31.66)
9. Interest on Fixed capital	270.68 (3.01)	272.83 (2.95)	240.67 (2.66)	277.73 (3.24)	136.62 (1.51)	217.50 (2.40)
Cost B	7315.05 (81.28)	8207.50 (88.73)	8078.60 (89.37)	7820.11 (91.11)	8618.55 (95.05)	8159.62 (90.38)
10. Family labour charges	1684.48 (18.72)	1042.91 (11.27)	960.58 (10.63)	762.94 (8.89)	448.77 (4.95)	868.19 (9.62)
Total Cost	8999.53 (100.00)	9250.41 (100.00)	9039.18 (100.00)	8583.05 (100.00)	9067.32 (100.00)	9027.81 (100.00)

(Figures in parantheses represent percentages to total)

Appendix VI b

Input-wise cost of maintenance per hectare of coconut - Income groupwise

(in Rs)

Items	I_1	I_2	I_3	I_4	I_5	Average
1. Hired human labour	1012.71	1376.17	1563.08	1693.96	2088.42	1697.31
	(11.38)	(15.35)	(16.90)	(19.13)	(23.11)	(18.80)
2. Plant protection chemicals	29.84	29.03	50.88	23.98	55.00	43.01
	(0.34)	(0.32)	(0.50)	(0.55)	(0.27)	(0.48)
3. Irrigation	749.81	603.92	675.20	586.74	497.88	585.43
	(8.42)	(6.74)	(7.30)	(6.63)	(5.51)	(6.48)
4. Manures	1679.07	1798.06	1644.09	1638.54	1728.67	1712.70
	(18.86)	(20.06)	(17.78)	(18.51)	(19.13)	(18.97)
5. Fertilizers	118.14	448.27	359.05	375.90	413.34	388.76
	(1.33)	(5.00)	(3.88)	(4.25)	(4.61)	(4.31)
6. Depreciation	142.99	129.26	105.46	130.41	97.33	112.50
	(1.61)	(1.44)	(1.44)	(1.47)	(1.08)	(1.25)
7. Interest on working capital	447.91	526.17	527.85	533.94	585,90	544.55
	(5.03)	(5.87)	(5.71)	(6.03)	(6.48)	(6.03)
8. Cost A	4180.47	4910.88	4926.61	4983.47	5466.54	5084.26
	(46.96)	(54.78)	(53.26)	(56129)	(60.52)	(56.32)
8. Rental value	2630.22	2812.74	3034.86	2768.69	2853.76	2857.86
	(29.54)	(31.38)	(32.81)	(31.27)	(31.58)	(31.66)
9. Interest on Fixed capital	279.16	252.37	205.91	254.61	183.01	217.50
	(3.14)	(2.82)	(2.23)	(2.88)	(2.03)	(2.40)
Cost B	7089.85	7975.99	8167.38	8006.77	8503.31	8159.62
	(79.64)	(88.98)	(88.30)	(90.43)	(94.13)	(90.38)
10. Family labour charges	1812.72	988.08	1082.04	846.98	530.70	868.19
	(20.36)	(11.02)	(11.70)	(9.57)	(5.87)	(9.62)
Total Cost	8902.57	8964.07	9248.42	8853.75	9034.01	9027.81
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

(Figures in parantheses represent percentages to total)

Appendix VI c

Operation-wise cost of maintenance per hectare of Coconut - Size groupwise

(in Rs)

Items	S_1	S_2	S_3	S_4	S_5	Average
1. Inter-culture	337.00 (3.74)	314.58 (3.40)	331.46 (3.67)	345.49 (4.03)	281.35 (3.10)	312.86 (3.47)
2. Plant protection	119.77 (1.33)	87.48 (0.95)	114.61 (1.27)	86.27 (1.01)	113.53 (1.25)	106.74 (1.18)
3. Irrigation	1004.73 (11.16)	996.98 (10.78)	921.09 (10.19)	872.86 (10.17)	1013.34 (11.18)	973.75 (10.79)
4. Manuring	2539.50 (28.22)	2299.1 (24.85)	2179.33 (24.11)	2165.88 (25.24)	2078.46 (22.92)	2212.87 (24.51)
5. Fertilizer application	263.71 (2.93)	487.64 (5.27)	701.99 (7.77)	492.79 (5.73)	527.47 (5.82)	515.33 (5.71)
6. Harvesting charges	1263.73 (14.04)	1073.17 (11.60)	917.04 (10.14)	983.75 (11.46)	1396.82 (15.40)	1173.85 (13.00)
7. Depreciation	138.64 (1.54)	146.18 (1.58)	123.27 (1.36)	142.25 (1.66)	69.98 (0.77)	112.50 (1.25)
8. Interest on working capital	477.91 (5.31)	523.47 (5.66)	519.30 (5.74)	519.20 (6.05)	603.87 (6.66)	544.55 (6.03)
10. Interest on Fixed capital	2583.86 (28.71)	3048.98 (32.96)	2991.14 (33.09)	2696.83 (31.42)	2845.83 (31.39)	2857.85 (31.66)
Total Cost	270.68 (3.01)	272.83 (2.95)	240.67 (2.66)	277.73 (3.24)	136.62 (1.51)	217.50 (2.40)
	8999.53 (100.00)	9250.41 (100.00)	9040.09 (100.00)	8583.05 (100.00)	9067.32 (100.00)	9027.81 (100.00)

(Figures in parantheses represent percentages to total)

Appendix VI d

Operation-wise cost of maintenance per hectare of coconut - Income group-wise

(in Rs)

Items	I_1	I_2	I_3	I_4	I_5	Average
1. Interculture	282.95 (3.18)	302.14 (3.37)	311.37 (3.37)	291.22 (3.29)	332.13 (3.67)	312.86 (3.47)
2. Plant protection	126.74 (1.42)	60.97 (0.68)	124.43 (1.35)	50.96 (0.58)	138.94 (1.54)	106.74 (1.18)
3. Irrigation	1275.40 (14.33)	942.95 (10.52)	977.13 (10.57)	915.64 (10.34)	963.00 (10.66)	973.75 (10.79)
4. Manuring	2337.98 (26.26)	2302.91 (25.69)	2106.45 (22.78)	2276.66 (25.71)	2184.20 (24.18)	2212.87 (24.51)
5. Fertilizer application	176.34 (1.98)	480.84 (5.36)	583.12 (6.31)	482.54 (5.45)	560.01 (6.20)	515.83 (5.71)
6. Harvesting charges	1202.88 (13.51)	1153.72 (12.87)	1271.84 (13.75)	1148.90 (12.98)	1135.73 (12.57)	1173.85 (13.00)
7. Depreciation	142.99 (1.61)	129.26 (1.44)	105.46 (1.14)	130.41 (1.47)	97.33 (1.08)	112.50 (1.25)
8. Interest on working capital	447.71 (5.03)	526.17 (5.87)	527.85 (5.71)	533.94 (6.03)	585.90 (6.48)	544.55 (6.03)
9. Rental value	2630.22 (29.54)	2812.74 (31.38)	3034.86 (32.81)	2768.69 (31.27)	2853.76 (31.59)	2857.86 (31.66)
10. Interest on Fixed capital	279.16 (3.14)	252.37 (2.82)	205.91 (2.23)	254.61 (2.88)	183.0 (2.03)	217.50 (2.41)
Total Cost	8902.57 (100.00)	8964.07 (100.00)	9248.42 (100.00)	8853.57 (100.00)	9034.01 (100.00)	9027.81 (100.00)

(Figures in parantheses represent percentages to total)

Appendix VII a

Input-wise cost of maintenance per hectare of areacanut - Size group-wise

(in Rs)

Items	S_1	S_2	S_3	S_4	S_5	Average
1. Hired human labour	721.98 (15.43)	627.59 (12.75)	595.98 (12.75)	543.53 (12.58)	650.09 (14.92)	615.50 (13.45)
2. Irrigation	251.59 (5.38)	212.43 (4.32)	369.45 (7.91)	226.38 (5.24)	260.57 (5.98)	262.56 (5.74)
3. Organic manures	1181.25 (25.25)	1362.35 (27.68)	1200.45 (25.69)	1292.63 (29.91)	1197.29 (27.49)	1258.10 (27.50)
4. Depreciation	138.64 (2.96)	146.18 (2.97)	123.27 (2.64)	142.25 (3.29)	69.98 (1.61)	120.96 (2.64)
5. Interest on working capital	275.22 (5.88)	277.45 (5.64)	274.70 (5.88)	264.57 (6.12)	261.35 (6.00)	270.09 (5.90)
Cost A	2568.67 (54.90)	2626.00 (53.36)	2563.87 (54.86)	2469.36 (57.14)	2439.38 (56.00)	2527.21 (55.23)
6. Rental value	1478.25 (31.60)	1763.47 (35.83)	1571.01 (33.61)	1302.55 (30.14)	1455.04 (33.40)	1520.91 (33.24)
7. Interest on fixed capital	270.68 (5.79)	272.83 (5.54)	240.67 (5.15)	277.73 (6.43)	136.62 (3.14)	233.11 (5.09)
Cost B	4317.60 (92.28)	4662.30 (94.73)	4375.55 (93.62)	4049.64 (93.71)	4030.94 (92.54)	4281.23 (93.56)
8. Family labour charges	360.99 (7.72)	259.21 (5.27)	297.99 (6.38)	271.76 (6.29)	325.04 (7.46)	294.51 (6.44)
Total Cost	4678.59 (100.00)	4921.51 (100.00)	4673.54 (100.00)	4321.4 (100.00)	4355.98 (100.00)	4575.74 (100.00)

(Figures in parantheses represent percentages to total)

Appendix VII b

Input-wise cost of maintenance per hectare of arecanut - Income groupwise

(in Rs)

Items	I_1	I_2	I_3	I_4	I_5	Average
1. Hired human labour	442.06 (9.14)	579.67 (13.86)	653.34 (13.43)	578.83 (10.85)	682.52 (15.41)	615.50 (13.45)
2. Irrigation	262.48 (5.43)	207.24 (4.96)	282.10 (5.80)	353.14 (6.62)	268.44 (6.06)	262.56 (5.74)
3. Organic manures	1331.11 (27.52)	1180.76 (28.24)	1325.93 (27.25)	1523.58 (28.56	1172.65 (26.48	1258.10 (27.50)
4. Depreciation	142.99 (2.96)	129.26 (3.09)	105.46 (2.17)	130.41 (2.44)	113.21 (2.54)	120.96 (2.64)
5. Interest on working capital	259.04 (5.36)	251.63 (6.02)	284.02 (5.84)	310.32 (5.82)	266.51 (6.02)	270.09 (5.90)
6. Cost A	2437.68 (50.41)	2348.56 (56.16)	2650.85 (54.48)	2896.28 (54.29)	2503.33 (56.53)	2527.21 (55.23)
6. Rental value	1428.03 (29.53)	1291.08 (30.87)	1681.88 (34.57)	1894.35 (35.51)	1522.47 (34.38)	1520.91 (33.24)
7. Interest on fixed capital	279.16 (5.77)	252.37 (6.03)	205.91 (4.23)	254.61 (4.77)	211.49 (4.77)	233.11 (5.09)
Cost B	4144.87 (85.71)	3892.01 (93.07)	4538.64 (93.29)	5045.24 (94.57)	4237.29 (95.68)	4281.23 (93.56)
8. Family labour charges	691.25 (14.29)	289.84 (6.93)	326.67 (6.71)	289.41 (5.43)	191.26 (4.32)	294.51 (6.44)
Total Cost	4836.12 (100.00)	4181.85 (100.00)	4865.31 (100.00)	5334.65 (100.00)	4428.55 (100.00)	4575.74 (100.00)

(Figures in parentheses represent percentages to total)

Appendix VII c

Operation-wise cost of maintenance per hectare of arecanut - Size group-wise

(in Rs)

Itesm	S_1	S_2	S_3	S_4	S_5	Average
1. Inter culture	562.5	575.33	571.38	621.21	639.62	599.94
	(12.02)	(11.69)	(12.23)	(14.38)	(14.68)	(13.11)
2. Irrigation	351.59	287.43	434.45	326.38	340.57	344.23
	(7.51)	(5.84)	(9.30)	(7.55)	(7.82)	(7.52)
3. Manuring	1601.72	1598.96	1457.84	1386.71	1452.80	1486.50
	(34.24)	(32.49)	(31.19)	(32.09)	(33.35)	(32.49)
4. Depreciation	138.64	146.18	123.27	142.25	69.98	120.96
	(2.96)	(2.97)	(2.64)	(3.29)	(1.61)	(2.64)
5. Interest on working capital	275.22	277.45	274.70	264.57	261.35	270.09
	(5.88)	(5.64)	(5.88)	(6.12)	(6.00)	(5.90)
6. Rental value	1478.25	1763.47	1571.01	1302.55	1455.04	1520.91
	(31.60)	(35.83)	(33.62)	(30.14)	(33.40)	(33.24)
7. Interest on fixed capital	270;68	272.83	240.67	277.73	136.62	233.11
	(5.79)	(5.54)	(5.15)	(6.43)	(3.14)	(5.10)
Total dost	4678.6	4921.57	4673.32	4321.40	4355.98	4575.74
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

(Figures in parantheses represent percentages to total)

Appendix VII d

Operation-wise cost of maintenance per hectare of arecanut - Income group-wise

(in Rs)

Items	I_1	I_2	I_3	I_4	I_5	Average
1. Inter-culture	690.09 (14.27)	575.77 (13.77)	613.16 (12.60)	675.00 (12.65)	565.31 (12.77)	599.94 (13.11)
2. Irrigation	401.75 (8.31)	291.37 (6.97)	345.09 (7.09)	461.93 (8.66)	335.23 (7.57)	344.23 (7.52)
3. Manuring	1635.06 (33.81)	1390.37 (33.25)	1629.79 (33.50)	1608.03 (30.14)	1414.33 (31.94)	1486.50 (32.49)
4. Depreciation	142.99 (2.96)	129.26 (3.09)	105.46 (2.17)	130.41 (2.44)	113.21 (2.56)	120.96 (2.64)
5. Interest on working capital	259.04 (5.36)	251.63 (6.02)	284.02 (5.84)	310.32 (5.82)	266.51 (6.02)	270.09 (5.90)
6. Rental value	1423.03 (29.53)	1291.08 (30.87)	1681.88 (34.88)	1894.35 (35.51)	1522.47 (34.38)	1520.91 (33.24)
7. Interest on Fixed capital	279.16 (5.77)	252.37 (6.03)	205.91 (4.23)	254.61 (4.77)	211.49 (4.78)	233.11 (5.10)
Total Cost	4836.12 (100.00)	4181.85 (100.00)	4865.31 (100.00)	5334.65 (100.00)	4428.55 (100.00)	4575.74 (100.00)

(Figures in parantheses represent percentages to total)

Appendix VIII a

Input-wise cost of cultivation of banana - Size group-wise (in Rs)

Items	S_1	S_2	S_3	S_4	S_5	Average
1. Hired human labour	3969.07 (16.06)	3501.50 (14.30)	4040.50 (14.96)	3915.89 (15.82)	6143.09 (21.48)	4428.99 (16.99)
2. Suckers	1825.40 (7.38)	1796.26 (7.34)	1963.35 (7.27)	1950.35 (7.88)	1833.33 (6.41)	1879.40 (7.21)
3. Manures	3333.33 (13.48)	2863.21 (11.70)	4505.20 (16.68)	3191.49 (12.89)	2425.93 (8.48)	3188.40 (12.23)
4. Fertilizers	1269.84 (5.14)	1353.35 (5.53)	1041.66 (3.86)	1063.83 (4.30)	1888.89 (6.61)	1346.49 (5.16)
5. Irrigation	1587.30 (6.42)	1353.35 (5.53)	1302.08 (4.82)	1063.83 (4.30)	1777.78 (6.22)	1403.69 (5.38)
6. Preps.	1375.76 (5.57)	1443.05 (5.89)	1403.93 (5.20)	1384.35 (5.59)	1077.22 (3.77)	1320.18 (5.06)
7. Miscellaneous	353.21 (1.43)	440.51 (1.80)	430.70 (1.59)	485.30 (1.96)	470.20 (1.64)	447.26 (1.72)
8. Depreciation	138.64 (0.56)	146.18 (0.60)	123.27 (0.46)	142.25 (0.57)	69.98 (0.24)	120.93 (0.46)
9. Interest on working capital	1662.31 (6.72)	1547.69 (6.32)	1777.28 (6.58)	1583.67 (6.40)	1882.37 (6.58)	1696.21 (6.51)
Cost A	15514.86 (62.76)	14455.1 (59.00)	16587.97 (61.40)	14780.96 (59.72)	17568.79 (61.44)	15831.55 (60.72)
10. Rental value	6950.58 (28.12)	7216.59 (29.48)	7469.68 (27.65)	7648.42 (30.90)	8643.83 (30.23)	7702.30 (29.55)
11. Interest on fixed capital	270.68 (1.09)	272.83 (1.11)	240.67 (6.89)	277.73 (1.12)	136.62 (0.48)	233.78 (0.90)
Cost B	22736.12 (91.97)	21934.52 (89.90)	24298.32 (89.94)	22707.11 (91.75)	26349.24 (92.14)	23767.63 (91.17)
12. Family labour charges	1984.53 (8.03)	2547.09 (10.10)	2718.67 (10.06)	2042.91 (8.25)	2247.88 (7.86)	2301.82 (8.83)
Cost C	24720.65 (100.00)	24481.61 (100.00)	27016.99 (100.00)	24750.02 (100.00)	28597.12 (100.00)	26069.45 (100.00)

(Figures in parantheses represent percentages to total)

Appendix VIII b

Input-wise cost of cultivation of banana - Income group-wise (in Rs)

Items	I_1	I_2	I_3	I_4	I_5	Average
1.Hired human labour	1682.00	5279.42	3682.25	6233.62	5656.61	4428.99
	(6.49)	(20.71)	(15.27)	(24.49)	(19.74)	(16.99)
2.Suckers	1984.54	1802.01	1851.59	2051.90	1835.66	1879.40
	(7.66)	(7.07)	(7.68)	(8.06)	(6.41)	(7.21)
3.Manures	2988.72	3170.62	3155.08	2600.60	3566.43	3188.40
	(11.54)	(12.44)	(13.08)	(10.22)	(12.45)	(12.23)
4.Fertilizers	1125.73	771.46	1663.50	629.63	1879.20	1346.49
	(4.35)	(3.03)	(6.90)	(2.47)	(6.56)	(5.16)
5.Irrigation	1412.37	1163.93	1257.54	1523.50	1674.60	1403.69
	(5.45)	(4.57)	(5.21)	(5.99)	(5.84)	(5.38)
6.Preps.	1324.74	1462.52	1345.65	1325.50	1183.66	1320.18
	(5.11)	(5.74)	(5.58)	(5.21)	(4.13)	(5.06)
7.Miscellaneous	340.52	453.65	425.80	478.40	521.57	447.26
	(1.31)	(1.78)	(1.77)	(1.88)	(1.82)	(1.72)
8. Depreciation	142.99	129.26	105.46	130.41	110.72	120.93
	(0.55)	(0.51)	(0.44)	(0.51)	(0.39)	(0.46)
9. Interest on working capital	1320.19	1707.94	1618.42	1796.83	1971.41	1696.21
	(5.10)	(6.70)	(6.71)	(7.06)	(6.88)	(6.51)
Cost A	12321.8	15940.81	15105.29	16770.39	18399.86	15831.55
	(47.57)	(62.53)	(62.64)	(65.90)	(64.22)	(60.72)
10. Rental value	8330.50	7475.82	6869.41	7260.00	8390.50	7702.30
	(32.16)	(29.33)	(28.49)	(28.53)	(29.29)	(29.55)
11. Interest on fixed capital	279.16	252.37	205.91	254.61	208.73	233.78
	(7.08)	(0.99)	(0.85)	(1.00)	(0.73)	(0.90)
Cost B	20931.46	23669.00	22180.61	24285.00	26999.09	23767.63
	(80.81)	(92.85)	(91.98)	(95.42)	(84.24)	(91.17)
12. Family labour charges	4969.51	1823.29	1934.55	1164.36	1651.22	2301.82
	(19.19)	(7.15)	(8.02)	(4.58)	(5.76)	(8.83)
Cost C	25901.17	25492.29	24115.16	25449.36	28650.31	26069.45
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

(Figures in parantheses represent percentages to total)

Appendix VIII c

Operation-wise cost of cultivation of banana - Size group-wise (in Rs)

Items	S_1	S_2	S_3	S_4	S_5	Average
1. Preparatory cultivation	2559.52 (10.35)	2522.15 (10.30)	2796.88 (10.35)	2748.23 (11.10)	2638.89 (9.23)	2664.09 (10.22)
2. Seeds and sowing	2757.94 (11.16)	2965.06 (12.11)	3046.88 (11.28)	2890.07 (11.68)	2708.96 (9.47)	2870.19 (11.01)
3. Inter cultural operations	972.22 (3.93)	1037.26 (4.24)	912.88 (3.38)	969.05 (3.92)	1805.55 (6.31)	1183.30 (4.54)
4. Manuring	4087.30 (16.53)	3166.01 (12.93)	5546.88 (20.53)	4078.01 (16.48)	5111.11 (17.87)	4430.19 (16.99)
5. Fertilizer application	1388.89 (5.62)	1599.41 (6.53)	1406.25 (5.21)	1242.89 (5.02)	2148.15 (7.51)	1584.71 (6.08)
6. Irrigation	1587.30 (6.42)	1353.35 (5.53)	1302.08 (4.82)	1063.83 (4.30)	1777.78 (6.22)	1403.69 (5.38)
7. Propping	1992.06 (8.06)	2214.57 (9.05)	1963.54 (7.27)	1620.57 (6.55)	1203.70 (4.21)	1732.78 (6.64)
8. Miscellaneous	353.21 (1.43)	440.51 (1.80)	430.70 (1.59)	485.30 (1.96)	470.20 (1.64)	447.27 (1.72)
9. Depreciation	138.64 (0.56)	146.18 (0.60)	123.27 (0.46)	142.25 (0.57)	69.98 (0.24)	120.93 (0.46)
10. Interest on working capital	1662.31 (6.72)	1547.69 (6.32)	1777.28 (6.58)	1583.67 (6.40)	1882.37 (6.58)	1696.21 (6.51)
11. Rental value	6950.58 (28.12)	7216.59 (29.48)	7469.68 (27.65)	7648.42 (30.90)	8643.83 (30.23)	7702.36 (29.55)
12. Interest on fixed capital	270.68 (1.09)	272.83 (1.11)	240.67 (0.89)	277.73 (1.12)	136.62 (0.48)	233.78 (0.90)
Cost C	24720.65 (100.00)	24481.61 (100.00)	27016.99 (100.00)	24750.02 (100.00)	28597.14 (100.00)	26069.45 (100.00)

(Figures in parantheses represent percentages to total)

Appendix VIII d

Operation wise cost of cultivation of banana - Income groupwise (in Rs)

Items	I_1	I_2	I_3	I_4	I_5	Average
1. Preparatory cultivation	2641.75	2896.9	2306.15	3160.09	2664.34	2664.09
	(10.20)	(11.36)	(9.56)	(12.42)	(9.30)	(10.22)
2. Seeds and sowing	2822.16	3170.62	2573.53	2907.54	2937.06	2870.19
	(10.90)	(12.44)	(10.67)	(11.42)	(10.25)	(11.01)
3. Intercultural operations	837.62	1015.05	969.25	2163.75	1398.60	1183.30
	(3.23)	(3.98)	(4.02)	(8.50)	(4.88)	(4.54)
4. Manuring	4252.58	4767.34	4358.29	3176.02	4790.21	4430.19
	(16.42)	(18.70)	(18.07)	(12.48)	(16.72)	(16.99)
5. Fertilizer application	1546.39	570.26	1871.65	1068.61	2290.21	1584.71
	(5.97)	(2.24)	(7.76)	(4.20)	(7.99)	(6.08)
6. Irrigation	1412.37	1163.93	1257.54	1523.50	1674.66	1403.69
	(5.45)	(4.57)	(5.21)	(5.99)	(5.85)	(5.38)
7. Propping	1974.78	1889.15	1553.75	1529.60	1692.36	1732.78
	(7.62)	(7.41)	(6.44)	(6.01)	(5.91)	(6.64)
8. Miscellaneous	340.58	453.65	425.8	478.40	521.57	447.27
	(1.31)	(1.78)	(1.77)	(1.88)	(1.82)	(1.72)
9. Depreciation	142.99	129.26	105.46	130.41	110.72	120.93
	(0.55)	(0.51)	(0.44)	(0.51)	(0.39)	(0.46)
10. Interest on working capital	1320.19	1707.94	1618.42	1796.83	1971.41	1696.21
	(5.10)	(6.70)	(6.71)	(7.06)	(6.88)	(6.51)
11. Rental value	8330.5	7475.82	6869.41	7260.00	8390.50	7702.31
	(32.16)	(29.33)	(28.49)	(28.53)	(29.29)	(29.55)
12. Interest on Fixed Capital	279.16	252.37	205.91	254.61	208.73	239.78
	(1.08)	(0.99)	(0.85)	(1.00)	(0.73)	(0.90)
Cost C	25901.07	25492.29	24115.16	25449.36	28650.31	26069.45
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

(Figures in parantheses represent percentages to total)

SOCIO-ECONOMIC STUDY OF FARMERS IN PUZHAKKAL BLOCK IN COMMAND AREA OF PEECHI IRRIGATION PROJECT

BY

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ABSTRACT OF THE THESIS

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ABSTRACT

An investigation on the socio-economic status of farmers in Puzhakkal block, forming a part of command area of Peechi Irrigation Project, was conducted in 1982. The main objectives were to study the methods and practices followed for cultivation, understand social and economic conditions of the farms, farm business structure and infra-structural facilities.

Two stage random sampling was adopted for the study and data were collected from a sample of 100 farmers by personal interview. The data were tabulated and classified according to the size of holding and also gross income of of the family.

The size of holding worked out to 1.04 hectares on an average. The family size was found to be 6.35. The family members consisted of 51.18 per cent males and 48.82 per cent females. The literacy was found to be 96.53 per cent. The cropping intensity worked out to 135.68. The area irrigated was 68.94 per cent of the net area owned. The average investment on land, livestock, buildings etc. worked out to Rs.146,534.20 per farm. On an average an amount of Rs.1338.17 was invested per farm on implements and machinery.

It was observed that local varieties were grown during Viruppu and Mundakan. Punja is the major crop of paddy grown in 'kole' lands with larger area under high yielding varieties. The high yielding varieties in Punja recorded the highest cost of cultivation of Rs.4869.33 per hectare and yield of 31.14 quintals on an average. Whereas for local varieties the highest yield recorded was 24.91 quintals in Punja with a cost of cultivation of Rs.4625.50. The cost of production was lowest for Viruppu, Rs.87.70 per quintal and highest for local varieties in Punja, Rs.119.80 per quintal. In terms of net returns from paddy cultivation, Mundakan recorded the highest Rs.1542.81 per hectare. The utilisation of labour and fertilizers were more for high yielding varieties.

The annual cost of maintenance of coconut was Rs.9027.81 per hectare with a net income of Rs.5261.49 per hectare. For arecanut the maintenance cost was Rs.4575.74 per hectare per annum with a net income of Rs.3028.8 per hectare. The cost of cultivation of banana worked out to Rs.26069.45 with a net profit of Rs.12442.24 per hectare.

The cost of maintenance of cross bred animals was worked out to Rs.1874.50 per animal per year with an annual milk yield of 976 litres. Whereas for desi cows the annual maintenance cost was Rs.1088.80 with a milk yield of 527.80 litres. The minimum area required by a typical farmer to live on agriculture as main occupation had been estimated as 1.83 hectares.

The total annual household expenditure worked out to Rs.15661.10 per family having an average family size of 6.35. The gross income of the family was Rs.22132.51 on an average. The total savings per annum was worked out to Rs.6471.41 per family on an average.