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

By

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THESIS

Submitted in partial fulfilment of the
requirement for the degree of

Master of Science in Agriculture

Faculty of Agriculture
Kerala Agricultural University

Department of Agricultural Economics
COLLEGE OF HORTICULTURE
Vellanikkara - Trichur

1982

DECLARATION

I hereby declare that this thesis entitled "Socio-Economic study of farmers in Irinjalakkuda Block in the Command Area of Peechi Irrigation Project" is a bonafide record of research work done by me during the course of research work and this 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.

31/12/82

Vellanikkara,
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CERTIFICATE

Certified that this thesis entitled "Socio-Economic study of farmers in Irinjalakkuda Block in the Command Area of Peechi Irrigation Project" is a record of research work done independently by Kum. Latha Bastine, C., 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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We, the undersigned members of the Advisory Committee of Kum. Latha Bastine, C., a candidate for the degree of Master of Science in Agriculture with major in Agricultural Economics, agree that the thesis entitled "Socio-Economic study of farmers in Irinjalakkuda Block in the Command Area of Peechi Irrigation Project" may be submitted by Kum. Latha Bastine. C. in partial fulfilment of the requirements for the degree.

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ACKNOWLEDGEMENTS

I hereby express my sincere sense of gratitude to Mr. D.V. Rajendran, Chairman of the Advisory Committee, for his able and critical guidance and tireless help during the whole course of the present investigation as well as in the preparation of this thesis.

My profound sense of gratitude is expressed to Dr. V. Radhakrishnan, Professor and Head, Department of Agricultural Economics for the critical remarks and valuable suggestions given to me during the course of this investigation.

My indebtedness is also due to Mr.V.K.G. Unnithan, Associate Professor, Department of Agricultural Statistics, for his whole hearted help extended to me in the analysis of the data. I am also grateful to Mr.K.P. Ramachandran Nair, Assistant Professor, Department of Agricultural Extension for his valuable suggestions.

I had the privilege of having the sincere help from all corners, including the officers and staff members of the Agricultural Department and Irinjalakkuda Block Office in the conduct of the survey. I express my heartfelt thanks to them.

The award of fellowship by the Kerala Agricultural University is also acknowledged.

I am also grateful to my parents whose love and constant inspiration made me fulfil this endeavour.

I bow my head before the Almighty, the giver of all good things, without whose help all labour is ineffective and without whose grace all wisdom is folly.

LATHA BASTINE, C.

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CHAPTER I

INTRODUCTION

Under pressures of increasing population and rise in income, the demand for agricultural products in the country has been increasing. In view of the limited scope for further increasing the area under cultivation, the enhancement of agricultural production to meet the demand has to come through multiple cropping and use of high yielding varieties. For these, water supply in terms of timeliness and adequacy is an important requirement. Without this, it will not be possible to secure rapid increases in yields which the application of modern inputs like high yielding variety seeds, fertilizers, pesticides, etc. is capable of achieving.

The development of irrigation facilities has been one of the major item of state activity in India in recent years and in the Five Year Plans considerable amounts of investments have been made towards this. Since 1950-51, 146 major and 756 medium irrigation projects have been taken up till the end of the Fifth Five Year Plan. It is envisaged to create an additional irrigation potential of 15 m. ha during the Sixth Five Year Plan. This will be made up of 6.5 m. ha from major and medium irrigation schemes with an investment of Rs.6702 crores and 8.5 m. ha from minor irrigation schemes

with a public sector investment of Rs.1415 crores, about 2200 crores of institutional investment and about Rs.1000/- crores of investment from the sources of the farmers themselves.

However, the massive investments that have taken place has not produced results as anticipated. In several cases availability of water for irrigation has been much below the potential. Even the water available is not properly utilized in many cases due to a variety of factors such as organisational, institutional, technical, economic, sociological, etc.*

With a view to find solutions to these problems and to ensure integrated development of command areas of irrigation projects, the Government of India has adopted a policy of setting up Command Area Development Authorities in respect of major irrigation projects. Forty such Authorities were in existence by 1980, covering more than 50 irrigation projects.

As stated above, Command Area Development Authorities are intended to initiate integrated development of the command areas. The activities undertaken by the authority are providing engineering works to enable proper distribution of irrigation water, provide the required agricultural and other

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*Jayaraman, T.K. (1980). Some research issues in Irrigated Agriculture under Major Irrigation Projects. Proceedings of the National Seminar on Research Prospectives in Agricultural Economics, T.N.A.U., Coimbatore.

supporting services and to develop a scientific approach to crop production which would enable exploitation of the full production potential of the irrigation projects. The programmes envisaged include developing the irrigation system, arranging a systematic and efficient water management, land levelling, exploitation of ground water, development of cropping pattern suited to the locality, provide for drainage facilities wherever required, consolidate holdings wherever possible, exploit ground water, ensure supply of inputs, marketing, processing and communication facilities and to enable the farmers to take up soil conservation measures, etc.

Command area of Peechi irrigation project

The Dam and Reservoir is located at Peechi, 24 Km east of Trichur town. The dam is built across the Manali river, a tributary of Karuvannur river. The catchment area of the dam was estimated as 107.09 sq.km. It was envisaged to irrigate 17,256 hectares of paddy land in Trichur district by its two main canals and their branches. The dam is constructed with masonary and earth work. Apart from irrigation, the reservoir also supplies drinking water to Trichur Municipality and its adjacent panchayats.

The Left Bank Canal extends to 44.86 Km and would benefit 2848 hectares while the Right Bank Canal measures

36.85 km and expected to irrigate 14,228 hectares which includes 7664 hectares of kole lands. The expenditure on the project till June 1977 was Rs.235 lakhs. Generally water for irrigation is released through the canals during August to December for cultivation of Mundakan paddy. During February water is again released exclusively for the benefit of kole cultivation. The supply of water from the project is exclusively for paddy crop.

For the development of command areas of Peechi, Chalakkudy and Malampuzha projects in Kerala, the Command Area Development Authority - came to be established in Kerala. The Kerala Agricultural University has recently set up a special research cell for command areas. Agricultural development of any nature to be of benefit to the farmer warrants an understanding of the existing socio-economic conditions of the area to be developed. This study is an attempt in that directions and it proposes to understand the present socio-economic status of farmers in the Irinjalakkuda N.E.S. Block area which forms a part of Peechi Command. The specific objectives of the study are:

1. To study the methods and practices followed for cultivation;
2. To study infrastructural facilities available;
3. To understand general, social and economic conditions of farmers in the locality;

4. To study cost and income structure of the farm business;
5. To assess the availability and use of resources;
6. To study savings, investments, assets and debts pattern; and
7. To understand the consumption pattern and standard of living of the farmers.

Review of Literature

CHAPTER II

REVIEW OF LITERATURE

Studies on the socio-economic conditions of farmers in Command areas of irrigation projects or farmers in general are covered in the present review. It also covers the related aspects such as income, expenditure and savings, resource use in agriculture and economics of crop production and dairying.

1. General socio-economic studies in Command areas

The possible ways to derive maximum benefit from the irrigation water of the Chambal valley project were studied by Anand (1960). He came to the conclusion that reclamation of waste lands, mechanisation to help save labour or animals power, provision of adequate fertilizer and other inputs along with intensive extension work could help farmers to achieve this.

Wade (1975) suggested that attention should be focussed on mainly, the alternative approaches to land development and consolidation, effect of rotational irrigation both on aggregate output and income of farmers and the role of water associations in order to enable agricultural development.

Pathak et al. (1977) reviewing on the Kadana Command

area emphasised the need to strengthen co-operatives in the command area to cater to the farmers' input needs.

Singh (1977) concluded that there is an underutilisation of irrigation facilities in the major and minor irrigation projects studied, to the tune of about 98 per cent. The reasons attributed were, (1) the non-availability of assured and regular supply of water in certain systems, (2) lack of construction of water courses and field canals, (3) non-existence of proper drainage system, (4) lack of proper land levelling and shaping and (5) inadequacy of infrastructure, inputs and wastage of water.

Sisodia (1977) tried to reveal the disadvantages of farmers in the command areas and other areas of Chambal. In the areas not benefitted by the C.A.D. programme he observed, the extent of land holding, quality of land possessed, area irrigated and the intensity of cropping were of low order. The cropping pattern of the farmers in the command area had a better balance between food crops and cash crops, whereas food grains dominated for the farmers in other areas. He has also noted that the net surplus with the farmers in the command areas were better.

In the study conducted by Khuspe and Sawani (1979) in Mula command area project it was found that about 57 per cent of the farmers were underutilising the canal irrigation

facilities. The reasons attributed to this were non-availability of agricultural credit, heavy cost incurred for the repair and maintenance of field canals, undulating terrain and non-availability of agricultural inputs in time.

Suryawanshi and Patil (1980) studied the economics of investment in Girna Command area of Maharashtra. A definite impact was observed on the cropping pattern, crop yields and the income levels of farmers. The benefit-cost ratio increased from 1.14 to 1.2. He has also observed that the extension agency reached the farms, the ultimate areas to develop. A qualitative change on the attitude to adoption has also been recorded.

Bagi (1981) analysing the economics of irrigation in crop production at Haryana concluded that the technical efficiency was higher on irrigated farms. The relative allocative efficiency of the inputs were also found to improve.

2. Income, expenditure and savings

Parthasarathy (1972) studied the income and expenditure pattern of agricultural families according to type and size of farms in Andhra Pradesh. In all types and size of farms, family expenditure constituted a major item of expenditure followed by crop and livestock enterprises.

The study conducted by Deole et al. (1972) in the command area of Purna project in Parbhani district of Maharashtra revealed that with regard to the non-beneficiaries crop production accounted for about 68 per cent of the gross annual income per holding while in the case of beneficiaries it was 76 per cent. The respective percentages of crop expenditure were 46.25 per cent and 51.81 per cent. The holdings below 10 acres did not have any savings.

Chawla et al. (1975) studied the income and expenditure pattern of small farmers in Amritsar district. The study revealed that the income from farm production varied positively with farm size. Food items accounted for maximum expenditure followed by clothing, lighting, housing, miscellaneous items, medicine, social ceremonies, feed and education. The expenditure on food items varied inversedly with farm size. Expenses on light, medicine, clothing, fuel and education varied positively with farm size.

Patil et al. (1978) observed that food was the most important item of expenditure in the Girna project area, accounting for more than 50 per cent of the total family expenditure. The next in importance were clothing and bedding, fuel and lighting, education, recreation, travelling, medical etc. Of the total family income 73.76 per cent was from crop

production followed by livestock production (12.39 per cent). The income from wages earned, business and service, hiring of implements and animals, etc. also contributed 4 to 5 per cent each to the total income.

Patil et al. (1980) in their socio-economic study of Ghod Command area (Maharashtra) showed that food was the most important item of expenditure accounting for 53 per cent of the total family expenditure. Of the total farm income 73.34 per cent came from crop production. The other sources were livestock (11.98%), wages and services (5.92%), hiring of implements (2.06%), poultry (1.16%), etc. It was observed that the income of small farmers largely depended on the employment activities other than crop production.

Sidhu et al. (1980) studied the income and expenditure pattern of Punjab farmers. The study revealed that the major share of income of the farmers is contributed by crops followed by dairying and other sources. Farm business income per hectare showed an inverse relationship with the size of the farm. But per capita farm business income was found to have positive relationship with the size of the farm. An inverse relationship was noticed between farm expenditure per hectare and the farm size. Per capita farm family domestic expenditure was found to have a positive relationship with the farm size. Surplus from agriculture showed a positive relationship with the farm size.

3. Resource use in agriculture

The study conducted by Negi et al. (1972) in the small farms of Nainital Tarai revealed that land was the most important resource which has significant and positive impact on almost all crops. Fertilizers showed a significant and positive impact on high yielding varieties of wheat.

Desai (1973) studied the economics of resource use on sample farms of central Gujarat. The study concluded that the uncertainty prevailed with respect to irrigation resource caused an uneconomic use of labour and sub-optimum use of fertilizers and manures in less developed regions. In regions where irrigation facilities are reliable and adequate the farmers maximised the net returns over all inputs.

The study conducted by Singh et al. (1975) in Meerut district of Uttar Pradesh showed that the percentage of area under food crops decreased as the size of holding increased. Input, output and net income per farm showed an increasing trend with an increase in the size of holdings, mainly because of the higher cropping intensity and higher expenditure on cash inputs.

Singh et al. (1975) studied the income, investment and cropping pattern of small farmers in Kalyanpur Block, Uttar Pradesh. The study showed that 80% of the total input was accounted for by three factors namely human labour (20%),

bullock labour (21%) and rental value of land 38%. Manures and fertilizers accounted for about 8 per cent of the total cost.

Chawla (1975) studied the small farmers expenditure on modern inputs in district Amritsar, revealed that the small farmers did not apply the recommended dose of fertilizers and irrigation due to low income, high prices and ignorance while other farmers reported difficulties with regard to power supply.

Rathore et al. (1975) analysed the economy of small farms in Udaipur district of Rajasthan. He concluded that irrigated farms could generate substantial income and production. Labour use was also greater in irrigated farms, so also underemployment. He stressed the need for taking up subsidiary occupations.

A study conducted by Acharya and Sukla (1975) analysed small scale farming in southern Rajasthan. Estimates of six Cobb-Douglas type of production function and corresponding marginal value products revealed that total labour, family labour, hired labour, non-conventional capital, non-mechanical capital and variable expenses exerted a significant effect on output. The effect of land, fixed capital, conventional capital input and machine input did not turn out to be significant. Different forms of capital input for which the

production elasticities were significant had value of HYVs seeds, fertilizers and insecticides as common items. It also concluded that the adoption of labour intensive HYV crops increased the intensity of cropping and use of fertilizers and insecticides were instruments for increasing the incomes of small farmers.

Dhawan and Bansal (1977) studied the rationality of the use of various factors of production on different sizes of farms in Punjab. The study brought out that land resource was efficiently used on the small and medium farms. The small farmers should curtail the use of human labour, expenditure on irrigation and drought animals on the one hand and increase the expenditure on seeds and manures and fertilisers and milch animals. The study also revealed that all categories of farms could increase their income by more investments on milch animals and through intensive use of chemical fertilizers.

Desai (1977) studied cropping pattern of farm families of Surat district. The results showed that increasing the availability of net irrigable land would shift the crop pattern in favour of more remunerative and also labour intensive crops such as sugarcane, banana and high yielding variety paddy. The shift would in turn increase the net income of an average farmer.

The study conducted by Palaniswamy and Rajagopalan (1977) showed that the family labour input was more in small farms where it was the permanent labour in large farms. The total labour input per unit area decreased as the size of the farm increased.

Patil et al. (1978) conducted a socio-economic survey of Girna irrigation project area in Jalgaon district in Maharashtra. The study revealed that for almost all crops, the use of fertilizers was below the recommended doses. The utilization of nitrogen was relatively more as compared to phosphorus and potash.

Patil et al. (1980) in their investigation into the socio-economic conditions of Ghod irrigation project area concluded that after the introduction of irrigation over a period of time, the production levels had been increased considerably. They made note of the increased use of hired labour, low use of fertilizers, etc. in the study area.

4. Economics of crop production and dairying

Singh (1966) studied the cost of cultivation in relation to size of holding. The results showed that there is an increasing trend in output per acre and a decreasing trend in human and bullock labour inputs and so the cost of cultivation. The minimum cost of cultivation was recorded for a holding size of about 40 acres.

Chaurasia and Singh (1972) studied the economics of local and high yielding varieties of wheat in Panagar village of Madhya Pradesh. The results showed that high yielding varieties area comparatively more labour intensive and responsive to fertilizer than the local varieties. They require more expenditure per acre of which about 57 per cent forms the material cost.

Patil et al. (1978) studied the cost of cultivation of various crops in Girna project area in Maharashtra and found out that the cost of cultivation per hectare of paddy was Rs.1865.47 with the total output of 11.67 quintals. The net profit per hectare was Rs.610.59. The per hectare cost of cultivation of banana was Rs.7492.97.

Patil et al. (1980) studied the cost of cultivation of crops in the Ghod command area of Maharashtra and found that, that for paddy worked out to Rs.1740.45 with the output of 11.72 quintals. The profit per hectare was Rs.885.07.

The study conducted by Sidhu et al. (1980) on the farm expenditure pattern of Punjab farmers revealed that the farm expenditure per hectare decreased with the increase in the size of holding. The contribution of different agricultural inputs in the total farm expenditure in forms of percentages was 31.34, 26.84, 10.56, 8.13, 6.84, 5.62, 4.85, 3.59 and 2.43 on labour, fertilizer, seed, feed and fodder, land

revenue/land rent/crop cess, irrigation charges, fuel and mobile oil, insecticides and weedicides and miscellaneous items respectively.

Bal et al. (1980) studied the economics of milch animals and they concluded that the contribution of dairy business to total farm business income was low and the input-output ratio in case of milch animals was smaller. However the performance of milch animals was better on medium and small farms. The contribution of the dairy enterprises to total farm business income in small, medium, large and overall size of farms were 15.58%, 14.03%, 6.38% and 13.16% respectively. Input-output ratios were Rs.1.48, Rs.1.53, Rs.1.29 and Rs.1.43 from milch animals in the various size groups and Rs.1.69, Rs.1.76, Rs.1.64 and Rs.1.70 from crop production.

Balishter and Singh (1980) studied the economics of crop and livestock enterprises in Bichpuri block of Agra district of western U.P. Their study revealed that the output per animal was the highest in small farms and lowest on large farms. The share of crops and livestock in total farm output were 72.16 per cent and 27.84 per cent, respectively. In the case of livestock the input-output ratio was higher in small farms as compared to crop enterprise, indicating a better scope for livestock enterprise as a subsidiary occupation of the farms.

Singh et al. (1980) studied the economics of livestock production in relation to its contribution to the gross farm income and employment in District Farukhabad (U.P.). It showed that of the average gross farm income and expenses of Rs.4991.22 and Rs.3553.88, the livestock production accounted for 28.57 per cent in the former and 29.48 per cent in the later. The percentage contribution made to total farm income, expenses and employment by livestock was higher on small farms as compared to large sized farms.

The study conducted by Verma and Tewari (1980) in district Unnao, Uttar Pradesh revealed that she-buffaloes gave higher return than cows. The contribution made by livestock to gross income and expenses were 21.65 per cent and 24.19 per cent respectively as against 78.35 and 75.81 per cent by crop production. The contribution of livestock production to the gross farm income was higher on the smallest size group than the largest one.

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 rent for high yielding varieties of paddy while it was Rs.1905.00 per hectare for local varieties. The cost per quintal was estimated as Rs.80 for HYVs and Rs.107 for local varieties. The benefit cost ratio was 1.32 for HYVs and 1.12 for local varieties at total cost excluding rent.

Radhakrishnan et al. (1981) studied the cost of cultivation of paddy in Kerala during 1979-80. The results showed that at cost C, excluding rent, cost per quintal of high yielding varieties was Rs.52.88 and traditional varieties Rs.93.60 in Trichur district. The benefit-cost ratio worked out to 1.64 for high yielding varieties and 1.14 for traditional varieties.

Materials and Methods

CHAPTER III

MATERIALS AND METHODS

Coverage

The study covers the farmers in Irinjalakkuda Block in the Command area of Peechi Irrigation Project. The Peechi Dam was built across the Manali river and was meant to provide irrigation to the paddy crop in the command area. It supplements the water needs of the Mundakan paddy in the command area besides providing irrigation to the Puncha crop in the kole lands.

Sample design

Two stage simple random sampling was adopted for the study. At the first stage, five Panchayat wards were selected randomly, from among the panchayat wards in Irinjalakkuda Block. In the second stage, twenty farm families were selected randomly from each panchayat ward. The total size of the sample was thus limited to one hundred as it was felt that an individual would not be able to cope with a larger sample, however desirable that may be from other points of view. The panchayats and wards selected for the study were the following.

Name of Panchayat	Name of ward
1. Karalam	Karalam
2. Karalam	Chemmanda
3. Perathissery	Karuvannoor
4. Kattoor	Karanchira
5. Muriad	Pulloor

The total 100 holdings were further classified according to the size of operational holding and also according to the gross income of the family. The different size groups, their designation used in the study, different income groups and their designation are given in the following tables.

Table 3.1. Classes of sample holding and their designations

A. According to size of holding

Sl.No.	Holding size	Designation
1	Less than 0.4 hectares	S_1
2	0.4 to 0.8 hectares	S_2
3	0.8 to 1.2 hectares	S_3
4	1.2 to 1.6 hectares	S_4
5	1.6 hectares and above	S_5

B. According to income

Sl.No.	Income	Designation
1	Less than Rs.8,000/-	I_1
2	Rs.8,000 to Rs.15,000/-	I_2
3	Rs.15,000 to Rs.25,000/-	I_3
4	Rs.25,000 to Rs.35,000/-	I_4
5	Rs.35,000 and above	I_5

Collection of data

The data were collected using well structured schedules designed for the purpose. A copy of the schedule used is given in the Appendix. The schedules were designed to gather information on the various aspects such as assets on the farms, utilisation of inputs for the crops, their outputs, expenditure on maintenance of family, etc. Personal interview method was adopted for the collection of information. The information were gathered for the period from 1st June 1981 to 31st May 1982.

Concepts used in the study

i) Human labour:

a) Family labour - The actual work done by the members of the family on crop and livestock production was considered

as family labour. It was evaluated at the wage rates prevailing in the concerned ward for the purpose of calculation of the cost.

b) Hired labour - The actual paid wage labour engaged was considered as hired labour. It was evaluated at the rates paid by the farmers, including payments in kind wherever applicable. Hired labour consisted entirely of casual labour.

ii) Bullock labour

Bullocks for the various operations were generally hired in by the farmers and the rates paid were considered. In the few cases where bullocks were owned, their costs were evaluated at the rates paid for hired bullock labour.

iii) Tractor hours

Tractors were used by some of the respondents for ploughing by hiring in at hourly rates. For the purpose of costing these were evaluated at the actual rates paid.

iv) Seeds, manures, fertilisers and pesticides

For seeds and manures purchased, actual amounts paid has been accounted. Farm produced seeds and manures have been evaluated on the basis of prevailing rates.

v) Irrigation charges and land revenue

Irrigation charges included the water charges actually

paid to the Revenue Department for the use of canal water and also to the irrigation committees or kole committees. In the case of well irrigation actual charges paid for fuel used are considered. Land revenue was considered as the actual amounts paid to the Revenue Department by the farmers.

vi) Rental value of owned land

Hiring in and leasing out land was not reported among the sample farmers. Hence actual quantum of rent could not be found out. The rental value of owned land has been considered at one-fifth of the value of gross produce from the various crops.

vii) Interest on working capital

Interest on working capital was calculated at 12.5 per cent per annum for four months in the case of each crop of paddy and for whole year for annual and perennial crops.

viii) Interest on fixed capital

Interest on fixed capital was computed at the rate of 10.25 per cent on the value of implements, machinery, sprayers, etc. The interest charges were allocated for individual crops in proportion to the area under each crop.

ix) Depreciation

Loss of value in use is depreciation. For pucca

buildings it was charged at the rate of two per cent and for Kacha buildings at the rate of five per cent. For implements the rates of depreciation charged were 15 per cent for iron implements and 20 per cent in the case of wooden implements, baskets, ropes, etc. The depreciation for pumpsets was taken as five per cent and that for sprayers ten per cent.

x) Cost concepts

The analysis was made using different cost concepts - cost A_1, B and C. Since leasing in of land is not practised in the study area, cost A_2 was not considered.

a) Cost A

The various items included under this head were:

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

b) Cost B

Cost B consists of cost A, rental value of owned land and interest on fixed capital.

c) Cost C

Cost C consists of cost B and imputed value of family labour.

xi) Measures of income

Farm business analyses have been carried out by applying the different measures of income. They are:-

a) Gross income

Income obtained by the sale of main product and by-product comprises gross income and were worked out at the rates which prevailed in the concerned areas at the harvest periods. Income on different cost concepts were worked out as follows:

b) Farm business income

The difference between the gross income and cost A represents farm business income of the cultivators.

c) Family labour income

The difference between gross income and cost B (i.e., profit at cost B) represents the income of the cultivators on account of his own and family labour.

d) Net income

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

e) Farm investment income

It was computed by deducting the imputed value of family labour from the farm business income.

f) Input-output ratio

Input-output ratios were worked out for the different enterprises and farm business as a whole by dividing the gross income by the total cost.

xii) Adult consumption units

For calculating the consumption to study the nature of family consumption, the family members of the different category were equated on the basis of the following equivalence, which was standardised by Khare (1975).

Male/Female	Age in years	Consumption unit
Male or female	0-6	0.45
Male or female	6-14	0.75
Female	14 and above	0.90
Male	14 and above	1.00

xiii) House-hold expenditure

a) Food

This includes cost of rice, pulses, oils, sugars, vegetables and other articles which form a part of the daily diet of the farm family.

b) Fuel and lighting

This consists mainly of expenditure on firewood, kerosene and electricity charges.

Other items include expenditure on education, medicine, travel, recreation, beverages, house taxes, etc.

Area of study

CHAPTER IV

AREA OF STUDY

Irinjalakkuda Block is situated 15 km south of Trichur bounded on the north side by the Cherpu and Anthikad blocks, on the south by Vellangallur block, on the west by Kodakara and Mala blocks, and on the eastern side by Thalikulam and Mathilakam blocks.

The average annual rainfall is 2633 mm with a maximum temperature of 39°C.

The Block comprises of five panchayats namely, Muriad, Parappukkara, Porathissery, Karalam and Kattur, on the southern part of Trichur district, extending over 96.92 sq.km. The total population according to 1971 census was 86,282 and was estimated at 1,03,263 in 1978. The Table below gives the panchayatwise area and population.

Table 4.1. Estimated population for Irinjalakkuda Block for the year 1978

Sl. No.	Panchayat	No. of Wards	Area	Population	No. of households
1	Muriad	9	21.83	20,098	3,835
2	Parappukkara	10	21.36	27,588	5,466
3	Porathissery	10	21.46	26,791	4,734
4	Karalam	9	20.58	16,818	3,850
5	Kattoor	8	11.69	11,968	2,400
			96.92	1,03,263	20,285

Source: Block Office, Irinjalakkuda N.E.S. Block.

Infrastructural facilities

Agricultural modernisation to a great extent depends upon the facilities available in the region. They include service infrastructure consisting of credit facilities, marketing services, input supply services, research and extension services and physical infrastructure consisting of transport, irrigation, power and storage facilities. The block is well connected by roads which extend to about 73 km of semi pucca roads and 207 km of kaccha roads. The Trichur-Kodungalloor road traverses through the block and is connected to a network of kaccha roads. The Kodungalloor-Guruvayoor road passes through Kattoor - one of the panchayats. On the eastern side of the block passes the National Highway-47. The Irinjalakkuda railway station is about five kilometers from the block.

A part of Karuvannoor river passes through the northern and western boundaries of the block. There is a fresh water lake in the block - Muriad kayal. Two irrigation projects supply water to the block - the Peechi Irrigation Project and the Chalakkudy Irrigation Project.

Telephone facilities are also available in all localities - with telegraph offices at Karuvannoor, Madaikonam and Nellayi. A number of small markets dealing with a host of commodities are spread throughout the block.

The services of primary co-operative societies are available in all the panchayats. Branches of commercial banks function in the Irinjalakkuda municipal area which is about five kilometers away from the block headquarters. In the block area there are offices of Indian Overseas Bank at Karuvannoor, Cochin Bank at Karalam and Kattoor panchayats. A number of professional money lenders also operate in this area.

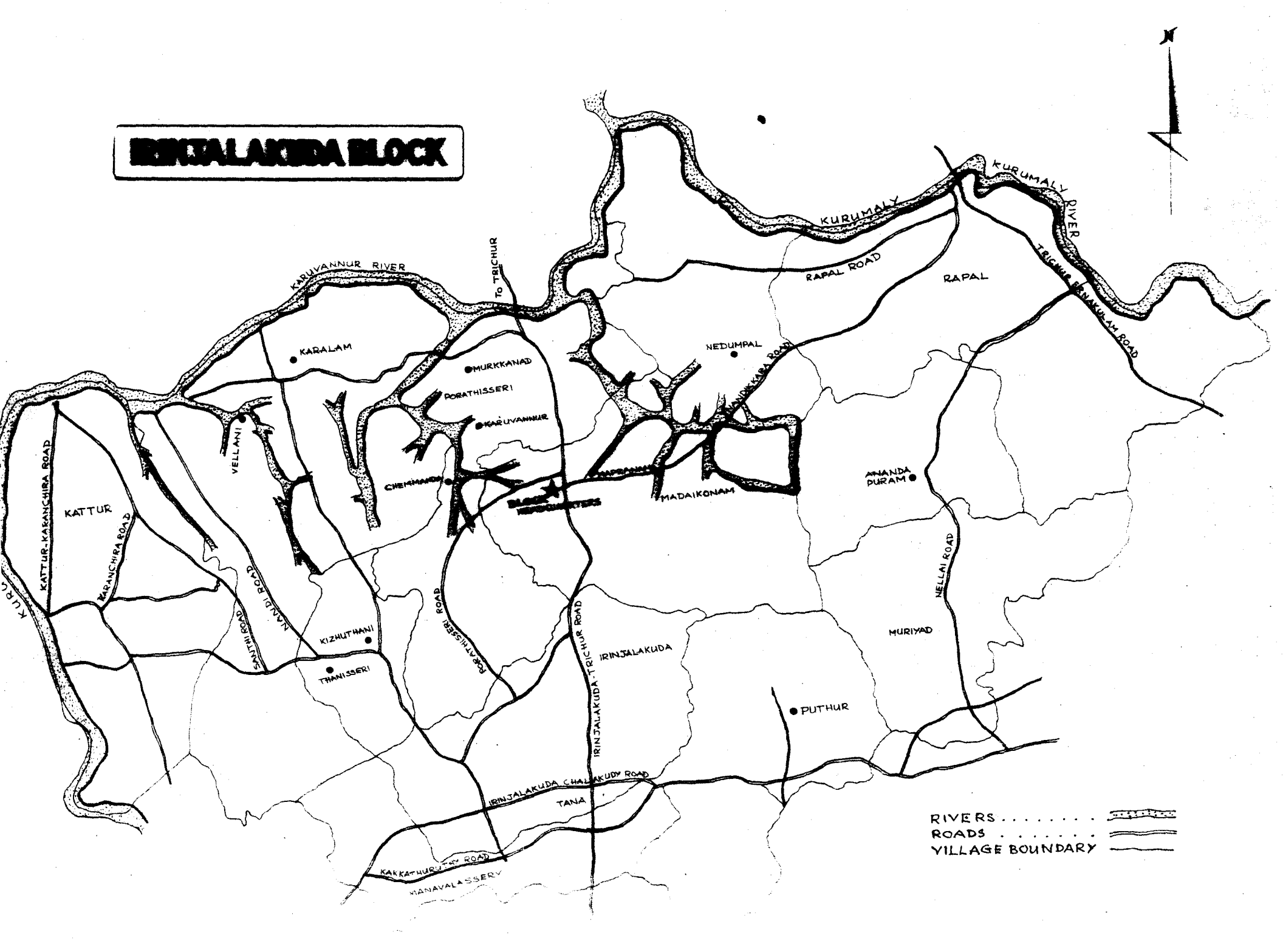
There is one government hospital in the Kattoor panchayat and another in the municipal area. A primary health centre functions in the Muriad Panchayat and a number of family welfare sub-centres distributed in the block area.

Within the block area there are five high schools, eleven upper primary schools and 16 lower primary schools. Educational facilities are available in the municipal area also.

Tile manufacturing is the only established industry in this block area. Making bricks during seasons utilising clay from paddy fields is also common.

Two major soil types are seen in the northern part namely, the alluvial soil referred as kole lands which are heavy in texture and the laterite soil which is the predominant soil in garden lands. The soil is rich in organic matter, nitrogen and potash, deficient in phospherus. The alluvial soils are periodically subjected to salt water emundation.

It is estimated that about 3500 hectares of wet lands are brought under cultivation of paddy. Of this about 1540 hectares are in the kole region. Paddy is being raised as a single crop in 780 hectares, double crop in 1200 hectares and triple crop in 190 hectares. In the garden land coconut occupies 2610 hectares, tapioca 850 hectares, arecanut 508 hectares, banana and plantains 455 hectares, cashew in 416 hectares and a variety of other crops are also cultivated.


IRINJALAKUDA BLOCK
N
KURUMALY
KURUMALY RIVER
KARUVANNUR RIVER
To TRICHUR
RAPAL ROAD
RAPAL
TRICHUR ERNAKULAM ROAD
KARALAM
MURKKANAD
PORATHISSERI
KARUVANNUR
NEDUMPAL
KANJIRAKARA ROAD
VELLANI
CHEMMANDA
MADAIKONAM
ANANDA PURAM
KATTUR
KATTUR-KARANCHIRA ROAD
KARANCHIRA ROAD
SANTHI ROAD
NANDI ROAD
KIZHUTHANI
THANISSERI
PORATHISSERI ROAD
IRINJALAKUDA-TRICHUR ROAD
IRINJALAKUDA
NELLAI ROAD
MURIYAD
PUTHUR
IRINJALAKUDA CHALAKUDY ROAD
TANA
KAKKATHURUTHY ROAD
MANAVALASSERY
RIVERS
ROADS
VILLAGE BOUNDARY

General characteristics of the sample farms

CHAPTER V

GENERAL CHARACTERISTICS OF THE SAMPLE FARMS

Knowledge on the socio-economic conditions like the population, its structure, educational status, occupation, income, etc. are of great value in the context of development. In the following pages an attempt is made to examine the general socio-economic conditions of the sample farm households.

The sample was classified into five categories on the basis of size of holding. They were also grouped into five on the basis of gross income of families. The distribution of the farmers according to their size of holding is given in Table 5.1.

The average size of the holding was 1.23 hectares. Twentyseven per cent of the sample farms was in the size group between 0.40 hectare to 0.8 hectare (1 to 2 acres). This group accounted for only 13.76 per cent of the total area for the sample. Twentyfour per cent of the total farmers had holdings of more than 1.6 hectares (4 acres) and they possessed 50.41 per cent of the total area, with an average size of 2.58 hectares.

The distribution of sample according to income groups shows that the number of holdings in the different income

Table 5.1. Distribution of sample farm households according to different holding size

Sl. No.	Holding size (in hectares)	Number of holdings	Per cent to total number	Total area owned (in ha)	Percentage to total area	Average size of holding (in ha)
1	0.4	14	14.00	4.00	3.26	0.29
2	0.41-0.8	27	27.00	16.89	13.76	0.63
3	0.81-1.2	22	22.00	21.81	17.77	0.99
4	1.21-1.6	13	13.00	18.17	14.80	1.40
5	1.6 and above	24	24.00	61.88	50.41	2.58
	Total	100	100.00	122.75	100.00	1.23

Table 5.2. Distribution of sample farm households according to income

Sl. No.	Income groups (in rupees)	Number of holdings	Percentage to total number	Total area owned (in ha)	Percentage to total area	Average size of holding (in ha)
1	Upto 8000	23	23.00	15.16	12.35	0.66
2	8000-15000	23	23.00	18.26	14.88	0.79
3	15000-25000	23	23.00	32.66	26.61	1.42
4	25000-35000	9	9.00	12.09	9.85	1.34
5	35000 and above	22	22.00	44.58	36.31	2.03
	Total	100	100.00	122.75	100.00	1.23

classes were more or less the same except in the income group of Rs.25,000 to 35,000 where it accounted for only nine per cent. More than 36 per cent of the total area owned was by farmers in the income group above Rs.35,000/- and they had an average area of 2.03 hectares. The area owned by those in the income group of Rs.25,000 to Rs.35,000/- accounted for only 9.85 per cent. The distribution of the sample farmers into the different classes are shown in Tables 5.1 and 5.2, sizewise and incomewise respectively.

The composition of the members of the sample families classified according to the different holding size groups is given in Table 5.3. The total number of members in the respondent families was 656 of which 51.98 per cent was males and 48.02 per cent are females. The average family size was 6.56.

The largest family size of 7.27 was found in S_3 while the lowest family size in S_2, with an average family size of 6.00. The distribution between males and females was almost equal with more males in S_4 while females were more in group S_5.

Among the different size groups it could be seen that the proportion of family members below 6 years were more in the first group accounting for 10.34 per cent followed by the group S_5 (7.62 per cent), S_3 (6.88 per cent), S_4

Table 5.3. Composition of families (size groupwise)

Sl. No.	Age group		S_1	S_2	S_3	S_4	S_5	Average
1	60 and above Males	Total	-	6	7	6	6	25
		Average	-	0.22	0.32	0.46	0.25	0.25
		Percentage to total		3.70	4.38	6.82	3.82	3.81
2	60 and above Females	Total	2	1	6	3	9	21
		Average	0.14	0.04	0.27	0.23	6.38	0.21
		Percentage to total	2.25	0.61	3.75	3.41	5.73	3.20
3	15-60 Males	Total	29	63	58	32	56	238
		Average	2.07	2.33	2.64	2.46	2.33	2.38
		Percentage to total	32.58	38.89	36.25	36.36	35.67	36.28
4	15-60 Females	Total	28	54	47	31	51	211
		Average	2.00	2.00	2.14	2.38	2.13	2.11
		Percentage to total	31.46	33.33	29.38	35.23	32.48	32.16
5	6 to 14 Males	Total	11	11	14	7	12	55
		Average	0.79	0.41	0.64	0.54	0.50	0.55
		Percentage to total	12.36	6.79	8.75	7.95	7.64	8.38
6	6 to 14 Females	Total	9	21	17	5	12	64
		Average	0.64	0.78	0.77	0.38	0.50	0.64
		Percentage to total	10.11	12.96	10.63	5.68	7.64	9.76
7	0 to 6 Males	Total	5	4	7	3	4	23
		Average	0.64	0.15	0.32	0.23	0.17	0.23
		Percentage to total	5.12	2.47	4.38	3.41	2.56	3.51
8	0 to 6 Females	Total	5	2	4	1	7	19
		Average	0.36	0.07	0.18	0.08	0.29	0.19
		Percentage to total	5.62	1.25	2.50	1.14	4.46	2.90
9	Total males	Total	45	84	86	48	78	341
		Average	3.21	3.11	3.91	3.69	3.25	3.41
		Percentage to total	50.56	51.85	53.75	54.55	49.68	51.98
10	Total females	Total	44	78	74	40	79	315
		Average	3.14	2.89	3.36	3.08	3.29	3.15
		Percentage to total	49.44	48.15	46.25	45.45	50.32	48.02
11	Total population	Total	89	162	160	88	157	656
		Average	6.36	6.00	7.27	6.77	6.54	6.56
		Percentage to total	100.00	100.00	100.00	100.00	100.00	100.00

Table 5.4. Composition of families (income groupwise)

Sl. No.	Age group		I_1	I_2	I_3	I_4	I_5	Average
1	60 and above Males	Total	5	6	6	3	5	25
		Average	0.22	0.26	0.52	0.89	0.23	0.25
		Percentage to total	3.62	4.03	3.82	4.62	3.40	3.81
2	60 and above Females	Total	3	3	5	3	7	21
		Average	0.13	0.13	0.22	0.33	0.32	0.21
		Percentage to total	2.17	2.01	3.18	4.62	4.76	3.20
3	15 to 60 Males	Total	47	53	61	19	58	238
		Average	2.04	2.30	2.43	2.11	2.64	2.38
		Percentage to total	34.06	35.57	38.65	29.22	39.46	36.28
4	15 to 60 Females	Total	50	52	47	21	41	211
		Average	2.18	2.26	2.04	1.78	1.86	2.11
		Percentage to total	36.23	34.90	29.94	32.31	27.89	32.16
5	6 to 14 Males	Total	11	12	14	7	11	55
		Average	0.48	0.52	0.61	0.78	0.50	0.55
		Percentage to total	7.97	8.05	8.92	10.76	7.48	8.38
6	6 to 14 females	Total	16	14	11	9	14	64
		Average	0.70	0.61	0.48	1.00	0.64	0.64
		Percentage to total	11.59	9.40	7.01	13.85	9.53	9.76
7	0 to 6 Males	Total	5	4	7	2	5	23
		Average	0.22	0.17	0.26	0.11	0.23	0.23
		Percentage to total	3.62	2.68	24.46	3.08	3.40	3.51
8	0 to 6 Females	Total	1	5	6	1	6	19
		Average	2.22	0.22	0.26	0.22	0.27	0.19
		Percentage to total	0.72	3.36	3.82	1.54	4.08	2.90
9	Total males	Total	68	75	88	35	79	341
		Average	2.96	3.26	3.83	3.89	3.59	
		Percentage to total	49.28	50.34	56.05	53.85	53.74	51.98
10	Total females	Total	70	74	69	30	68	315
		Average	3.04	3.22	3.00	3.33	3.00	
		Percentage to total	50.72	49.66	43.95	46.15	46.26	48.02
11	Total population	Total	138	149	157	65	147	656
		Average	6.00	6.48	6.83	7.22	6.68	6.56
		Percentage to total	100.00	100.00	100.00	100.00	100.00	100.00

(4.55 per cent) and S_2 (3.72 per cent). The proportion of the members of the age group 60 and above was the highest in S_4 (10.23 per cent) followed by S_5, S_3, S_2 and S_1.

If one consider, the age group of between 15 to 60 to contribute to production, the sample on an average had 68.44 per cent members in the age group 15 to 60, which is regarded as the working age group. 31.56 per cent or nearly one-third of the total members of the households were outside the working age group. This worked out to be 2.07 members per family. The work force consists of almost 53 per cent males and 47 per cent females. The percentage of people in the age group of 15 to 60 was lowest in the first size group (64.04) and highest in the second size group. Among the different holding size groups the proportion of people in the age group of 15 to 60 did not show much variation.

Table 5.4 shows that the proportion of people in the age group 15 to 60 ranged from 61.53 in the fourth income group to 70.47 in the second. This indicates that a sizeable part of income of farmers are to be utilised for purposes not directly related to improvement in production.

Educational status

Kerala is recognised to be in the forefront considering the extent of literacy. The sample averages also indicated the same. Of the total number of 656 members in the sample

families 5.64 per cent - coming in the age group below five years are yet to receive education. Among the balance 619 members it is seen that 85.21 per cent are literate. Literacy was higher among the males accounting to 87.68 per cent while that for females was 82.54 per cent.

On a further analysis of literacy it was seen that all the literates in the sample have attended schools, but to varying levels. While 15.24 per cent had education upto the primary school level, 18.90 per cent attended middle school, 36.13 per cent attended high school, 6.7 per cent attended College. Graduates accounted for 6.25 per cent of the total and post-graduates 1.52 per cent.

Occupational structure

It was generally observed that a sizeable proportion of sample families, to the tune of 67 per cent, were getting income from other occupations along with agriculture. The nature of employment were wage labour, petty trade, professions, government service, etc. Twelve per cent of the sample families were getting income from wage labour and petty trades. Another 12 per cent received income from specialised jobs. Twentyeight per cent of the sample families had accepted services as their major source of income. Fifteen per cent of the total families are engaged in more than two occupations. The details are presented in Table 5.7.

Table 5.7. Occupational distribution of head of families (size groupwise)

(in numbers)

Size groups	Agriculture and subsidiary business						Total
	Completely dependent on agriculture	Labour	Trade	Profession	Service	More than two occupations	
1	3 (21.43)	3 (21.43)	2 (14.29)	1 (7.14)	2 (14.29)	3 (21.43)	14 (100.00)
2	11 (40.74)	-	2 (7.41)	3 (11.11)	7 (25.93)	4 (14.81)	27 (100.00)
3	6 (27.27)	3 (13.64)	1 (4.55)	4 (18.18)	4 (18.18)	4 (18.18)	22 (100.00)
4	6 (46.16)	-	1 (7.69)	1 (7.69)	4 (30.77)	1 (7.69)	13 (100.00)
5	7 (29.17)	-	-	3 (12.50)	11 (45.83)	3 (12.50)	24 (100.00)
Total	33 (33.00)	6 (6.00)	6 (6.00)	12 (12.00)	28 (28.00)	15 (15.00)	100 (100.00)

(Figures in parentheses are percentages)

Table 5.8. Occupational distribution of head of families (income groupwise)

(in numbers)

Income groups	Agriculture and subsidiary business						Total
	Completely dependent on agriculture	Labour	Trade	Profession	Service	More than two occupations	
1	15 (65.22)	3 (13.04)	-	2 (8.70)	2 (8.70)	1 (4.35)	23 (100.00)
2	5 (21.74)	3 (13.04)	2 (8.70)	4 (17.39)	4 (17.39)	5 (21.74)	23 (100.00)
3	9 (39.13)	-	1 (4.35)	4 (17.39)	5 (21.74)	4 (17.39)	23 (100.00)
4	-	-	1 (11.11)	2 (22.22)	4 (44.44)	2 (22.22)	9 (100.00)
5	4 (18.18)	-	2 (9.09)	-	13 (59.09)	3 (13.64)	22 (100.00)
Total	33 (33.00)	6 (6.00)	6 (6.00)	12 (12.00)	28 (28.00)	15 (15.00)	100 (100.00)

(Figures in parentheses are percentages)

Table 5.9. Occupational distribution of the income earners of households (size groupwise)

(in numbers)

Sl. No.	Size groups	Main occupation						Total number
		Agriculture	Labour	Trade	Profession	Service	Others	
1	S_1	6 (33.33)	4 (22.22)	2 (11.11)	1 (5.56)	3 (16.67)	2 (11.11)	18 (100.00)
2	S_2	14 (40.00)	2 (5.71)	2 (5.71)	3 (8.58)	12 (34.29)	2 (5.71)	35 (100.00)
3	S_3	9 (27.27)	5 (15.16)	3 (9.09)	3 (9.09)	10 (30.30)	3 (9.09)	33 (100.00)
4	S_4	8 (50.00)	-	1 (6.25)	1 (6.25)	4 (25.00)	2 (12.50)	16 (100.00)
5	S_5	17 (36.17)	-	-	3 (6.38)	25 (53.19)	2 (4.26)	47 (100.00)
	Total	54 (36.24)	11 (7.38)	8 (5.38)	11 (7.38)	54 (36.24)	11 (7.38)	149 (100.00)

(Figures in parentheses are percentages)

Table 5.10. Occupational distribution of the income earners of households (income groupwise)

(in numbers)

Sl. No.	Income group	Main occupation						Total number
		Agriculture	Labour	Trade	Profession	Service	Others	
1	I_1	14 (56.00)	4 (16.00)	-	2 (8.00)	2 (8.00)	3 (12.00)	25 (100.00)
2	I_2	12 (38.71)	2 (6.45)	3 (9.68)	5 (16.13)	7 (22.58)	2 (6.45)	31 (100.00)
3	I_3	15 (44.12)	3 (8.82)	2 (5.88)	3 (8.82)	8 (23.54)	3 (8.82)	34 (100.00)
4	I_4	3 (18.75)	-	1 (6.25)	-	10 (62.50)	2 (12.50)	16 (100.00)
5	I_5	10 (23.26)	2 (4.65)	2 (4.65)	1 (2.33)	27 (62.78)	1 (2.33)	43 (100.00)
	Total	54 (36.24)	11 (7.38)	8 (5.38)	11 (7.38)	54 (36.24)	11 (7.38)	149 (100.00)

(Figures in parentheses are percentages)

The occupational distribution of respondents classed into the different income brackets showed that the dependence on agriculture in I_1 was higher, while in I_4 none of the respondents solely depended on agriculture. The distribution is presented in Table 5.8.

The occupational distribution of the income earners among the sample households is presented in Tables 5.9 and 5.10. In total 149 members from the different families earned income. According to the number of wage earners, agriculture and service were found to be the major sources of income.

The proportion of people engaged in agriculture to the total income earners was found to be the highest in S_4 (50 per cent) followed by S_2, S_3, S_1 and S_5. The proportion of people engaged in services was the highest in S_5 followed by S_2 and S_3. In S_1 the major occupation of one-third of the total wage earners was agriculture.

Among the different income groups the proportion of people engaged in agriculture was the highest in I_1 (56 per cent) followed by I_3 (44.12 per cent). In groups I_5 and I_4 majority of the people were engaged in services (62.79 and 62.50 per cent respectively).

Land use pattern

The land use pattern of the different size groups is

Table 5.11. Land use pattern of the sample (size groupwise)

	S_1		S_2		S_3		S_4		S_5		Overall	
	Total area	Per farm	Total area	Per farm	Total area	Per farm	Total area	Per farm	Total area	Per farm	Total area	Per farm
1. Total holding	4.00	0.29	16.89	0.63	21.81	0.99	18.17	1.40	61.88	2.58	122.75	1.25
i) Wet land	1.68	0.12	7.54	0.28	10.46	0.48	10.94	0.84	31.60	1.32	62.21	0.62
ii) Garden land	2.32	0.17	9.36	0.35	11.35	0.52	7.23	0.56	30.28	1.26	60.54	0.61
2. Land put to non-agricultural uses	0.12	0.01	0.34	0.01	0.28	0.001	0.18	0.01	0.41	0.02	1.32	0.01
3. Gross cropped area	4.14	0.30	19.07	0.71	21.58	0.98	19.71	1.52	70.02	2.90	134.53	1.33
i) Wet land	1.89	0.14	9.88	0.37	11.21	0.51	13.31	1.02	32.45	1.77	78.73	0.79
ii) Garden land	2.25	0.16	9.19	0.34	10.37	0.47	6.40	0.49	27.57	1115	55.80	0.56
4. Net cropped area	3.88	0.28	16.55	0.61	21.53	0.98	17.99	1.38	61.47	2.56	121.43	1.21
i) Wet land	1.68	0.12	7.54	0.28	10.46	0.48	10.94	0.84	31.60	1.32	62.21	0.62
ii) Garden land	2.20	0.16	9.02	0.33	11.07	0.50	7.05	0.54	29.88	1.25	59.22	0.59
a) Irrigated	2.62	0.19	13.75	0.51	16.55	0.75	14.72	1.13	51.84	2.16	99.48	0.99
Wet land	1.38	0.10	6.99	0.26	9.96	0.45	9.53	0.73	28.50	1.19	56.36	0.56
Garden land	1.24	0.99	6.76	0.25	6.59	0.30	5.19	0.40	23.34	0.97	43.12	0.43
b) Unirrigated	1.26	0.09	2.80	0.10	4.98	0.23	3.28	0.25	9.63	0.40	21.95	0.22
Percentage of area irrigated to net area	67.53		83.08		76.87		81.82		84.33		81.92	
Cropping intensity	107		115		100		110		114		111	

Table 5.12. Land use pattern of the sample (Income groupwise)

	I_1		I_2		I_3		I_4		I_5		Overall	
	Total area	Per farm	Total area	Per farm	Total area	Per farm	Total area	Per farm	Total area	Per farm	Total area	Per farm
1. Total holding	15.16	0.66	18.26	0.79	32.65	1.42	12.09	1.34	45.58	2.07	122.75	1.23
i) Wet land	6.94	0.30	9.26	0.40	18.64	0.81	6.26	0.70	22.11	1.01	62.21	0.62
ii) Garden land	8.23	0.36	9.00	6.39	14.01	0.61	5.83	0.65	23.48	1.07	60.54	0.61
Land put to non-agricultural uses	0.43	0.02	0.18	0.010	0.82	0.04	0.13	0.01	0.76	0.03	1.32	0.13
2. Gross cropped area	13.07	0.57	17.80	0.77	35.79	1.64	15.12	1.68	50.74	2.31	134.53	1.35
i) Wet land	7.39	0.32	9.40	0.41	22.93	1.00	9.91	1.10	29.09	1.32	78.73	0.79
ii) Garden land	5.68	0.25	8.40	0.37	14.86	0.64	5.21	0.58	21.65	0.98	55.80	0.56
3. Net cropped area	14.73	0.64	18.08	0.79	31.83	1.38	11.96	1.33	44.82	2.04	121.43	1.21
i) Wet land	6.94	0.30	9.26	0.40	18.64	0.81	6.26	0.70	21.11	0.96	62.21	0.62
ii) Garden land	7.80	0.34	8.81	0.38	13.19	0.57	5.70	0.63	23.72	1.08	59.22	0.59
a) Irrigated	11.39	0.50	15.08	0.66	26.27	1.14	9.35	1.04	37.39	1.70	99.48	0.99
Wet land	6.48	0.28	9.80	0.43	16.36	0.71	6.10	0.68	17.63	0.80	56.36	0.56
Garden land	4.91	0.21	5.28	0.23	9.91	0.43	3.25	0.36	19.76	0.90	43.12	0.43
b) Unirrigated land	3.34	0.15	3.00	0.13	5.56	0.24	2.61	0.29	7.43	0.34	21.95	0.22
Percentage of area irrigated to net area	77.33		83.41		82.53		78.18		83.42		81.92	
Cropping intensity	89		98		119		126		113		111	

represented in Table 5.11 for the selected households. The total area owned by the sample farmers was 122.75 hectares. In all, 1.32 hectares were put to non-agricultural uses. The net cropped area worked out to 121.43 hectares. The availability of net cropped area per farm was 1.21 hectares, while the total holding per farm was 1.23. The cropping intensity was 111 per cent on an average. The total holding of farmers consisted of wet lands and garden lands almost in equal proportions on an average.

The average net area cultivated was found to increase with the size of holdings. It was 0.28 for S_1, 0.61 for S_2, 0.98 for S_3, 1.38 for S_4 and 2.56 for S_5. The same trend was noticed in the case of average area irrigated. The proportion of area irrigated to the net area was found to be the highest in S_5 (84.33 per cent) followed by S_2 (83.08) and S_4 (81.82). The average worksdout to 81.92 per cent.

The percentage of area irrigated to net area was highest in I_5 (83.42 per cent) followed by I_2 (83.41 per cent and I_3 (82.53 per cent).

Cropping pattern

Table 5.13 shows the cropping pattern of the sample holdings. The total cropped area was found to be 134.53 hectares. Of this 55.8 hectares were garden lands and 78.73 wet land which worked out to 41.49 per cent and

58.51 per cent respectively. Of the total gross cropped area 58.51 per cent was under paddy, 32.97 per cent under coconut and 3.64 per cent under arecanut. The area under banana, pepper, cashew and other crops consisted of 0.85, 0.27, 1.6 per cent respectively. The proportion of wet land to total cropped area was found to be the lowest in S_1 (45.65 per cent) and the highest in S_4 (67.53 per cent). The high yielding variety coverage was highest for puncha paddy, in S_1 (80.15 per cent) and the lowest in S_4 (35.43 per cent). But for the mundakan season, the HYV coverage was highest in S_3 (56.52 per cent) and lowest in S_4 (10.67 per cent). In size group S_1 40.1 per cent of the total area (1.66 hec) was under coconut, which is the highest proportion of area under a single crop to the total area.

The area under each crop per farm is also worked out and is presented in Table 5.13. Wet land per farm was found to be increasing with size of the holdings. It was 0.14 hectare in first holding size class and 1.77 hectares in the highest holding size class, the average being 0.79 hectare. The average area under coconut was found to be 0.44 hectare and the per farm area under coconut was found to be increasing with an increase in total size of the holdings. The per farm area under arecanut and banana, on average were found to be 0.05 and 0.01 hectare respectively. The respective per farm

area for cashew and other crops worked out to 0.02 and 0.03 hectare. Per farm total garden land was found to be 0.56 hectare. Average per farm cropped area was found to be 1.35 hectares. Per farm gross cropped area was found to be the highest in S_5 (2.90 hectares) and the lowest in S_1 (0.30 hectare).

The income groupwise cropping pattern is presented in Table 5.14. The percentage of area under paddy was found to be the highest in I_4 (65.54) followed by I_3 (60.67) and I_5 (57.33). The proportion of area under coconut which is the most important cash crop in the area was the highest in I_2 (37.36 per cent) followed by I_5 (34.84 per cent) and I_3 (31.17 per cent). The per farm area under coconut was found to be the highest in I_5 (0.80 hectare) and the lowest in I_1 (0.17 hectare).

Capital assets

The investment by the farmers has been broadly classed into land, livestock, buildings, implements, machinery and shares. Since the average size of farms varies from 0.29 hectare to 2.58 hectares for the different holding size groups, it would be of interest to understand the asset position both per farmer as well as per hectare. Such a distribution of the assets for the holding size groups are presented in Table 5.15. On the whole it was seen that the investment on land accounted

for the bulk of the total assets (94.13 per cent). The total asset value of land per farmer in the sample was Rs.388451.80. The per hectare value of land was Rs.316457.67. In all the size groups, the proportion of land in the total assets was very high. It was more than 90 per cent for group S_3, S_4 and group S_5 recording the highest (97.24 per cent). It was 87.13 per cent in S_2 and 77.74 per cent in S_1. The value of land per farm was found to be over 10 lakhs in group S_5, over 2.5 lakhs in group S_3 and S_4, around 1.5 lakhs for group S_2 and little more than Rs.68,000 for group S_1.

The average value of livestock was about Rs.2000 which was below 1 per cent of the value of total assets. Residential buildings on an average accounted for 4.59 per cent of the total assets. The proportion of the value of buildings for the different size groups to the total assets were found to decrease with the increase in holding size group. The highest proportion was in group S_1 (18.25 per cent) and the lowest in group S_5 (2.1[illegible] per cent). Similar trend is also noticed for the farm house and the cattle shed. The average investment on implements was 0.46 per cent. The ownership of shares in co-operatives accounted for a meagre proportion of total assets with an overall average of 0.01 per cent.

The total assets per farm for the sample was worth Rs.412672.25. It was found to be increasing with increase

Table 5.15. Capital assets of cultivators (size groupwise)

(in rupees)

Items		S_1	S_2	S_3	S_4	S_5	Average
1. Land -	Per farm	68971.43	143342.59	261831.81	262269.23	1034980.40	388451.80
	Per hectare	241400.00	229144.46	264112.79	187644.46	401414.51	316457.67
	Percentage to total asset	77.74	87.13	90.58	92.64	97.24	94.13
2. Livestock -	Per farm	1254.29	1348.56	1790.59	1590.15	1796.54	1571.53
	Per hectare	4390.00	2155.77	1806.19	1137.70	696.78	1280.27
	Percentage to total asset	1.41	0.82	0.62	0.56	0.17	0.38
3. Buildings -	Per farm	16214.29	16222.22	22477.27	15076.92	22500.00	18955.00
i) Residential building	Per hectare	56750.00	25932.50	22673.09	10787.01	8726.57	15441.96
	Percentage to total asset	18.28	9.85	7.78	5.33	2.11	4.59
ii) Farm house-cattleshed	Per farm	1507.14	1670.37	1309.09	2146.15	2306.25	1782.50
	Per hectare	5275.00	2670.22	1320.50	1535.50	894.47	1452.14
	Percentage to total asset	1.70	1.02	0.45	0.76	0.22	0.43
4. Implements and machinery	Per farm	733.71	1887.44	1585.64	1908.92	2675.17	1851.37
	Per hectare	2568.00	3017.23	1599.45	1365.77	1037.56	1508.24
	Percentage to total asset	0.82	1.15	0.55	0.67	0.25	0.46
5. Shares in Co-operatives:	Per farm	40.71	50.37	67.27	126.15	39.79	60.05
	Per hectare	142.20	80.52	67.86	90.26	15.43	48.92
	Percentage to total asset	0.05	0.03	0.02	0.04	0.01	0.01
Total -	Per farm	88721.57	164521.55	289061.67	283117.52	1064298.15	412672.25
	Per hectare	310525.50	263000.70	291579.86	202560.69	412785.32	336189.21
	Percentage	100.00	100.00	100.00	100.00	100.00	100.00

Table 5.16. Capital assets of selected cultivators (Income groupwise)

(in rupees)

Items		I_1	I_2	I_3	I_4	I_5	Average
1. Land	- Per farm	134700.00	175481.73	306302.17	309588.88	994534.09	388451.80
	Per hectare	204360.15	221033.95	215705.75	230463.19	490797.44	316457.67
	Percentage to total	89.39	86.41	91.67	91.28	97.71	94.13
2. Livestock	- Per farm	1133.04	1672.39	1924.91	1402.78	1624.09	1571.53
	Per hectare	1719.00	2106.52	1355.57	1044.25	801.48	1280.27
	Percentage to total	0.75	0.82	0.58	0.41	0.16	0.38
3. Buildings: a) Residential buildings							
	Per farm	12043.48	22760.87	21304.35	25000.00	17272.73	18955.00
	Per hectare	18271.77	28669.22	15003.06	18610.42	8524.00	15441.96
	Percentage to total	7.99	11.21	6.38	7.37	1.70	4.59
b) Farm house Cattle shed							
	Per farm	1276.09	1486.96	2545.65	1500.00	1938.64	1782.50
	Per hectare	1936.02	1872.95	1792.71	1116.63	956.71	1452.14
	Percentage to total	0.85	0.73	0.76	0.44	0.19	0.43
4. Implements and machinery							
	Per farm	1488.09	1622.46	1966.07	1584.70	2459.67	1851.37
	Per hectare	2257.65	2043.59	1384.56	1179.68	1213.84	1508.24
	Percentage to total	0.99	0.80	0.59	0.47	0.24	0.46
5. Shares in Co-operatives							
	Per farm	53.48	57.39	75.87	90.56	40.68	60.05
	Per hectare	81.13	72.29	53.43	67.41	20.08	48.92
	Percentage to total	0.04	0.03	0.02	0.03	-	0.01
Total	- Per farm	150694.18	203081.80	334119.02	339166.92	1017869.90	412672.25
	Per hectare	228625.73	255798.50	235295.08	252481.58	502313.54	336189.21
	Percentage	100.00	100.00	100.00	100.00	100.00	100.00

in size of holding. Total assets per hectare on an average was Rs.336189.21. It was the highest for the group S_5.

The trend in capital investment among different income groups both per farm and per hectare remained more or less similar to that of holding size groups. The total value of assets found to be increasing with an increase in income.

The distribution of total assets according to different income groups are presented in Table 5.16. It may be noted that both in the case of holding size groups as well as of income groups, the average assets per farmer increased with the increase in their holding or income.

Livestock

Different types of domestic animals and birds were found to be possessed by the farmers. They included milch animals, drought animals, young stock, goats and poultry. The average possession of these for the different size categories of farmers both in terms of numbers as well as value indicating the proportion of the investment to the total are shown in Table 5.17.

Of the total investment of Rs.1576.03 on an average on livestock, Rs.1161/- was on milch animals which is 73.67 per cent. The average number of milch animals was 0.88. The investment on drought animals was 123.50. Investment on young stock constitutes 9.68 per cent of the total investment.

Table 5.17. Investment in livestock by the households per farm (Size groupwise)

Size groups	Particulars	Milch animals	Draft animals	Young stock	Goats	Poultry	Total
S_1	Number	0.71	0.14	0.29	0.14	3.07	
	Value (Rs)	1057.14	32.14	82.14	21.43	61.43	1254.28
	Percentage to total investment on livestock	84.28	2.56	6.55	1.71	4.90	100.00
S_2	Number	0.78	0.15	0.41	0.30	4.19	
	Value (Rs)	977.78	88.89	129.63	68.52	83.74	1348.56
	Percentage to total investment on livestock	72.51	6.59	9.61	5.08	6.21	100.00
S_3	Number	0.95	0.27	0.45	0.27	4.77	
	Value (Rs)	1309.09	177.27	143.18	65.91	95.14	1790.59
	Percentage to total investment on livestock	73.11	9.90	8.00	3.68	5.31	100.00
S_4	Number	1.00	0.15	0.77	0.23	5.69	
	Value (Rs)	1138.46	153.85	138.46	46.15	113.23	1590.15
	Percentage to total investment on livestock	71.59	9.68	8.71	2.90	7.12	100.00
S_5	Number	0.96	0.17	0.58	0.04	5.13	
	Value (Rs)	1304.17	150.00	235.42	4.17	102.79	1796.55
	Percentage to total investment on livestock	72.59	8.35	13.10	0.23	5.72	100.00
Overall average							
	Number	0.88	0.16	0.50	0.20	4.58	
	Value (Rs)	1161.00	123.50	152.50	47.50	91.53	1576.03
	Percentage to total investment on livestock	73.67	7.84	9.68	3.01	5.80	100.00

Table 5.18. Investment in livestock by the households per hectare (Income groupwise)

Income groups	Particulars	Milch animals	Draft animals	Young stock	Goats	Poultry	Total
I_1	Number	0.78	0.09	0.30	0.04	2.52	3.73
	Value (Rs)	930.43	47.83	95.65	8.70	50.43	1133.04
	Percentage to total investment on livestock	82.12	4.22	8.44	0.77	4.45	100.00
I_2	Number	0.74	0.26	0.43	0.39	4.17	5.99
	Value (Rs)	1126.09	226.08	141.30	95.65	83.26	1672.38
	Percentage to total investment on livestock	67.33	13.52	8.45	5.72	4.98	100.00
I_3	Number	1.13	0.09	0.65	0.09	5.26	7.22
	Value (Rs)	1460.87	86.96	243.48	28.26	105.35	1924.92
	Percentage to total investment on livestock	75.89	4.52	12.65	1.47	5.47	100.00
I_4	Number	0.89	-	0.33	0.33	9.00	10.55
	Value (Rs)	1038.89	-	105.50	77.78	180.56	1402.79
	Percentage to total investment on livestock	74.06	-	7.52	5.54	12.88	100.00
I_5	Number	0.86	0.27	0.68	0.18	4.64	6.63
	Value (Rs)	1175.00	200.49	147.73	45.45	92.27	1660.94
	Percentage to total investment on livestock	70.74	12.07	8.89	2.74	5.56	100.00
Overall average							
	Number	0.88	0.16	0.50	0.20	4.58	6.32
	Value (Rs)	1161.00	123.50	152.50	47.50	91.53	1576.03
	Percentage to total investment on livestock	73.67	7.84	9.68	3.01	5.80	100.00

Among the various size groups, the highest number of milch animals were observed in S_4 and the lowest in group S_1. The value of milch animals was the highest for group S_3 amounting to Rs.1309.09.

Poultry were found to be the next important item of investment by the farmers. On an average each family possessed 4.58 birds, which accounted for 5.80 per cent of the total investment. Generally, the number of birds as well as the total investment on them was found to have a direct relationship with the size of the farm.

Tools, implements and machinery

Investment on tools, implements and machinery was Rs.1851.37 per farm and amounted to Rs.1508.25 per hectare on an average. This item formed only 0.46 per cent of the total assets. A break up of the total investment on tools and implements for the different size groups are shown in Table 5.19. Tools included items like spade, pick axe, crow bar, etc. and temporary items like baskets, mats, ropes, etc.

Investment on pumpset constituted the major part of the total investment - 90.60 per cent on this category of investment. This amounted to Rs.1677.40 per farm and Rs.1366.52 per hectare on an average. The proportion of

Table 5.19. Distribution of tools, implements and machinery per farm (size groupwise)

(in rupees)

Items	S_1	S_2	S_3	S_4	S_5	Average
1. Tools and implements:						
Per farm	40.43	42.07	50.00	74.31	83.88	57.81
Per hectare	141.50	67.23	50.44	53.16	32.53	47.10
Percentage to total investment	5.51	2.23	3.15	3.89	3.14	3.12
2. Temporary items:						
Per farm	82.57	57.40	64.27	73.08	64.63	66.21
Per hectare	289.00	91.77	64.83	52.28	25.06	53.94
Percentage to total investment	11.25	3.04	4.05	3.83	2.42	3.58
3. Sprayers:						
Per farm	-	36.11	31.82	-	138.33	49.95
Per hectare	-	243.75	32.10	-	53.65	40.69
Percentage to total investment	-	1.91	2.01	-	5.16	2.70
4. Pumpsets:						
Per farm	610.71	1751.85	1439.55	1761.54	2388.33	1677.40
Per hectare	2137.50	2800.47	1452.09	1260.32	926.31	1366.52
Percentage to total investment	83.24	92.82	90.79	92.28	89.28	90.60
Total						
Per farm	733.71	1887.43	1585.64	1908.93	2675.17	1851.37
Per hectare	2568.00	3203.22	1599.46	1365.76	1037.55	1508.25
Percentage to total investment	100.00	100.00	100.00	100.00	100.00	100.00

Table 5.20. Distribution of tools, implements and machinery per farm (Income groupwise)

(in rupees)

Items	I_1	I_2	I_3	I_4	I_5	Average value
1. Tools and implements:						
Per farm	50.91	38.35	67.43	56.11	76.00	57.81
Per hectare	77.24	48.30	47.49	41.77	37.51	47.10
Percentage to total investment	3.42	2.36	3.43	3.54	3.09	3.12
2. Temporary items:						
Per farm	65.43	68.77	67.18	43.25	72.72	66.21
Per hectare	99.27	86.62	47.31	32.20	35.88	53.94
Percentage to total investment	4.40	4.24	3.42	2.73	2.96	3.58
3. Sprayers:						
Per farm	-	25.13	33.61	39.56	149.45	49.95
Per hectare	-	31.65	23.67	29.45	73.76	40.69
Percentage to total investment	-	1.55	1.71	2.50	6.08	2.70
4. Pumpset:						
Per farm	1371.74	1490.22	1797.83	1445.78	2161.50	1677.40
Per hectare	2081.13	1877.05	1266.07	1076.26	1066.69	1366.52
Percentage to total investment	92.18	91.85	91.44	91.23	87.87	90.60
Total						
Per farm	1488.08	1622.47	1966.05	1584.70	2459.67	1851.37
Per hectare	2257.64	2043.62	1384.54	1179.68	1213.84	1508.25
Percentage to total investment	100.00	100.00	100.00	100.00	100.00	100.00

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investment of pumpsets to total expenditure for tools, implements and machinery was the highest in S_2 (92.82 per cent) and the lowest in S_1 (83.24 per cent).

The proportion of expenditure on temporary items was the highest in S_1 (11.25 per cent), the average being 3.58 per cent.

Tools and implements constituted 3.12 per cent of total investment for tools, implements and the machinery. The proportion was highest in S_1 (5.51 per cent) and lowest in S_2 (2.23 per cent).

Investment on sprayers accounted for 2.70 per cent of the total expenditure on tools, implements and machinery. This amounted to Rs.49.95 per farm and Rs.40.69 per hectare on an average.

Table 5.20 presents the distribution of tools, implements and machinery among the income groups. The proportional expenditure to the total expenditure on various items was found to be decreasing with increase in income for pumpsets and temporary items. But expenditure on sprayers was found to increase with increase in income.

Shares in co-operatives

Another item of investment was shares owned by the farmers in the co-operative societies. This item accounted

Table 5.21. shares owned by farm families (size groupwise)

(in rupees)

Type of shares	S_1	S_2	S_3	S_4	S_5	Total
1. Service Co-operative Society	400.00	940.00	1020.00	1135.00	660.00	4155.00
Percentage	70.18	69.11	68.92	69.21	69.11	69.19
2. Milk Co-operative Society	100.00	240.00	260.00	290.00	160.00	1050.00
Percentage	17.54	17.65	17.57	17.68	16.75	17.49
3. Others	70.00	180.00	200.00	215.00	135.00	800.00
Percentage	12.28	13.24	13.51	13.11	14.14	13.32
Total	570.00	1360.00	1480.00	1640.00	955.00	6005.00
Percentage	100.00	100.00	100.00	100.00	100.00	100.00

Table 5.22. Shares owned by farm families (Income groupwise)

(in rupees)

Type of shares	I_1	I_2	I_3	I_4	I_5	Total
1. Service Co-operative Society	850.00	915.00	1215.00	565.00	610.00	4155.00
Percentage	69.11	69.32	69.63	69.32	68.16	69.19
2. Milk co-operative Society	215.00	230.00	300.00	140.00	165.00	1050.00
Percentage	17.48	17.42	17.19	17.18	18.44	17.49
3. Others	165.00	175.00	230.00	110.00	120.00	800.00
Percentage	13.41	13.26	13.18	13.50	13.40	13.32
Total	1230.00	1320.00	1745.00	815.00	895.00	6005.00
Percentage	100.00	100.00	100.00	100.00	100.00	100.00

for only a meagre 0.01 per cent of the total investment. The distribution for the various size and income groups are shown in Tables 5.21 and 5.22 respectively. In both the income groups and size groups bulk of the shares owned by farmers were in service co-operative societies. The total value of shares possessed was seen to be for Rs.6005/- only - Rs.4155 in service co-operative societies, Rs.1050/- in milk co-operative societies and Rs.800/- in other types of societies.

CHAPTER VI

ECONOMICS OF FARM BUSINESS

Farm holdings in the area by and large are small. Each farmer was found to possess more than one fragment, consisting of wet lands and garden lands. This fact was reflected in the cropping pattern in the sample holdings. Wet lands were generally cultivated with paddy. It was seen that garden lands are put under a variety of crops such as coconut, arecanut, banana, cashew, pepper, etc. in different combinations. The practices followed for cultivation of various crops remain more or less the same in Irinjalakkuda Block. An account of the cultivation practices followed, the cost of cultivation of different crops and profitability of different crops are given in this part.

PADDY

Paddy is grown in two seasons mainly, the Mundakan season which starts by August and Puncha from January. Generally it is observed that majority of the cultivators grow paddy only during the Puncha. For both these seasons the cultivation practices remain more or less the same with slight variations to adjust to the prevailing climatic conditions. Paddy cultivation is concentrated on the banks of Karuvannoor river and in areas referred to as 'Kole lands"

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which remain submerged under water for almost six months in an year.

In areas where water level is comparatively low and where the water recedes around August, two crops are made possible - Mundakan and Puncha. In other areas only the puncha crop is possible.

At the end of the Puncha crop, after harvest, the lands are generally ploughed once - partial ploughing - and left to water enundation.

Cultivation operation for Mundakan paddy starts soon after the water recedes, by August. Fields are ploughed, puddled and levelled to attain required tilth. Land preparation is accomplished by ploughing using bullocks or tractors or by digging up the land. Puncha paddy is seen cultivated both in the areas where mundakan is grown as well in lands which remain under water even during the months of June to December. In such areas where Puncha crop is raised land preparation is effected similarly. In certain parts of the Block, namely Karuvannoor, cultivation of paddy is in lands which are dewatered.

Seeding is through both broadcasting as well as transplanting. Both high yielding and local varieties were cultivated. The seed rate for broadcast is seen to be 80-100 kg per hectare while transplanting it is around 40-50 kg per hectare.

Farmers do not treat the seeds before sowing. Seedlings to be transplanted are raised in separate nurseries and are transplanted after about 20-25 days in nurseries.

Cowdung is the organic manure commonly applied. Ash and green leaf are seen used wherever it is available. These are given as basal doses along with ploughing - preparatory cultivation. Chemical fertilizers are applied by majority of the farmers both as basal doses and top dressing.

Handweeding is the common practice to control weeds. Generally two weedings are given. Plant protection chemicals of different varieties are used to control pests and diseases. The application of pesticides are more for Puncha than for Mundakan.

Harvesting is by cutting at the base of plants and they are bundled and transported, threshed and cleaned. Women are generally employed for these operations. Workers are paid cash wages except for harvest where payments are made in kind.

A. Area under paddy

Both high yielding and local varieties were cultivated. Eightythree farmers of the sample were found to cultivate paddy during puncha - fortyeight of them high yielding varieties and thirtyfive cultivated local varieties. The total area under the high yielding varieties of paddy was 26.87 hectares while that under local varieties was 27.57 hectares.

For Mundakan paddy, the average area under high yielding varieties per farm was 0.59 hectare and for local varieties it was 0.78 hectare. The area under traditional varieties was found to be 32.20 per cent more than that of high yielding varieties. The distribution is presented in Table 6.1.

The average area under high yielding varieties of paddy per farmer in Puncha was 0.56 hectare while that for local varieties 0.79 hectare. When distributed according to different holding size groups the area under paddy was found to increase with the size of the farm both for high yielding varieties and local varieties. Among income groups though a similar trend was observed for local varieties, it was not seen for high yielding varieties. The aggregate area under local varieties in Puncha was found to be 41.07 per cent more than that for high yielding varieties. The distribution is given in Table 6.2.

The cost per hectare of high yielding varieties during Mundakan season on an average was found to be Rs.4186.60 (as shown in Table 6.3). The highest cost was recorded by S_3 (Rs.4513.00) which was 7.80 per cent higher than the average cost and 25 per cent higher than the lowest cost recorded by S_4 (Rs.3610.32). For the local varieties the average cost was found to be 22.18 per cent lower (Rs.3426.70) than that of the high yielding varieties. The highest cost was found to be Rs.3549.23 in S_1 which was 3.58 per cent higher than

Table 6.3. Total cost of cultivation per hectare of paddy (Mundakan)

(in rupees)

Size groups	S_1	S_2	S_3	S_4	S_5	Average
a) High yielding varieties	4302.08	4074.08	4513.00	3610.32	4185.87	4186.60
b) Local varieties	3549.23	3453.18	3164.98	3450.66	3379.41	3426.70
Income groups	I_1	I_2	I_3	I_4	I_5	**Average**
a) High yielding varieties	3869.87	-	4002.60	4241.56	4297.27	4186.60
b) Local varieties	2921.04	3817.36	3736.42	3119.71	3321.83	3426.70

Table 6.4. Total cost of cultivation per hectare of paddy (Puncha)

(in rupees)

Size groups	S_1	S_2	S_3	S_4	S_5	Average
a) High yielding varieties	5929.20	5337.42	5237.96	4871.27	4647.40	4959.11
b) Local varieties	5924.51	4627.41	4312.07	4831.49	4345.43	4498.27
Income groups	I_1	I_2	I_3	I_4	I_5	**Average**
a) High yielding varieties	5116.11	4951.06	4980.13	4931.28	4914.38	4959.11
b) Local varieties	4506.91	4476.45	4588.05	4033.52	4511.18	4498.27

the average and 12.14 per cent higher than the lowest recorded in S_5 (Rs.3164.98).

Among the income groups the cost of cultivation per hectare for HYVs was found to be increasing with an increase in income.

The total cost of cultivation per hectare of paddy for the Punchs both for high yielding varieties and local varieties for the different classes and groups are represented in Table 6.4. The average cost incurred for the high yielding varieties was Rs.4959.11, while that for local varieties it was Rs.4498.27 which was 1.24 per cent less. It can be noted from the table that the cost of cultivation for the different size groups both for HYVs and local varieties were found to decrease with increase in area. The highest cost for HYVs was recorded by S_1 (Rs.5929.20) which is 19.56 per cent more than the average, while the lowest recorded by S_5 the largest size group (Rs.4647.40) which is 27.58 per cent less than the cost for S_1. The average cost of cultivation of local varieties was Rs.4498.27. In this case the cost for S_1 was found to be 31.70 per cent more than the average and 37.39 per cent more than the lowest cost per hectare incurred by S_5. It may also be noted that the cost per hectare for the lowest size group which had only a tiny area of 0.13 hectare under paddy remained almost the same for both HYVs and local varieties. The higher costs in the lower size groups appear to be

due to certain indivisibilities, particularly in the employment of wage labour.

The total cost per hectare among the various income groups for the high yielding varieties showed decreasing trend with increase in income.

An inputwise split up of the average cost of cultivation per hectare of paddy for both the high yielding varieties and the local varieties for Puncha and Mundakan are represented in Table 6.5. It is clear from the table that the bulk of the total cost was incurred on hired human labour, which accounted for around 30 per cent of the total. Rental value of land assumed next in the order of importance, also accounting for 25 to 30 per cent of the total cost. Use of manures and fertilizers put together accounted for 8 to 13 per cent of the total cost.

The cost of cultivation distributed between the various operations is attempted to and is presented in Table 6.6. Among the various operations the largest proportion of cost to the total cost was incurred on seed materials and sowing - around 18 per cent on an average. Harvesting constituted about 15 per cent. Expenditure on preparation of land accounted for about 10 per cent to the total cost. The expenditure on fertilizers in the case of Puncha high yielding varieties was three times more than that for Mundakan high yielding varieties.

Table 6.5. Cost of cultivation per hectare of paddy (inputwise)

(in rupees)

Sl. No.	Items	Puncha		Mundakan	
		HYV	LV	HYV	LV
1	Tractor use	172.63 (3.48)	139.73 (3.11)	68.47 (1.64)	150.03 (4.38)
2	Animal labour	248.68 (5.01)	347.49 (7.72)	143.81 (3.44)	143.88 (4.21)
3	Hired human labour	1366.04 (27.55)	1341.97 (29.83)	1539.44 (36.77)	1097.23 (32.02)
4	Seed materials	429.78 (8.67)	422.42 (9.39)	453.49 (10.83)	415.02 (12.11)
5	Manures	79.27 (1.60)	134.78 (3.00)	187.00 (4.47)	179.34 (5.23)
6	Fertilizers	565.71 (11.41)	335.00 (7.45)	169.45 (4.05)	175.00 (5.11)
7	Pesticides	222.47 (4.49)	150.63 (3.35)	95.32 (2.28)	85.37 (2.49)
8	Irrigation	331.80 (6.69)	307.87 (6.84)	-	-
9	Depreciation	35.11 (0.70)	35.11 (0.78)	35.11 (0.84)	35.11 (1.02)
10	Interest on working capital	138.06 (2.78)	128.60 (2.86)	107.68 (2.56)	91.24 (2.66)
11	Cost A	3589.55 (72.38)	3343.60 (74.33)	2799.77 (66.88)	2372.22 (69.23)
12	Rental value	1290.69 (26.03)	1095.85 (24.35)	1326.00 (31.67)	1015.49 (29.63)
13	Interest on fixed capital	23.96 (0.48)	23.96 (0.53)	23.96 (0.57)	23.96 (0.70)
	Cost B	4904.20 (98.89)	4462.71 (99.21)	4149.73 (99.12)	3411.67 (99.56)
14	Family labour	54.91 (1.11)	35.56 (0.79)	36.87 (0.88)	15.03 (0.44)
15	Cost C	4959.11 (100.00)	4498.97 (100.00)	4186.60 (100.00)	3426.70 (100.00)

(Figures in parentheses are percentages to total)

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Table 6.6. Cost of cultivation per hectare of paddy (operationwise)

(in rupees)

Sl. No.	Operations	Puncha		Mundakan	
		HYV	LV	HYV	LV
1	Preparation of land	528.76 (10.66)	599.65 (13.33)	328.17 (7.84)	366.86 (10.71)
2	Seed materials and sowing	675.50 (13.62)	708.94 (15.76)	824.09 (19.68)	708.59 (20.68)
3	Manures and manuring	98.60 (1.99)	159.05 (3.54)	234.71 (5.60)	218.52 (6.38)
4	Fertilizers and application	595.10 (12.00)	353.57 (7.86)	177.36 (4.24)	184.63 (5.39)
5	Plant protection	286.20 (5.77)	210.73 (4.68)	106.58 (2.55)	95.36 (2.78)
6	Weeding	188.21 (3.80)	236.15 (5.25)	199.64 (4.77)	119.22 (3.48)
7	Irrigation	331.80 (6.69)	307.87 (6.84)	-	-
8	Harvesting	767.12 (15.47)	639.50 (14.22)	823.30 (19.66)	567.72 (16.57)
9	Depreciation	35.11 (0.71)	35.11 (0.78)	35.11 (0.84)	35.11 (1.02)
	Total	3506.40 (70.71)	3250.56 (72.26)	2728.96 (65.18)	2296.01 (67.01)
10	Interest on working capital	138.06 (2.78)	128.60 (2.86)	107.68 (2.58)	91.24 (2.66)
11	Rental value	1290.69 (26.03)	1095.85 (24.35)	1326.00 (31.67)	1015.49 (29.63)
12	Interest on fixed capital	23.96 (0.48)	23.96 (0.53)	23.96 (0.57)	23.96 (0.70)
	Total cost	4959.11 (100.00)	4498.97 (100.00)	4186.60 (100.00)	3426.70 (100.00)

(Figures in parentheses are percentages to total)

But for plant protection, expenditure during Puncha was double the expenditure incurred during Mundakan. No cost was incurred on irrigation for the Mundakan as it is a rainfed crop.

In computing cost C imputed rental value of land was also accounted for, which cannot be considered as a true representation of the actual cost incurred by the farmers. So a split up of cost of cultivation on the basis of total cost excluding the rental value of land was worked out and is shown in Table 6.7. According to this the extent of hired human labour during Puncha season was to the order of about 40 per cent for both the high yielding and local varieties. For Mundakan high yielding varieties more than 50 per cent of the expenditure was on hired labour and 15.85 per cent of the expenditure was on seed material. Family labour constituted only 1.29 per cent of the total cost. The respective proportion of expenses for local varieties were 45.51, 17.21 and 0.62.

Among the various operations seed materials and sowing and harvesting accounted for the bulk of the cost. The proportion of expenditure on seed materials and sowing was the highest for local variety Mundakan accounting for 29.39 per cent, followed by high yielding Mundakan varieties (28.81 per cent), Puncha local varieties (20.84 per cent) and Puncha high yielding varieties (18.41 per cent).

Table 6.7. Cost of cultivation per hectare of paddy excluding rental value of land (inputwise)

(in rupees)

Sl. No.	Items	Puncha		Mundakan	
		HYV	LV	HYV	LV
1	Tractor use	172.63 (4.71)	139.73 (4.11)	68.47 (2.39)	150.05 (6.22)
2	Animal labour	248.68 (6.78)	347.49 (10.21)	143.81 (5.03)	143.88 (5.97)
3	Hired human labour	1366.04 (37.24)	1341.97 (39.44)	1539.44 (53.82)	1097.23 (45.51)
4	Seed material	429.78 (11.72)	422.42 (12.42)	453.49 (15.85)	415.02 (17.21)
5	Manures	79.27 (2.16)	134.78 (3.96)	187.00 (6.54)	179.34 (7.44)
6	Fertilizers	565.71 (15.42)	335.00 (9.85)	169.45 (5.92)	175.00 (7.26)
7	Pesticides	222.47 (6.06)	150.63 (4.43)	95.32 (3.33)	85.37 (3.54)
8	Irrigation	331.80 (9.04)	307.87 (9.05)	-	-
9	Depreciation	35.11 (0.96)	35.11 (1.00)	35.11 (1.23)	35.11 (1.46)
10	Interest on working capital	138.06 (3.76)	128.60 (3.78)	107.68 (3.76)	91.24 (3.78)
11	Family labour	54.91 (1.50)	35.56 (1.05)	36.87 (1.29)	15.03 (0.62)
12	Interest on fixed capital	23.96 (0.65)	23.96 (0.70)	23.96 (0.84)	23.96 (0.99)
	Total cost	3668.42 (100.00)	3403.12 (100.00)	2860.60 (100.00)	2411.21 (100.00)

(Figures in parentheses are percentages to total)

For harvesting the proportional expenditure was 28.78 per cent for Mundakan high yielding varieties, 23.55 per cent for local varieties in Mundakan season 20.91 per cent for Puncha HYVs and 18.80 per cent for Puncha local varieties. The cost of fertilizers and its application was the highest for HYVs puncha Rs.595.10 accounting for 16.23 per cent of the total cost. The proportion of the same for the local variety Puncha was 10.39 per cent (Rs.353.57). For the Mundakan, this operation accounted for 7.66 per cent of the total cost (Rs.184.63) for local varieties while 6.24 per cent for HYVs (Rs.177.36). The proportion expenditure to total cost for manures and manuring was found to be higher for Mundakan in general accounting for Rs.218.52 (9.06 per cent) for the local varieties and Rs.234.71 (8.20 per cent) for the HYVs. The expenditure on this item for Puncha local varieties was Rs.159.05 (4.67 per cent) and HYVs Rs.98.60 (2.69 per cent). The cost for preparing the land was the highest for Puncha local varieties Rs.599.65 (17.62 per cent) followed by HYV Puncha Rs.528.76 (14.41 per cent). For the Mundakan this item accounted for Rs.366.86 for local varieties, Rs.328.17 for high yielding varieties. Irrigation, an operation only for the Puncha crop accounted for little more than 9 per cent for both high yielding and local varieties. The information is presented in Table 6.8.

Table 6.8. Cost of cultivation per hectare of paddy excluding rental value of land (operationwise)

(in rupees)

Sl. No.	Operations	Puncha		Mundakan	
		HYV	LV	HYV	LV
1	Preparation of land	528.76 (14.41)	599.65 (17.62)	328.17 (11.47)	366.86 (15.21)
2	Seed materials and sowing	675.50 (18.41)	708.94 (20.84)	824.09 (28.81)	708.59 (29.39)
3	Manures and manuring	98.60 (2.69)	159.05 (4.67)	234.71 (8.20)	218.52 (9.06)
4	Fertilisers and application	595.10 (16.23)	353.57 (10.39)	177.36 (6.21)	184.63 (7.66)
5	Plant protection	286.20 (7.80)	210.73 (6.19)	106.58 (3.73)	95.36 (3.95)
6	Weeding	188.21 (5.13)	236.15 (6.94)	199.64 (6.98)	119.22 (4.94)
7	Irrigation	331.80 (9.05)	307.87 (9.05)	-	-
8	Harvesting	767.12 (20.91)	639.50 (18.80)	823.30 (28.78)	567.72 (23.55)
9	Depreciation	35.11 (0.96)	35.11 (1.03)	35.11 (1.23)	35.11 (1.46)
	Total	3506.40 (95.58)	3250.56 (95.54)	2728.96 (95.40)	2296.01 (95.22)
10	Interest on working capital	138.06 (3.76)	128.60 (3.78)	107.68 (3.76)	91.24 (3.78)
11	Interest on fixed capital	23.96 (0.65)	23.96 (0.70)	23.96 (0.83)	23.96 (0.79)
	Total cost	3668.42 (100.00)	3403.12 (100.00)	2860.60 (100.00)	2411.21 (100.00)

(Figures in parentheses are percentages to total)

Resource use in paddy cultivation

a) High Yielding Varieties during Mundakan season

In this, the use of family labour was found to be decreasing with increase in size in the case of high yielding varieties. The hired man labour use was the highest in S_1 (212.50 man hours) but the hired female labour was the highest in S_5 (1065 hours), the average being 72.72 hours and 1032.27 hours respectively. The involvement of family labour was of the order of 15.51 in the case of male labour and only less than one per cent in the case of female labour. The utilisation of bullock and tractor shows that bullock labour was the highest in S_1. This was the lowest in S_2 where the use of tractor was higher. The respective averages were 19.31 and 1.96 hours.

Use of seeds also showed variation - the highest rate in S_5 (151.78 kg) which is 54.12 per cent higher than the lowest rate used (98.48 kg) in S_1, the average use being 130.74 kg as against the recommended rate of 80-100 kg for broadcasting.

It can be seen from Table 6.9 that the use of fertilisers was much below the recommended dose. The quantities applied by the farmers as percentages of recommended rate, in the case of N, P and K were 83.21 per cent, 71.86 per cent and 61.34 per cent respectively on an average. The lowest

Table 6.9. Use of resources per hectare (Mundakan high yielding varieties - size groupwise)

Groups / Unit	S_1	S_2	S_3	S_4	S_5	Average
Family labour (hrs)						
Men	97.50	12.50	20.00	45.00	7.50	13.35
Women	-	15.00	-	-	1.20	3.04
Hired human labour (Hrs)						
Men	212.50	75.00	77.50	50.00	67.50	72.72
Women	1030.00	945.00	967.50	920.00	1065.00	1032.27
Total human labour						
Men	310.00	87.50	97.50	95.00	75.00	86.07
Women	1030.00	960.00	967.50	920.00	1066.20	1035.31
Bullock labour (hrs)	60.00	12.50	20.00	45.00	17.50	19.31
Tractor labour (hrs)	-	4.31	1.27	-	1.74	1.96
Seeds (kg)	98.48	110.63	151.78	125.00	134.10	130.74
Fertilizers (kg)						
Nitrogen	6.45	14.38	20.10	28.75	9.40	11.75
Phosphorus	6.45	17.95	5.43	-	9.40	9.85
Potash	6.45	10.78	5.43	37.50	13.90	13.53

Table 6.10. Use of resources per hectare (Mundakan-high yielding varieties Income groupwise)

Classes / Unit	I_1	I_2	I_3	I_4	I_5	Average
Family labour (hrs)						
Men	62.50	-	17.50	25.00	2.50	13.35
Women	-	-	7.50	-	2.50	3.04
Hired human labour (hrs)						
Men	87.50	-	65.00	50.00	72.50	72.72
Women	1025.00	-	950.00	837.50	1130.00	1032.27
Total human labour (hrs)						
Men	150.00	-	82.50	75.00	75.00	86.07
Women	1025.00	-	957.50	837.50	1132.50	1035.31
Bullock labour (hrs)	25.00	-	20.00	12.50	20.00	19.31
Tractor labour (hrs)	-	-	5.18	3.16	0.20	1.96
Seeds (kg)	112.95	-	107.65	160.00	136.75	130.74
Fertilisers (kg)						
Nitrogen	19.88	-	14.00	16.60	8.08	11.75
Phosphorus	19.88	-	8.88	15.18	7.25	9.85
Potash	19.88	-	23.85	8.75	8.70	13.53

nitrogen use was in S_1 (6.45 kg) which is only 13.50 per cent of the recommended dose. Even the highest level used (28.75 kg in S_4) was only 41.07 per cent of the recommendation. The highest quantity of phosphatic fertilisers used was 17.95 kg in S_2 just above 50 per cent of the recommendation. In the case of potassic fertilisers only in S_4 the use was found to be almost on par with the recommended dose and in all the other groups it was very low.

Among the income groups (as per Table 6.10) no farmer in I_2 was cultivating high yielding varieties of paddy. Family labour use was found to be decreasing with the increase in income. In all the income groups the use of fertilizer was below the recommended dose.

b) Local Varieties during Mundakan season

The use of family labour was found to be very low for Mundakan local varieties. The use of hired female and male labour was found to be almost the same among the groups, the averages being 49.35 hours and 925.72 hours respectively. The bullock labour was found to be the highest in S_1 and tractor use highest in S_3. The respective overall averages were 20.15 hours and 4.29 hours.

Seed rate was found to vary widely among the holding size groups. The average seed rate was 119.84 kg. As stated

Table 6.11. Use of resources per hectare (Mundakan-local varieties size groupwise)

Groups / Unit	S_1	S_2	S_3	S_4	S_5	Average
Family labour (hrs)						
Men	57.50	20.00	12.50	5.00	-	5.31
Women	75.00	-	-	-	-	1.62
Hired human labour (hrs)						
Men	77.50	42.50	47.50	42.50	52.50	49.35
Women	775.00	910.00	747.50	995.00	920.00	925.72
Total human labour(hrs)						
Men	135.00	62.50	60.00	47.50	52.50	54.66
Women	850.00	910.00	747.50	995.00	920.00	927.34
Bullock labour (hrs)	37.50	7.50	15.50	15.50	15.50	20.15
Tractor labour (hrs)	-	-	6.67	4.25	5.18	4.29
Seeds (kg)	153.13	121.95	83.33	114.30	122.83	119.84
Fertilisers (kg)						
Nitrogen	4.40	19.63	13.33	14.10	12.33	13.50
Phosphorus	4.40	14.33	16.68	8.45	9.93	10.29
Potash	4.40	8.78	-	20.35	13.93	14.00

Table 6.12. Use of resources per hectare (Mundakan-local varieties income groupwise)

Groups / Unit	I_1	I_2	I_3	I_4	I_5	Average
Family labour (hrs)						
Men	30.00	100.00	5.00	1.25	-	5.31
Women	45.00	-	-	-	-	1.62
Hired human labour (hrs)						
Men	35.00	7.50	47.50	72.50	45.00	49.35
Women	755.00	1225.00	925.00	845.00	925.00	925.72
Total human labour (hrs)						
Men	65.00	107.50	52.50	73.75	45.00	54.66
Women	800.00	1225.00	925.00	845.00	925.00	927.34
Bullock labour (hrs)	22.50	37.50	20.00	20.00	17.50	20.15
Tractor labour (hrs)	-	-	5.61	0.81	5.23	4.29
Seeds (kg)	151.93	140.63	112.88	126.83	118.75	119.84
Fertilisers (kg)						
Nitrogen	-	-	18.70	13.33	11.30	13.50
Phosphorus	-	-	9.50	12.10	11.23	10.29
Potash	-	-	23.10	16.15	8.25	14.00

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earlier no group was found to apply fertilisers upto the recommendation. The farmers in S_1 are found to be applying lower quantities of N, P and K. The average use of fertilizer was 13.5, 10.29 and 14 kg of N, P and K respectively. The details are furnished in Table 6.11.

Table 6.12 shows the use of resources among the income groups. The use of family labour was found to be decreasing with an increase in income, in general. Though hired female labour did not show much variation, hired male labour was found to vary much among the groups. It was 7.5 hours in I_2 and 72.5 hours in I_4 - i.e., about 10 times. The average worked out to 49.35. Bullock labour utilisation was almost the same, but tractor use differed much. In the first two income groups no tractor labour was used. The average tractor use was 4.29 hours. The seed rate did not vary much. In the first two income groups fertilizers was not used at all.

e) High Yielding Varieties during Puncha season

Table 6.13 shows details of resource use per hectare for HYVs during Puncha. On an average 81.53 hours of male labour and 960.76 hours of female labour was used. The proportion of family labour to total labour was to the tune of 20.25 per cent in the case of male labour and only 1.08 per cent in the case of female labour. From the table it can be noted that the per hectare employment of family labour - both

male labour and female labour was found to decrease with an increase in the size of the holdings. The quantum of employment of hired labour - male as well as female - per hectare did not show any constant pattern. Use of bullock pairs also showed a decreasing trend with the increase in the size of the farm. The employment of tractor power was higher in S_3 and S_4 than the other groups - the average being 4.93 hours.

With regard to the quantity of seeds used per hectare, the groups showed not much difference, the average quantity of seeds used being 127.87 kg per hectare.

On an average 51.37 kg of N, 27.25 kg of P_2O_5 and 49 kg of K was used as against the recommended dose of 70 kg N, 35 kg P_2O_5 and 35 kg K.

The per hectare use of fertilizers in the different holding size groups was found to decrease with an increase in the size. In group S_2 though the application of nitrogen was the highest (62.73 kg per hectare), it was 9.84 per cent less than the recommended dose. The application of nitrogen was found to be the lowest for group S_4 (40.20 kg per hectare). Considerable variation was noticed among holding size groups in the use of phosphatic fertilizers as well as potassic fertilizers though in the later case the rate of use was even higher than the recommendation.

Table 6.13. Use of resources per hectare (Puncha-high yielding varieties size groupwise)

Groups	Unit	S_1	S_2	S_3	S_4	S_5	Average
Family labour	hrs						
Men		37.50	40.00	25.00	10.00	5.00	16.51
Women		77.50	22.50	15.00	5.00	-	10.34
Hired human labour	hrs						
Men		12.50	72.50	65.00	47.50	62.50	65.02
Women		942.50	967.50	930.00	947.50	957.50	950.42
Total human labour	hrs						
Men		50.00	112.50	90.00	57.50	67.50	81.53
Women		1020.00	990.00	945.00	952.50	957.50	960.76
Bullock labour	hrs	65.00	60.00	44.93	20.00	22.50	34.40
Tractor labour	hrs	-	0.54	6.47	9.78	4.53	4.93
Seeds	kg	124.05	121.75	136.45	114.95	129.08	127.87
Fertilizers	kg						
Nitrogen		58.50	62.73	58.53	40.20	46.68	51.37
Phosphorus		52.20	41.03	29.95	16.25	22.60	27.25
Potash		54.10	64.08	40.85	35.45	52.05	49.00

Table 6.14. Use of resources per hectare (Puncha-HYVs income groupwise)

Groups	Unit	I_1	I_2	I_3	I_4	I_5	Average
Family labour	hrs						
Men		55.00	15.00	17.50	12.50	6.50	16.51
Women		25.00	30.00	10.00	0.98	-	10.34
Hired human labour	hrs						
Men		75.00	65.00	57.50	55.00	70.70	65.02
Women		800.00	975.00	942.50	825.28	1047.23	950.42
Total human labour	hrs						
Men		90.00	80.00	75.00	67.50	77.20	81.53
Women		825.00	1005.00	552.50	826.26	1047.23	960.76
Bullock labour	hrs	60.00	4.00	32.50	17.50	30.00	34.40
Tractor labour	hrs	0.53	6.12	8.92	9.35	1.80	4.93
Seeds	kg	131.00	137.15	112.63	122.40	134.15	127.87
Fertilisers:	kg						
Nitrogen		52.90	54.80	33.48	53.98	56.98	51.37
Phosphorus		33.55	34.03	22.55	23.33	26.20	27.25
Potash		54.80	27.68	42.50	70.70	51.63	49.00

The utilisation of family labour in various income groups showed similar trend as that of the holding size groups as shown by Table 6.14. Use of hired human labour was not seen to vary much with increase in income - it was around 65 man hours in the case of male labour and around 950 hours in the case of female labour. The use of bullock labour showed a decreasing trend with increase in income, the average being 34.40 hours. The quantity of seeds used did not differ much between the different income groups.

None of the groups were found to be using the recommended dose of nitrogenous fertilizers. Moreover, there was considerable variation in fertilizer use among income groups. It is therefore reasonable to assume that level of farming income did not influence fertilizer use. Farmers in I_5 found to be using the largest quantity of nitrogenous fertilizer, 56.98 kg which is also less than the recommended quantity.

d) Local Varieties during Puncha season

The use of the resources - labour, seed material and fertilizers for puncha local varieties are shown in Table 6.15. Here also decreasing use of family labour was seen with regard to male and female labour in the increase of holding size. Hired male labour use also decreased with increase in the size. Hired female labour remained almost the same

Table 6.15. Use of resources per hectare (Puncha-local varieties size groupwise)

Groups	Unit	S_1	S_2	S_3	S_4	S_5	Average
Family labour	hrs						
Men		67.50	7.50	10.00	15.00	5.00	8.77
Women		120.00	12.50	5.00	12.50	5.00	8.59
Hired human labour	hrs						
Men		130.00	70.00	67.50	80.00	65.00	69.82
Women		1037.50	1042.50	937.50	1062.50	1017.50	1020.68
Total human labour	hrs						
Men		197.50	77.50	77.50	95.00	70.00	78.59
Women		1157.50	1055.00	942.50	1075.00	1022.50	1029.27
Bullock labour	hrs	60.00	67.50	37.50	42.50	42.50	42.21
Tractor labour	hrs	-	1.17	3.56	0.42	6.23	3.99
Seeds	kg	136.38	140.15	112.40	109.33	136.43	127.85
Fertilizers:	kg						
Nitrogen		43.55	36.23	25.98	32.08	26.50	28.91
Phosphorus		-	12.33	14.38	20.38	17.63	17.10
Potash		-	15.65	14.98	31.75	33.88	28.78

except in S_5 where it was the lowest amounting to 937.5 hours - the average being 1020.68 hours. While bullock labour decreased with holding size, tractor use increased with increase in size of holding. Utilisation of seeds per hectare showed little variation among groups - the average use worked out to 127.85 kg.

Only farmers in the smallest size group was found to be using the recommended dose of nitrogenous fertiliser of 40 kg per hectare. The average use of nitrogenous fertiliser was 28.91 kg and that was 27.73 per cent less than the recommended dose. The average use of phosphatic fertiliser worked out to 17.10 kg, which was 14.50 per cent lower than the recommended dose. In S_1 no farmer was seen using phosphatic and potassic fertilisers for local variety paddy during puncha. With regard to potassic fertilisers, the average use was 43.90 per cent higher than the recommended dose of 20 kg per hectare.

Among the various income groups (Table 6.16) the male family labour use was the highest in the first income group (25 man hours) and female family labour highest in I_2 (25 hours). The averages were 8.77 and 8.59 hours respectively. Hired male labour was the highest in I_4 (107.5 hours) and female labour in I_1 (1205 hours). The respective averages were 69.82 hours and 1020.68 hours. While tractor power was

Table 6.16. Use of resources per hectare (Puncha-local varieties income groupwise)

Groups	Unit	I_1	I_2	I_3	I_4	I_5	Average
Family labour	hrs						
Men		25.00	10.00	10.00	-	2.50	8.77
Women		5.00	25.00	10.00	-	-	8.59
Hired human labour	hrs						
Men		55.00	82.50	62.50	107.50	70.00	69.82
Women		1205.00	865.00	1042.00	880.00	1050.00	1020.68
Total human labour	hrs						
Men		80.00	92.50	72.50	107.50	72.50	78.59
Women		1210.00	890.00	1052.00	880.00	1050.00	1029.27
Bullock labour	hrs	62.50	62.50	40.00	30.00	40.00	42.21
Tractor labour	hrs	-	1.17	3.56	0.42	6.23	3.99
Seeds	kg	102.95	139.75	131.13	129.50	125.70	127.85
Fertilisers:	kg						
Nitrogen		31.08	33.75	27.93	23.00	28.08	28.91
Phosphorus		9.43	17.43	26.58	-	11.73	17.10
Potash		8.40	15.65	38.45	45.00	27.23	28.78

found to be increasing with the increase in income, the bullock labour was found to decrease with increase in income - the average of each being 3.99 hours and 42.21 hours respectively. Seed rate remained almost the same among the different income groups.

None of the groups were found to use nitrogenous fertilisers upto the recommended dose. The lowest level of use was in I_4 (23 kg) which is 42.50 per cent lower than the recommended dose. The use of phosphatic fertilisers was very low (9.43 kg) in I_1 and higher than the recommended dose in I_3 (26.58 kg). In I_1, the use of potash was also very low (8.40 kg) and in I_4 it was more than double (45 kg) the recommended dose of 20 kg.

Yield and output of paddy per hectare

a) High Yielding Varieties during Mundakan season

The holding sizewise and income groupwise yield and output of high yielding varieties is given in Table 6.17. Average yield was found to be 33.58 quintals. Yield shows much difference among the size groups. It was found to be the highest in S_3 (39.99)quintals) and the lowest in S_1 (21.08 quintals). Byproduct contributes 19.39 per cent of the total receipt. The contribution of main product to total receipt was found to be the highest in S_2 (82.92 per cent). Total receipt was recorded to be the highest in S_3 (Rs.7885.20)

Table 6.17. Yield and output of paddy per hectare - Mundakan high yielding varieties

Size groups	S_1	S_2	S_3	S_4	S_5	Average
Yield in quintals	21.08	30.34	39.99	26.25	34.44	33.58
Output:						
a) Main product (Rs)	3372.73 (77.13)	4855.17 (82.92)	6400.51 (81.17)	4200.00 (80.77)	5469.03 (80.19)	5344.16 (80.61)
b) Byproduct (Rs)	1000.00 (22.87)	1000.00 (17.08)	1484.69 (18.83)	1000.00 (19.23)	1350.72 (19.81)	1285.82 (19.39)
Total receipt	4372.73 (100.00)	5855.17 (100.00)	7885.20 (100.00)	5200.00 (100.00)	6819.75 (100.00)	6629.98 (100.00)

Income groups	I_1	I_2	I_3	I_4	I_5	Average
Yield in quintals	25.76	-	31.41	36.12	35.04	33.58
Output:						
a) Main product (Rs)	4124.10 (80.48)	-	5026.03 (83.04)	5779.29 (77.98)	5550.16 (80.32)	5344.16 (80.61)
b) Byproduct (Rs)	1000.00 (19.52)	-	1026.81 (16.96)	1632.14 (22.02)	1359.77 (19.68)	1285.82 (19.39)
Total receipt	5124.10 (100.00)	-	6052.84 (100.00)	7411.43 (100.00)	6909.93 (100.00)	6629.98 (100.00)

(Figures in parentheses are percentages to total)

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which is 80.33 per cent higher than that of the lowest in S_1 (Rs.4372.73). The yield and output for the income groups are also shown in Table 6.17. The yield and output showed no consistent relationship.

b) Local Varieties during Mundakan season

Table 6.18 shows the yield and output of local varieties of paddy cultivated during mundakan. The average yield was 23.79 quintals per hectare. Yield was found to be the highest in S_2 (24.23 kilograms) and the lowest in S_1 (21 quintals). The proportion of main product and byproduct to total returns was found to be 78.24 per cent and 21.76 per cent, their respective value being Rs.3962.80 and Rs.1101.82. The proportion of value of main product to total receipt was found to be the highest in S_5 (79.69) and the lowest in S_4 (74.83 per cent). On an average the total output was found to be Rs.5064.62.

The various income groups did not show any constant pattern with regard to yield - the highest yield was in I_3 (28.52 quintals) and the lowest in I_1 (19.38 quintals). The contribution of byproduct to total returns varied from 25.55 in I_4 to 20.33 in I_2. The total returns also showed wide variation among the income groups - the highest receipt was in I_3 (Rs.5994.56) and the lowest in I_1 (Rs.4165.38).

Comparing the high yielding varieties with local

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Table 6.18. Yield and output of paddy per hectare - Mundakan local varieties

Size groups	S_1	S_2	S_3	S_4	S_5	Average
Yield in quintals	21.00	24.23	23.80	23.22	24.01	23.79
Output:						
a) Main product (Rs)	3568.75 (78.11)	3814.31 (78.29)	4165.00 (76.92)	3866.69 (74.83)	4026.61 (79.69)	3962.80 (78.24)
b) Byproduct (Rs)	1000.00 (21.89)	1057.91 (21.71)	1250.00 (23.08)	1300.48 (25.17)	1026.38 (20.31)	1101.82 (21.76)
Total receipt	4568.75 (100.00)	4872.22 (100.00)	5415.00 (100.00)	5167.17 (100.00)	5052.99 (100.00)	5064.62 (100.00)

Income groups	I_1	I_2	I_3	I_4	I_5	Average
Yield in quintals	19.38	23.75	28.52	21.80	21.49	23.79
Output:						
a) Main product (Rs)	3165.38 (75.99)	3918.75 (79.67)	4734.11 (78.97)	3767.68 (74.45)	3543.15 (79.21)	3962.80 (78.24)
b) Byproduct (Rs)	1000.00 (24.01)	1000.00 (20.33)	1260.45 (21.03)	1292.68 (25.55)	930.06 (20.79)	1101.82 (21.76)
Total receipt	4165.38 (100.00)	4918.75 (100.00)	5994.56 (100.00)	5060.36 (100.00)	4473.21 (100.00)	5064.62 (100.00)

(Figures in parentheses are percentages to total)

varieties cultivated during the Mundakan season it can be seen that high yielding varieties gave 40 per cent higher yield than the local varieties. Proportional contribution of byproduct to total output was 19.39 per cent for high yielding varieties and 21.76 per cent in the case of local varieties. Even though the yield difference was 41.15 per cent, the total returns was 30.91 per cent higher in high yielding varieties than the local varieties. This difference can be attributed to the higher price of the local varieties for both main product and byproduct.

Among size groups, the proportional contribution to total returns of byproduct was found to be higher in the case of local varieties than the high yielding varieties, it is of the order of 17 to 22 in high yielding varieties while in local varieties 20 to 25 per cent.

e) High yielding varieties during Puncha season

Information on yield and output of puncha high yielding varieties of paddy, both size groupwise as well as income groupwise is presented in Table 6.19. The average yield per hectare was found to be 33.82 quintals which was valued at Rs.5275.56. Both yield and output of paddy were the highest for the farmers in S_1 (35.67 quintals and Rs.5423.66) and

Table 6.19. Yield and output of paddy per hectare - Puncha high yielding varieties

Size groups	S_1	S_2	S_3	S_4	S_5	Average
Yield in quintals	35.67	35.10	32.84	34.09	33.71	33.82
Output:						
a) Main product (Rs)	5423.66 (85.49)	5579.04 (83.70)	5131.04 (81.10)	5298.46 (83.24)	5241.46 (80.76)	5275.56 (81.75)
b) Byproduct (Rs)	920.80 (14.51)	1086.77 (16.30)	1195.79 (18.90)	1066.78 (16.76)	1248.37 (19.24)	1177.92 (18.25)
Total receipt	6344.46 (100.00)	6665.81 (100.00)	6326.83 (100.00)	6365.25 (100.00)	6489.83 (100.00)	6453.48 (100.00)

Income groups	I_1	I_2	I_3	I_4	I_5	Average
Yield in quintals	33.36	32.01	36.87	33.35	33.30	33.82
Output:						
a) Main product (Rs)	4973.80 (78.68)	4815.40 (81.81)	5310.06 (83.81)	5284.06 (79.71)	5571.62 (82.46)	5275.56 (81.75)
b) Byproduct (Rs)	1348.03 (21.32)	1070.65 (18.19)	1025.71 (16.19)	1345.01 (20.29)	1185.41 (17.54)	1177.92 (18.25)
Total receipt	6321.83 (100.00)	5886.05 (100.00)	6335.77 (100.00)	6629.07 (100.00)	6757.03 (100.00)	6453.48 (100.00)

(Figures in parentheses are percentages to total)

the lowest in S_5. The contribution of byproduct to total output was 18.25 per cent on an average. The contribution of main product to the total output is seen to decrease with increase in the size of the holdings. On an average the income from byproducts amounted to Rs.1177.92 per hectare.

Among the income groups the proportional contribution of main product to total output was found to be the highest in I_3 (83.81 per cent). Total output was found to increase with increase in income except in I_2 (Rs.5886.05) which had the lowest, the highest value being Rs.6757.03 in I_5.

d) Local varieties during Punchha season

Table 6.20 shows the yield and output of the local varieties. On an average it was 25.89 quintals per hectare - 30.63 per cent less than that recorded by the high yielding varieties. Yield was found to be decreasing with increase in holding size. Highest yield was recorded by S_1 (33.26 quintals) which was 28.47 per cent higher than the average and 37.89 per cent higher than the lowest yield of 24.12 quintals which was obtained by S_5. This higher yield may be due to natural improvements in local varieties. The main product-byproduct ratio in its contribution to total returns was found to be 3:1, their values being Rs.4144.96 and Rs.1334.22. Total receipt was the highest in S_1 (Rs.7001.29)

Table 6.20. Yield and output of paddy per hectare - Puncha local varieties

Size groups	S_1	S_2	S_3	S_4	S_5	Average
Yield in quintals	33.26	26.66	24.27	30.27	24.12	25.89
Output:						
a) Main product (Rs)	5496.21 (78.50)	4264.31 (75.15)	3941.87 (73.88)	4842.76 (78.68)	3858.96 (74.64)	4144.96 (75.65)
b) Byproduct (Rs)	1505.08 (21.50)	1409.79 (24.85)	1393.83 (26.12)	1312.54 (21.32)	1311.39 (25.36)	1334.22 (24.35)
Total receipt	7001.29 (100.00)	5674.10 (100.00)	5335.70 (100.00)	6155.30 (100.00)	5170.35 (100.00)	5479.18 (100.00)

Income groups	I_1	I_2	I_3	I_4	I_5	Average
Yield in quintals	27.10	26.77	26.27	26.25	24.28	25.89
Output:						
a) Main product (Rs)	4318.57 (77.11)	4305.07 (75.41)	4211.21 (75.31)	4200.00 (79.25)	3884.93 (74.74)	4144.96 (75.65)
b) Byproduct (Rs)	1281.97 (22.89)	1404.10 (24.59)	1380.49 (24.69)	1100.00 (20.75)	1312.79 (25.26)	1334.22 (24.35)
Total receipt	5600.54 (100.00)	5709.17 (100.00)	5591.70 (100.00)	5300.00 (100.00)	5197.72 (100.00)	5479.18 (100.00)

(Figures in parentheses are percentages to total)

and the lowest in S_5 (Rs.5170.35), the difference of the order of 35.41 per cent.

Among the income groups, the yield and the total receipt were found to decrease with increase in income. Yield was 27.10 quintals in I_1 while it was 24.28 quintals; 11.61 per cent lower, in I_5. The total receipt was the highest in I_2 (Rs.5709.17) which was 9.84 per cent higher than the lowest recorded in I_5 (Rs.5197.72).

Comparing the yield of high yielding varieties with local varieties during the puncha season it was found that the yield was 30.63 per cent higher in the former than the later. The contribution of the byproduct to total receipt was 18.25 per cent in the high yielding varieties while it was 24.35 per cent for local varieties. Even though the yield difference was 30.63 per cent, the difference in the value of main product between these varieties was only 27.28 per cent, the reason was the higher price realised for local variety paddy. The value of total output was only 17.78 per cent higher in the high yielding varieties than the local varieties.

Income measures

Cost of production of paddy

The cost of production per quintal of paddy was worked out, both for puncha as well as for mundakan and are represented

in Tables 6.21 and 6.22. The cost C includes the value of paddy paid as wages for harvest. The grain yield recorded also includes the quantity given as wages for the harvest. Hence deduction of the value of grains attributed to harvest and the quantity of grain given as wages from the yield are done for adjustment. From the resultant cost, the cost of producing the grains was arrived at by substracting the value of byproduct from the total cost. The cost per quintal was worked out on the total cost including rental value of land and for excluding rental value. To obtain the cost for producing paddy, excluding the rental value of land, the amount of rental value accounted by grain alone was deducted.

The cost of production of high yielding varieties on an average during Mundakan season was found to be Rs.73.13 at cost C and exclusive of rental value of land, it was only Rs.35.51.

The cost of producing local varieties was found to be higher than that of high yielding varieties (Rs.86.21)at cost C and Rs.47.33 at cost excluding rental value on an average.

For Puncha high yielding varieties the cost of production per quintal was found to be Rs.104.29 at total cost. But exclusive of rental value of land, it was only Rs.67.78 per quintal of paddy. The cost of production was found to be

Table 6.21. Cost of production of paddy per quintal - Mundakan

(in rupees)

Size groups	S_1	S_2	S_3	S_4	S_5	Average
High yielding varieties						
At total cost	156.09	91.65	60.44	89.35	68.05	73.13
At cost excluding rental value	118.75	54.38	22.63	52.01	30.36	35.51
Income groups	I_1	I_2	I_3	I_4	I_5	Average
At total cost	103.29	-	83.49	55.72	69.93	73.13
At cost excluding rental value	65.94	-	45.97	17.69	32.34	35.51
Local varieties						
Size groups	S_1	S_2	S_3	S_4	S_5	Average
At total cost	111.70	97.40	64.71	79.67	86.60	86.21
At cost excluding rental value	70.93	57.10	23.87	40.54	47.26	47.33
Income groups	I_1	I_2	I_3	I_4	I_5	Average
At total cost	86.97	110.90	73.62	68.92	102.37	86.21
At cost excluding rental value	48.12	72.41	34.87	28.57	63.90	47.33

Table 6.22. Cost of production of paddy per quintal - Puncha

(in rupees)

Size groups	S_1	S_2	S_3	S_4	S_5	Average
High yielding varieties						
At total cost	128.29	114.67	117.34	104.29	91.61	104.29
At cost excluding rental value	102.36	77.49	80.67	68.01	55.27	67.78
Income groups	I_1	I_2	I_3	I_4	I_5	Average
At total cost	106.65	116.38	101.00	98.24	102.80	104.29
At cost excluding rental value	71.63	81.30	67.30	60.77	63.79	67.78
Local varieties						
Size groups	S_1	S_2	S_3	S_4	S_5	Average
At total cost	127.76	113.26	111.94	109.73	118.97	115.30
At cost excluding rental value	89.61	75.42	78.18	72.96	80.59	77.44
Income groups	I_1	I_2	I_3	I_4	I_5	Average
At total cost	111.95	106.59	112.64	101.17	126.63	115.30
At cost excluding rental value	74.52	68.71	75.59	62.14	88.86	77.44

decreasing with increase in the size of holding. At total cost excluding rental value of land, it varied from Rs.102.36 in the smallest holding size group to Rs.55.27 in the largest holding size group. No consistent relationship was found between gross farming income and cost per quintal of paddy.

For local varieties the cost per quintal was found to be higher than that of high yielding varieties. On an average the cost per quintal amounted to Rs.115.30 at total cost and Rs.77.44 at total cost excluding rental value of land. The cost was found to be decreasing with increase in size of holding except in the highest holding size. As in the case of HYVs, here also size of family income did not show any influence on cost per quintal.

Averaging the cost of production for both the seasons, the cost of production of high yielding varieties of paddy amounted to Rs.86.76 per quintal at cost C and it was only Rs.51.70 at total cost excluding rental value. For local varieties the cost of production was found to be Rs.105.89 at cost C and Rs.63.0& at total cost excluding rental value of land.

b) Income from paddy cultivation

It is commonly believed that the cultivation of paddy these days results in loss. It will therefore be of interest to understand the returns from cultivation. There are

different measures which can be used to evaluate farm profits. The income measures that are used in this study are (i) Net income at cost C, (ii) Net income excluding rental value of land, (iii) Farm business income, (iv) Family labour income and (v) Farm investment income. The benefit-cost ratio was also worked out.

Table 6.23 presents the various income measures worked out for Mundakan high yielding varieties. Profit at all cost levels was found to be the highest in S_3 and lowest in S_1. Net income on an average at cost C was found to be Rs.2443.38 and at cost exoluding rental value, Rs.3769.38. Average farm business income, family labour income and farm investment income worked out to Rs.3830.21, Rs.2480.25 and Rs.3793.34 respectively. On an average, the benefit-cost ratio at cost C was found to be 1.58. The highest ratio was in S_3 (1.75) followed by S_5 (1.63), S_4 and S_2 (1.44 each) and the lowest in S_1 (1.02). On an average the benefit-cost ratio at cost exoluding rental value of land was worked out to 2.32.

Among the income groups, profit was found to be the highest in I_4 and the lowest in I_1 at all cost levels. The benefit cost ratios were 1.75 and 1.32 for I_4 and I_1 respectively at cost C.

Table 6.24 shows profit at various cost levels for Mundakan local varieties. The net income at cost C on an

Table 6.23. Measures of income and benefit-cost ratios for High Yielding Varieties - Mundakan

(in rupees)

Size groups	m	S_1	S_2	S_3	S_4	S_5	Average
Net income at cost C	70.65	1781.09	3372.20	1589.69	2629.88	2443.38	
Net income at total cost excluding rental value	1745.40	2952.12	4949.24	2699.68	3993.03	3769.38	
Farm business income	1057.71	3031.91	5026.68	2811.19	4028.03	3830.21	
Family labour income	316.86	1827.79	3423.22	1752.18	2647.17	2480.25	
Farm investment income	811.50	2985.21	4975.66	2648.69	4010.74	3793.34	
Benefit-cost ratio at total cost	1.02	1.44	1.75	1.44	1.63	1.58	
At cost excluding rental value of land	1.21	2.02	2.69	2.02	2.42	2.32	

Income groups	I_1	I_2	I_3	I_4	I_5	Average
Net income at Cost C	1254.13	-	2050.24	3169.87	2612.66	2443.38
Net income at total cost excluding rental value	2278.93	-	3260.81	4652.16	3994.65	3769.38
Farm business income	2474.48	-	3328.79	4728.97	4024.71	3830.21
Family labour income	1412.26	-	2099.53	3230.58	2619.81	2480.25
Farm investment income	2316.35	-	3279.50	4679.50	4017.56	3793.34
Benefit-cost ratios at						
a) total cost	1.32	-	1.51	1.75	1.61	1.58
b) cost excluding rental value of land	1.80	-	2.17	2.69	2.37	2.32

Table 6.24. Measures of income and benefit-cost ratios for local varieties - Mundakan

(in rupees)

Size groups	S_1	S_2	S_3	S_4	S_5	Average
Net income at cost C	1019.52	1419.04	2250.02	1716.51	1673.58	1637.92
Net income at total cost excluding rental value	2083.27	2393.48	3333.02	2749.94	2684.18	2653.41
Farm business income	2383.75	2475.29	3392.77	2780.63	2701.89	2692.40
Family labour income	1253.90	1467.76	2283.35	1728.49	1673.58	1652.95
Farm investment income	2149.37	2426.57	3359.44	2768.75	2701.89	2677.37
Benefit-cost ratios at						
a) total cost	1.28	1.41	1.71	1.50	1.50	1.48
b) cost excluding rental value of land	1.84	1.97	2.60	2.14	2.13	2.10

Income groups	I_1	I_2	I_3	I_4	I_5	Average
Net income at cost C	1244.34	1101.39	2258.14	1940.65	1151.38	1637.92
Net income at total cost excluding rental value	2169.72	2085.14	3457.05	2952.72	2046.02	2653.41
Farm business income	2341.76	2364.09	3489.32	2971.87	2068.93	2692.40
Family labour income	1378.96	1351.39	2271.72	1943.70	1151.38	1652.95
Farm investment income	2207.14	2114.09	3475.74	2968.82	2068.93	2677.37
Benefit-cost ratios at						
a) total cost	1.43	1.29	1.60	1.62	1.35	1.48
b) cost excluding rental value of land	2.09	1.74	2.36	2.40	1.84	2.10

average worked out to Rs.1637.92. The profit was found to be the highest in S_3 and the lowest in S_1. Rs.2692.40, Rs.1652.95 and Rs.2677.37 were the farm business income, family labour income and farm investment income respectively, on an average. The benefit-cost ratio at cost C was 1.48 on an average. The highest ratio was recorded in S_3 (1.71) followed by S_4 and S_5 (1.50), S_2 (1.41) and S_1 (1.28). The benefit-cost ratio at cost excluding rental value of land on an average was worked out to 2.10.

Among the income groups profit was found to be the highest in I_3 and the lowest in I_5 at all cost levels. The benefit-cost ratio was found to be the highest in I_4 (1.62) and the lowest in I_2 (1.29).

The high yielding varieties were found to be more profitable than the local varieties at all cost levels, comparing the average values. But in S_1, S_4 and I_3 the LVs were found to be more profitable than the HYVs.

In Table 6.25 is shown the different measures of profit cultivating high yielding varieties during Punchs both size groupwise and income groupwise as well as the benefit-cost ratios. Profit at all cost levels was found to be the lowest in S_1 and the highest in S_5. Net income at cost C was found to be Rs.1494.37 per hectare on an average. Net income was found to be the lowest in S_1 (Rs.415.26) and the

Table 6.25. Measures of income and benefit-cost ratios for high yielding varieties - Purnea

(in rupees)

Size groups	S_1	S_2	S_3	S_4	S_5	Average
Net income at cost C	415.26	1328.39	1088.87	1493.98	1842.43	1494.37
Net income at total cost excluding rental value	1684.15	2661.55	2354.24	2767.03	3140.40	2785.06
Farm business income	1957.28	2832.74	2455.89	2812.94	3172.14	2863.93
Family labour income	622.29	1466.49	1164.10	1520.88	1856.46	1549.28
Farm investment income	1750.25	2694.64	2380.66	2786.04	3158.11	2809.02
Benefit-cost ratios at						
a) total cost	1.07	1.25	1.21	1.31	1.40	1.30
b) cost excluding rental value of land	1.36	1.66	1.59	1.77	1.94	1.76
Income groups	I_1	I_2	I_3	I_4	I_5	Average
Net income at cost C	1205.72	934.99	1355.64	1707.79	1842.65	1494.37
Net income at total cost excluding rental value	2470.09	2112.20	2622.79	3035.60	3194.06	2785.06
Farm business income	2685.40	2214.04	2693.34	3081.58	3233.60	2863.93
Family labour income	1383.61	1007.88	1407.50	1737.67	1859.28	1549.28
Farm investment income	2507.51	2141.15	2641.48	3051.70	3216.97	2809.02
Benefit-cost ratios at						
a) total cost	1.24	1.19	1.27	1.35	1.37	1.30
b) cost excluding rental value of land	1.64	1.56	1.71	1.84	1.90	1.76

highest in S_5 (Rs.1842.43) which was 3 times higher than S_1 and 23.29 per cent higher than that of the average. Net income at cost excluding rental value was found to be Rs.2785.06 on an average. In general, the size groups show an increasing trend with regard to the various income measures. The average farm business income, family labour income and farm investment income were found to be Rs.2863.93, Rs.1549.28 and Rs.2809.02 respectively. The benefit-cost ratio was generally found to increase with increase in size. The average value was recorded to be 1.3, the highest in S_5 (1.40) and the lowest in S_1 (1.07).

Among the income groups the profit at all cost levels was found to be the highest in I_5 and the lowest in I_2. Benefit-cost ratios did not show any consistent pattern.

The various income measures for the cultivation of local varieties during Puncha is given in Table 6.26. The net income at cost C was Rs.980.91 on an average. The profit at all cost levels was found to decrease with an increase in size with the exception of S_4. The net income was found to be the highest in S_4 (Rs.1323.81) which was 34.96 per cent higher than the average and 60.48 per cent higher than the lowest recorded by S_5 (Rs.824.92). Average profit at total cost excluding rental value of land was Rs.2076.75 per hectare. The farm business income and family labour income worked out to Rs.2135.58 and Rs.1016.47 respectively. Benefit-cost ratio

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Table 6.26. Measures of income and benefit-cost ratios for local varieties - Purnea

(in rupees)

Size groups	S_1	S_2	S_3	S_4	S_5	Average
Net income at cost C	1077.38	1046.69	1023.63	1323.81	824.92	980.91
Net income at total cost excluding rental value	2477.76	2181.51	2090.77	2554.87	1858.99	2076.75
Farm business income	2865.83	2250.48	2154.26	2627.92	1899.04	2135.58
Family labour income	1399.35	1082.57	1060.70	1377.85	847.26	1016.47
Farm investment income	2543.86	2214.60	2117.19	2573.88	1876.70	2100.02
Benefit-cost ratios at						
a) total cost	1.18	1.23	1.24	1.27	1.19	1.22
b) cost excluding rental value of land	1.55	1.62	1.64	1.71	1.56	1.61
Income groups	I_1	I_2	I_3	I_4	I_5	Average
Net income at cost C	1093.63	1232.72	1003.65	1266.48	686.54	980.91
Net income at total cost excluding rental value	2213.74	2374.55	2121.99	2326.48	1726.08	2076.75
Farm business income	2321.82	2453.70	2186.78	2342.58	1757.96	2135.58
Family labour income	1164.29	1282.92	1049.75	1266.48	695.51	1016.47
Farm investment income	2251.16	2403.50	2140.68	2342.58	1748.99	2100.02
Benefit-cost ratios at						
a) total cost	1.24	1.28	1.22	1.31	1.15	1.22
b) cost excluding rental value of land	1.65	1.71	1.61	1.78	1.50	1.61

was found to be the highest in S_4 (1.27) followed by S_3 (1.24), S_2 (1.23), S_5 (1.19) and S_1 (1.18) which was the lowest. Among the income groups, the net income at cost C was found to be the highest in I_4 (Rs.1266.48) and the lowest in I_5 (Rs.686.54).

Comparing the local and high yielding varieties in Puncha, the profit was found to be lesser in the case of local varieties than the high yielding varieties. The net income was found to be 52.35 per cent higher for HYVs. Benefit-cost ratio at cost C was 1.22 in the case of LVs as against the HYVs with benefit-cost ratio of 1.30. In all the groups excepting S_1 and I_2 the high yielding varieties were found to be more profitable.

The high yielding varieties of paddy grown during the Mundakan season was found to fetch more profit per hectare than that of puncha. The net profit at cost C was 63.51 per cent higher during Mundakan. The reason may be attributed to the higher cost of cultivation during Puncha mainly on account of irrigation, fertilizers and plant protection expenses. The benefit-cost ratio at cost C was worked out to 1.58 in Mundakan as against 1.30 in Puncha.

The local varieties cultivated during Mundakan was also found to be more profitable than that of similar varieties in Puncha. The net income was found to be 66.98 per cent

higher than that of Puncha. The benefit-cost ratio was 1.48 for Mundakan local varieties, while that for Puncha was only 1.22.

COCONUT

Coconut is estimated to be grown in 2610 hectares in the block and is an important cash crop. Only annual maintenance is carried out for the crop.

The operations start with the onset of monsoon. The basins around each palm are cleared of weeds and opened up so as to enable application of manures and fertilizers.. Usually green leaf, wherever available, some quantity of fertilizers and ash are applied and the basins are covered.

By January, the basins are again cleared and opened so as to enable irrigation. Generally the palms are irrigated two to three times a week for about five months.

Harvesting of nuts are usually once in 45 to 60 days (fortyfive days during summer and sixty days during rainy season). In an year, there can be 7 to 8 harvests.

Area under coconut

The area under coconut in the sample as a whole was found to be 44.35 hectares on an average. The per farm area under coconut was found to be increasing with an increase in the size of the holdings as well as the income of the farmer.

Table 6.27. Area under coconut

(in hectares)

Groups	I		II		III		IV		V		Average	
	Total area	Per farm	Total area	Per farm	Total area	Per farm	Total area	Per farm	Total area	Per farm	Total area	Per farm
A Size groups	1.66	0.12	6.90	0.26	7.72	0.35	4.99	0.38	23.09	0.96	44.35	0.44
B. Income groups	3.98	0.17	6.65	0.29	11.78	0.51	4.26	0.47	17.68	0.80	44.35	0.44

Table 6.28. Cost of maintenance per hectare of coconut

(in rupees)

Groups	I	II	III	IV	V	Average
A. Size groups	6445.77	6788.56	6206.43	6372.46	6210.54	6330.79
B. Income groups	6279.02	7151.31	5846.63	6514.37	6280.11	6330.79

The average area under coconut worked out to 0.44 hectare per farm. The table 6.27 shows the area under coconut in size groups and income groups.

A. Cost of maintenance of coconut

The cost of maintenance of coconut per hectare was worked out both inputwise as well as operationwise and is given as Appendix tables II.17 to II.20.

The average cost of maintenance was worked out to Rs.6330.79 (Table 6.28). Among the various holding size groups, the highest cost was recorded against S_2 (Rs.6788.56) which was 7.23 per cent higher than the average cost. The cost of maintenance per hectare among the size groups as well as the income groups varied and no definite trend was seen.

Among the various inputs used, manures accounted for the largest proportion of total expenditure followed by hired human labour (5.29 per cent) and irrigation (3.68 per cent). Harvesting charges accounts for about 10 per cent of the total cost. Imputed rental value of land formed the bulk of total cost which is Rs.2778.35. The inputwise cost of maintenance is given in Table 6.29.

Table 6.30 shows the operationwise maintenance expenditure of coconut. Among the different operations the expenditure was the highest on manures and manuring (11.21 per cent) followed by harvesting (10.78 per cent), irrigation

Table 6.29. Cost of maintenance of coconut per hectare (inputwise)

(in rupees)

Sl. No.	Items	Cost including rental value	Cost excluding rental value of land
1	Hired human labour	335.20 (5.29)	335.20 (9.44)
2	Seed material	-	-
3	Manures	590.11 (9.32)	590.11 (16.61)
4	Fertilizers	104.02 (1.64)	104.02 (2.93)
5	Plant protection	15.12 (0.24)	15.12 (0.43)
6	Irrigation	233.24 (3.68)	233.23 (6.57)
7	Harvesting charges	682.37 (10.78)	682.37 (19.20)
8	Miscellaneous	593.61 (9.38)	593.61 (16.70)
9	Depreciation	201.52 (3.18)	201.52 (5.67)
10	Interest on working capital	330.62 (5.22)	330.62 (9.31)
	Cost A	3085.80 (48.74)	-
11	Rental value of land	2778.35 (43.89)	-
12	Interest on fixed capital	364.41 (5.76	364.41 (10.26)
	Cost B	6228.56 (98.39)	-
13	Family labour charges	102.23 (1.61)	102.23 (2.88)
	Cost C	6330.79 (100.00)	3552.44 (100.00)

(Figures in parentheses are percentages to total)

Table 6.30. Cost of maintenance of coconut per hectare (operationwise)

(in rupees)

Sl. No.	Operations	Cost including rental value	Cost excluding rental value of land
1	Weeding and inter-cultural operations	142.18 (2.25)	142.18 (4.00)
2	Manures and manuring	709.55 (11.21)	709.55 (19.97)
3	Fertilizers and application	136.49 (2.16)	136.49 (3.84)
4	Plant protection	15.32 (0.23)	15.32 (0.43)
5	Irrigation	376.37 (5.95)	376.37 (10.59)
6	Harvesting	682.37 (10.78)	682.37 (19.21)
7	Miscellaneous	593.61 (9.38)	593.61 (16.72)
8	Depreciation	201.52 (3.18)	201.52 (5.67)
9	Interest on working capital	330.62 (5.22)	330.62 (9.31)
10	Rental value of land	2778.35 (43.89)	-
11	Interest on fixed capital	364.41 (5.75)	364.41 (10.26)
	Total cost	6330.79 (100.00)	3552.44 (100.00)

(Figures in parentheses are percentages to total)

(5.95 per cent) and intercultural operations (2.25 per cent). The expenditure on fertiliser was found to be very low (only 2.16 per cent) and on plant protection meagre (0.23 per cent).

Imputed rental value of land formed the bulk of the total cost Rs.2778.35 (43.89 per cent). The cost of maintenance excluding rental value of land was also worked out and is also given in Table 6.29. 19.20 per cent of this out of pocket expenses was on harvesting charges, 16.70 per cent on miscellaneous items and 16.61 per cent on manures. The expenditure on hired human labour, irrigation and fertilizers was 9.44 per cent, 6.57 per cent and 2.93 per cent respectively.

B. Resource use

Table 6.31 shows the utilisation of various resources among the different holding size groups. Family labour use was found to decrease with the size both for male and female labour, the average being 40.56 hours and 3.06 hours respectively. The hired male labour use was the highest in S_3 (127.5 hours) and the lowest in S_1 (82.50 hours). Hired female labour was found to be the highest in S_4 (20 hours) and the lowest in S_5 (12.5 hours). Compared with the fertilizer recommendation, the quantity of fertilizer applied was found to be far below. The quantities of N, P and K applied per hectare on an average were 5.20 kg, 6.49 kg and 17.34 kg

Table 6.31. Resource use of coconut per hectare (size groupwise)

Size groups	S_1	S_2	S_3	S_4	S_5	Average
1. Family labour (hrs)						
i) Male	110.00	80.00	50.00	55.00	17.50	40.56
ii) Female	17.50	10.75	1.05	-	1.05	3.06
2. Hired labour (hrs)						
i) Male	82.50	117.50	127.50	107.50	140.00	128.52
ii) Female	17.50	15.00	17.50	20.00	12.50	17.22
3. Total human labour (hrs)						
i) Male	192.50	197.50	177.50	162.50	157.50	169.08
ii) Female	35.00	25.75	18.55	20.00	13.55	20.28
4. Fertilizers (kg)						
Nitrogen	1.69	0.98	4.98	6.56	6.50	5.20
Phosphorus	1.93	0.87	4.46	18.09	6.67	6.49
Potash	48.43	22.28	26.28	10.75	11.94	17.34

Table 6.32. Resource use of coconut per hectare (income groupwise)

Income groups	I_1	I_2	I_3	I_4	I_5	Average
1. Family labour (hrs)						
i) Male	100.00	55.00	40.00	32.50	22.50	40.56
ii) Female	5.00	5.00	2.50	7.50	2.50	3.06
2. Hired labour (hrs)						
i) Male	82.50	122.50	115.00	152.50	145.00	128.52
ii) Female	17.50	17.50	17.50	12.50	12.50	17.22
3. Total human labour (hrs)						
i) Male	182.50	177.50	155.00	185.00	168.00	169.08
ii) Female	22.50	22.50	20.00	20.00	25.00	20.28
4. Fertilizers (kg)						
Nitrogen	2.35	6.38	1.43	32.58	1.33	5.20
Phosphorus	2.45	15.38	1.43	31.88	1.33	6.49
Potash	5.73	49.65	2.85	69.53	6.05	17.34

which was found to only 7.65 per cent, 19.00 per cent and 12.75 per cent respectively of the recommended quantities of

CR:34:136 In income classes also family labour was found to decrease with increase in income. Among the income groups better use of fertiliser use was in I_4, 32.58 kg N, 31.88 kg P and 69.53 kg K.

C. Returns from coconut cultivation

Yield and output of coconut

The yield and output of coconut is shown in Table 6.33. The average number of nuts per hectare was found to be 9995.83. The yield per hectare was found to be the highest in S_4 (10931 nuts or 54.66 nuts per palm), which was found to be 9.36 per cent higher than the average and 26.96 per cent higher than the lowest yield obtained in S_3 (8610.59). The average main product value obtained per hectare was found to be Rs.12107.23. On an average, the proportion of byproduct value to the total output was worked out to 12.85 per cent. The total output was found to increase with increase in the size of the holding.

Among the income groups the yield was found to increase with increase in income (Table 6.34). The highest yield was recorded in I_5, which was found to be 11.65 per cent higher than the average and 31.39 per cent higher than the lowest

Table 6.33. Yield and output of coconut (Size groupwise)

Size groups	S_1	S_2	S_3	S_4	S_5	Average
1. Yield (numbers)						
a) per hectare	9208.53	8676.99	8610.59	10931.62	10630.00	9995.83
b) Per palm	46.04	43.38	43.05	54.66	53.15	49.98
3. Main product (Rs)	9594.08 (86.04)	10254.79 (83.21)	10474.00 (85.18)	12580.34 (87.10)	13285.29 (88.74)	12107.23 (87.15)
4. Byproduct(Rs)	1556.40 (13.96)	2069.32 (16.79)	1821.90 (14.82)	1863.30 (12.90)	1686.33 (11.26)	1784.54 (12.85)
5. Total output	11150.48 (100.00)	12324.11 (100.00)	12295.90 (100.00)	14443.64 (100.00)	14971.62 (100.00)	13891.77 (100.00)

(Figures in parentheses are percentages to total)

Table 6.34. Yield and output of coconut (income groupwise)

Income groups	I_1	I_2	I_3	I_4	I_5	Average
1. Yield (numbers)						
a) Per hectare	8460.00	8477.50	9677.50	9622.26	11115.31	9995.83
b) Per palm	42.30	42.39	48.39	48.11	55.58	49.98
2. Value of main product (Rs)	9114.81 (83.00)	9939.74 (83.49)	11405.22 (85.17)	12410.24 (90.49)	13991.38 (89.29)	12107.23 (87.15)
3. Value of byproduct(Rs)	1866.67 (17.00)	1966.05 (16.51)	1986.57 (14.83)	1304.73 (9.51)	1678.75 (10.71)	1784.54 (12.85)
4. Total output	10981.48 (100.00)	11905.79 (100.00)	13391.79 (100.00)	13714.97 (100.00)	15670.13 (100.00)	13891.77 (100.00)

(Figures in parentheses are percentages to total)

yield recorded in I_1 (8460 nuts). The average value of byproducts per hectare was found to be Rs.1784.54. The total output was found to be the highest in I_5 (15670.13) which was 12.80 per cent higher than the average and 42.70 per cent higher than the lowest recorded in I_1 (Rs.10981.48).

D. Profitability of coconut cultivation

a) Cost of production

The cost of production of coconut for 1000 nuts was worked out and is presented in Table 6.35. Cost of production at cost C (total cost) was found to be Rs.454.85. It was found to be the highest in S_1 (Rs.530.99) and the lowest in S_4 (412.51). The cost of production at cost excluding rental value of land was found to be Rs.176.88 on an average, the highest and the lowest value being Rs.288.77 in S_1 and Rs.143.92 in S_5 respectively.

Among the income groups the unit cost was found to be the highest in I_2 and the lowest in I_3 at all cost levels.

b) Measures of income

Various income measures have been worked out and are presented in Table 6.36. The net income at cost C worked out to Rs.7560.98 on an average. The net income was found to be increasing with increase in size of holdings. The highest net income was recorded in S_5 (Rs.8761.08) which is

Table 6.35. Cost of production of coconut per 1000 nuts

(in rupees)

Size groups	S_1	S_2	S_3	S_4	S_5	Average
1. Cost of production at:-						
Cost A	202.53	164.98	161.73	97.66	116.54	130.19
Cost B	498.53	522.27	493.57	400.12	421.40	444.62
Cost C	530.99	543.88	509.18	412.51	525.61	454.85
2. Cost excluding rental value of land	288.77	259.82	223.59	148.24	143.92	176.88
Income groups	I_1	I_2	I_3	I_4	I_5	**Average**
1. Cost of production at:-						
Cost A	149.26	256.37	77.69	215.67	102.33	130.19
Cost B	491.78	594.89	388.62	532.16	408.67	444.62
Cost C	521.55	611.61	398.85	541.43	413.98	454.85
2. Cost excluding rental value of land	261.94	330.75	122.10	256.36	132.01	176.88

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Table 6.36. Measures of income and benefit-cost ratios for coconut

(in rupees)

Size groups	S_1	S_2	S_3	S_4	S_5	Average
Net income at cost C	4704.71	5535.55	6089.47	8071.18	8761.08	7560.98
Net income at cost excluding rental value of land	6934.81	8000.37	8554.65	10959.91	11755.40	10339.33
Farm business income	7728.94	8823.27	9081.32	11512.84	12046.42	10805.97
Family labour income	5003.14	5723.09	6223.88	8206.59	8805.78	7663.21
Farm investment income	7430.51	8635.73	8946.91	11577.43	12001.72	10703.74
Benefit-cost ratios at						
a) cost C	1.73	1.82	1.98	2.27	2.41	2.19
b) cost excluding rental value of land	2.65	2.85	3.28	4.15	4.66	3.91

Income groups	I_1	I_2	I_3	I_4	I_5	Average
Net income at cost C	4702.46	4754.48	7545.16	7200.60	9390.02	7560.98
Net income at cost excluding rental value of land	6898.76	7135.64	10223.52	9943.59	12524.05	10339.33
Farm business income	7852.10	7766.23	10653.29	10335.10	12853.96	10805.97
Family labour income	4954.34	4896.28	7644.14	7289.80	9448.97	7663.21
Farm investment income	7600.22	7624.43	10554.31	10245.90	12795.01	10703.74
Benefit-cost ratios at:						
a) cost C	1.75	1.66	2.29	2.21	2.50	2.19
b) cost excluding rental value of land	2.69	2.50	4.23	3.64	4.98	3.91

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found to be 15.87 per cent higher than the average value and 86.22 per cent higher than the lowest income recorded by S_1 (Rs.4704.71). All the income measures were found to be increasing with an increase in income. The benefit-cost ratio at cost C was found to be 2.19 on an average with the highest and the lowest ratios being 2.41 in S_5 and 1.73 in S_1 respectively. The benefit-cost ratio at cost excluding rental value of land worked out to 3.91, on an average.

Among the income groups profit was found to be increasing with an increase in income at all cost levels, the highest values in I_5 and the lowest in I_1. The benefit-cost ratio was worked out to 2.50 in I_5 which was the highest and 1.66 in I_2, the lowest.

ARECANUT

Compared to coconut, arecanut is cultivated only to a very limited extent and generally palms in bearing stages were seen. The maintenance operations of arecanut starts with weeding and opening up basins for manuring at the onset of monsoon. Manures and green leaf are applied in the basins and covered. During January basins are opened up again for irrigation. Sale of nuts is generally on contract. Harvesting and plant protection are carried out by the contractors. The information on area under arecanut is given in Table 6.38. The average area under arecanut was found to be 0.05 hectare.

Table 6.37. Area under Arecanut

(in hectares)

Size groups	S_1	S_2	S_3	S_4	S_5	Average
i) Total area	0.31	0.80	0.85	0.71	2.23	4.90
ii) Per farm area	0.02	0.03	0.04	0.05	0.09	0.05
Income groups	I_1	I_2	I_3	I_4	I_5	Average
i) Total area	0.75	0.76	1.48	0.27	1.64	4.90
ii) Per farm area	0.03	0.03	0.06	0.03	0.07	0.05

Table 6.38. Cost of maintenance of Arecanut per hectare

(in rupees)

Size groups	S_1	S_2	S_3	S_4	S_5	Average
	4405.75	4885.05	4375.58	5303.75	4302.13	4565.16
Income groups	I_1	I_2	I_3	I_4	I_5	Average
	4592.49	4892.12	4614.68	2262.74	4857.20	4565.16

Table 6.39. Cost of maintenance of arecanut per hectare (inputwise)

(in rupees)

Sl. No.	Items	Cost including rental value	Cost excluding rental value of land
1	Hired human labour	677.33 (14.84)	677.33 (19.81)
2	Seed material	-	-
3	Manures	1093.93 (23.96)	1093.93 (31.99)
4	Fertilizers	-	-
5	Plant protection	-	-
6	Irrigation	376.27 (8.24)	376.27 (11.00)
7	Miscellaneous	134.63 (2.95)	134.63 (3.94)
8	Depreciation	201.52 (4.41)	201.52 (5.89)
9	Interest on working capital	298.04 (6.53)	298.04 (8.72)
10	Cost A	2781.72 (60.93)	-
11	Rental value of land	1145.75 (25.10)	-
12	Interest on fixed capital	364.31 (7.98)	364.31 (10.66)
13	Cost B	4291.78 (94.01)	-
14	Family labour charges	273.38 (5.99)	273.38 (7.99)
15	Cost C	4565.16 (100.00)	3419.41 (100.00)

(Figures in parentheses are percentages to total)

Table 6.40. Cost of maintenance of arecanut per hectare (Operationwise)

(in rupees)

Sl. No.	Operations	Cost including rental value	Cost excluding rental value of land
1	Preparatory cultivation	-	-
2	Seeds and sowing	-	-
3	Weeding and inter-cultural operation	481.48 (10.55)	481.48 (14.08)
4	Irrigation	579.26 (12.69)	579.26 (16.94)
5	Manures and manuring	1360.17 (29.79)	1360.17 (39.78)
6	Fertiliser and application	-	-
7	Plant protection	-	-
8	Harvesting	-	-
9	Miscellaneous	134.63 (2.95)	134.63 (3.93)
10	Depreciation	201.52 (4.41)	201.52 (5.89)
11	Interest on working capital	298.04 (6.53)	298.04 (8.72)
12	Rental value of land	1145.75 (25.10)	-
13	Interest on fixed capital	364.31 (7.98)	364.31 (10.66)
14	Total cost	4565.16 (100.00)	3419.41 (100.00)

(Figures in parentheses are percentages to total)

The area under arecanut was found to be increasing with an increase in size of holding.

A. Cost of maintenance of arecanut

The cost of maintenance per hectare worked out to Rs.4565.16 on an average. The sizewise and incomewise cost of maintenance is shown in Table 6.38.and in Appendix II.21 to 24.

The highest cost was recorded by S_4 (Rs.5303.75) and the lowest by S_5 (Rs.4302.13). Among the income groups the expenditure was the highest in I_2 (Rs.4892.12). 23.96 per cent of the total cost was accounted by manures, 14.84 per cent by hired human labour and 8.24 for irrigation. The split up of cost of maintenance inputwise is given in Table 6.39.

Cost of maintenance at total cost excluding rental value worked out to be Rs.3419.41. Manures, hired human labour and irrigation forms 31.99 per cent, 19.81 per cent and 11 per cent respectively of the total cost. Cost of maintenance split up at cost excluding rental value is given in Table 6.39.and Table 6.40.

B. Resource use

For arecanut only very limited quantities of inputs are applied. Hired labour is the foremost among them. Table 6.41 shows the labour hours employed in arecanut

Table 6.41. Resource use in arecanut cultivation per hectare

Size groups	S_1	S_2	S_3	S_4	S_5	Average
a) Family labour(hrs)						
i) Male	303.23	203.75	192.94	80.28	23.52	108.16
ii) Female	-	-	-	-	-	-
b) Hired labour(hrs)						
i) Male	19.35	202.50	214.12	315.49	327.35	266.12
ii) Female	-	-	-	-	-	-

Income groups	I_1	I_2	I_3	I_4	I_5	Average
a) Family labour (hrs)						
i) Male	264.00	161.84	58.11	25.95	70.73	108.16
ii) Female	-	-	-	-	-	-
b) Hired labour (hrs)						
i) Male	85.33	271.05	325.68	192.59	304.88	266.12
ii) Female	-	-	-	-	-	-

cultivation. Family labour was found to decrease with increase in the size, the average being 108.16 hours. No female labour was engaged for arecanut cultivation. The hired labour showed wide variation among size groups, the highest being in S_5 (327.35 hours) and the lowest in S_1 (19.35 hours). The use of hired labour was found to increase with increase in size. The use of hired human labour on an average was found to be 266.12 hours.

Among the income groups also the family labour was found to decrease with increase in income. Hired labour was found to be the highest in I_5 (325.68 hours) and the lowest in I_1 (85.33 hours).

C. Returns from arecanut cultivation

a) Yield and output

The average gross income from arecanut was found to be Rs.5728.74 per hectare. Since most of the produce were sold on contract basis, the data on quantity of arecanut produced could not be ascertained. The per hectare income was found to be the highest in S_4 (Rs.8361.68) which is 45.96 per cent higher than the average and more than double the lowest value recorded by S_2 (Rs.4158.29).

In general, the output was found to increase with an increase in income. In I_5 it was found to be Rs.7641.26 which is 38.38 per cent higher than the average Rs.5728.74.

Table 6.42. Output for areecanut per hectare

(in rupees)

Size groups	S_1	S_2	S_3	S_4	S_5	Average
	4320.79	4158.29	4523.64	8361.68	6115.59	5728.74
Income groups	I_1	I_2	I_3	I_4	I_5	Average
	3496.55	4345.55	6080.62	2259.04	7641.26	5728.74

Table 6.43. Measures of income and benefit-cost ratios for areecanut (size groupwise)

(in rupees)

	S_1	S_2	S_3	S_4	S_5	Average
1. Net income at cost C	-84.96	-726.76	148.06	3057.23	1813.46	1163.58
2. Net income at cost excluding rental value of land	779.20	104.90	902.00	4730.27	3036.58	2309.33
3. Farm business income	2024.26	1271.04	1780.13	5349.75	3341.14	2947.02
4. Family labour income	664.40	-195.98	627.93	3259.89	1871.70	1436.96
5. Farm investment income	1274.90	740.26	1300.26	5147.79	3282.90	2673.64
6. Benefit-cost ratios at						
a) cost C	0.98	0.85	1.03	1.58	1.42	1.25
b) total cost excluding rental value of land	1.22	1.03	1.25	2.30	1.99	1.68

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Table 6.44. Measures of income and benefit-cost ratios for arecanut (income groupwise)

(in rupees)

	I_1	I_2	I_3	I_4	I_5	Average
1. Net income at cost C	-1095.94	-546.57	1465.94	-3.70	2784.06	1163.58
2. Net income at cost excluding rental value of land	-396.63	322.54	2682.06	448.11	4312.31	2309.33
3. Farm business income	961.68	1213.82	3168.68	816.31	4759.84	2947.02
4. Family labour income	-439.09	-144.08	1621.77	62.19	2960.63	1436.96
5. Farm investment income	304.83	811.33	3012.85	750.42	4583.27	2673.64
6. Benefit-cost ratios at a) cost C	0.76	0.89	1.32	1.00	1.57	1.25
b) total cost excluding rental value of land	0.90	1.08	1.79	1.25	2.30	1.68

Profitability of arecanut cultivation

a) Cost of production

Due to the unavailability of data pertaining to the quantity of arecanut produced, computation of cost of production is not attempted.

b) Measures of income

Average net income at cost C worked out to Rs.1163.58 (Table 6.43). The cultivation was found to incur loss in the lowest size groups. The largest size groups were found to have higher profit than the smaller size groups. Profit at all cost levels were found to be the highest in S_4 and the lowest in S_2. The benefit-cost ratio at cost C was found to be 1.25 on an average and at cost excluding rental value of land 1.68.

The net income at cost C was found to be the highest in I_5 (Rs.2784.06).(Table 6.44).

BANANA

Systematic planting of banana was not found common and it was planted mixed with other crops. Generally banana cultivation was seen scattered in the garden lands. Paddy lands are also put under banana at times. As a rainfed crop, planting new suckers is undertaken during April-May and wherever irrigation facilities are available the crop is

planted during August-September. No definite spacing was seen adopted. Pits are made and filled with green leaf, farm yard manure. Suckers are planted in these pits. Fertilizers were rarely applied. In a few cases where it is applied, it is given in two doses, within four months of planting. Irrigation is given twice a week by farmers who have the facilities. Plant protection measures are not adopted. By the time the plants putforth bunches they are propped up to avoid damages. Bunches are ready for harvest in 12 to 14 months from the date of planting.

Area under banana

The total area under banana in the sample was found to be only 1.15 hectares. This crop was generally cultivated as an intercrop. Only a few farmers were cultivating it as a pure crop. The area under banana is shown in Table 6.45 for both classification.

The area under banana per farm was found to be 0.01 hectare on an average. The production of banana in this regions is not market oriented.

A. Cost of cultivation of banana

The cost of cultivation of banana for both classification is worked out in terms of rupees and is presented in Appendix II.25 to II.28.

Table 6.45. Area under banana

Size groups	S_1	S_2	S_3	S_4	S_5	Average
i) Total area (in ha)	0.07	0.35	0.16	0.19	0.38	1.15
ii) Per farm area (in ha)	0.01	0.01	0.01	0.01	0.02	0.01
Income groups	I_1	I_2	I_3	I_4	I_5	Average
i) Total area (in ha)	0.14	0.23	0.32	0.13	0.33	1.15
ii) Per farm area (in ha)	0.01	0.01	0.01	0.01	0.02	0.01

Table 6.46. Cost of cultivation per hectare of banana

(in rupees)

Size groups	S_1	S_2	S_3	S_4	S_5	Average
	39901.05	36663.11	36413.32	34885.31	33750.42	36248.82
Income groups	I_1	I_2	I_3	I_4	I_5	Average
	39726.01	37108.85	33158.25	32241.44	38473.98	36248.82

Table 6.46 shows the cost of cultivation at cost C. The cost of cultivation per hectare of banana on an average worked out to Rs.36,248.82. Among the holding size groups the highest cost was recorded by S_1 (Rs.39,901.05) and the lowest by S_5 (Rs.33,750.42). Among the different income groups, the highest cost was incurred by I_1 (Rs.39,726.01) and the lowest by I_4 (Rs.32,241.44).

A split up of the cost of cultivation is given in Table 6.47. Rental value of land accounted 24.87 per cent of total cost which forms major item of cost followed by manures (18.48 per cent), hired human labour (14.09 per cent) and seed material (10.18 per cent).

Among the different operations, manures and manuring accounts for 23.46 per cent of the total cost, followed by seed material and sowing 10.18 per cent, fertilizers and application (8.99 per cent), preparatory cultivation (8.80 per cent) and propping (6.90 per cent)as shown in Table 6.48.

Excluding the imputed rental value of land the cost of cultivation worked out to Rs.27235.17 per hectare of which the contribution made by manures, hired human labour, seed material and fertilizers were 24.60 per cent, 18.76 per cent, 13.55 per cent and 10.13 per cent respectively. Irrigation contributes only 1.6 per cent to the total cost of cultivation.

Table 6.47. Cost of cultivation of banana per hectare (inputwise)

(in rupees)

Sl. No.	Items	Cost including rental value	Cost excluding rental value of land
1	Hired human labour	5108.47 (14.09)	5108.47 (18.76)
2	Seed material	3689.64 (10.18)	3689.64 (13.55)
3	Manures	6700.49 (18.48)	6700.49 (24.60)
4	Fertilizers	2758.79 (7.61)	2758.79 (10.13)
5	Plant protection	-	-
6	Irrigation	435.41 (1.20)	435.41 (1.60)
7	Harvesting charges	-	-
8	Miscellaneous	595.70 (1.64)	595.70 (2.19)
9	Propping	2499.99 (6.90)	2499.99 (9.18)
10	Depreciation	201.52 (0.56)	201.52 (0.74)
11	Interest on working capital	2638.80 (7.28)	2638.80 (9.69)
12	Cost A	24628.81 (67.94)	-
13	Rental value of land	9013.65 (24.87)	-
14	Interest on fixed capital	364.41 (1.01)	364.41 (1.34)
15	Cost B	34006.87 (93.82)	-
16	Family labour charges	2241.95 (6.18)	2241.95 (8.22)
17	Cost C	36248.82 (100.00)	27235.17 (100.00)

(Figures in parentheses are percentages to total)

Table 6.48. Cost of cultivation of banana per hectare (operationwise)

(in rupees)

Sl. No.	Operations	Cost including rental value	Cost excluding rental value of land
1	Preparatory cultivation	3188.86 (8.80)	3188.86 (11.70)
2	Seeds and sowing	3689.64 (10.18)	3689.64 (13.55)
3	Weeding and inter-cultural operations	1858.82 (5.13)	1858.82 (6.83)
4	Irrigation	435.41 (1.20)	435.41 (1.60)
5	Manures and manuring	8502.45 (23.46)	8502.45 (31.22)
6	Fertilizers and application	3259.58 (8.99)	3259.58 (11.97)
7	Plant protection	-	-
8	Harvesting	-	-
9	Propping	2499.99 (6.90)	2499.99 (2.19)
10	Miscellaneous	595.70 (1.64)	595.70 (2.18)
11	Depreciation	201.52 (0.56)	201.52 (0.74)
12	Interest on working capital	2638.80 (7.28)	2638.80 (9.68)
13	Rental value of land	9013.65 (24.87)	-
14	Interest on fixed capital	364.41 (1.01)	364.41 (1.34)
	Total cost	36248.82 (100.00)	27235.17 (100.00)

(Figures in parentheses are percentagesto total)

The table 6.49 shows the utilisation of labour - family and hired, N, P, and K in banana. On an average, the family men labour accounted for 879.02 hours. The hired male labour was the highest in S_5 (2410 hours) and the lowest in S_2 (1700 hours), the average being 2036.81 hours.

The quantities of fertilisers applied were 159.52 kg N, 169.43 kg P and 346.94 kg K as against the recommended levels of 475 kg N, 287.5 kg P and 750 kg K. The highest quantities of N and P was applied by the farmers in S_5 and the lowest quantities by those in S_1.

Among the different income groups also the application of family labour was found to decrease with increase in income. Use of hired labour was the highest in I_5 (2600 hours).

Nitrogenous fertiliser application was the highest in I_5 (215.15 kg) and the lowest in I_2 (111.55 kg). Phosphoric fertilizer use was also found to be the highest in I_5 and the lowest in I_2. The highest potassic fertilizer use was recorded in I_1.

a) Output from banana

Table 6.50 shows information on value of output of banana, both size groupwise as well as income groupwise. The total output per hectare was found to be worth Rs.45068.23. The output was found to be the highest in S_1 (Rs.54147.73) and the lowest in S_3 (Rs.42430.73). The contribution of

Table 6.49. Resource use of banana per hectare

Size groups	S_1	S_2	S_3	S_4	S_5	Average
1. Family labour (in hrs)						
Male	1832.50	1300.00	995.00	750.00	330.00	879.02
Female	27.50	57.50	-	-	-	19.10
2. Hired labour (in hrs)						
Male	1761.38	1700.00	2165.00	1907.50	2410.00	2036.81
Female	-	-	-	-	-	-
3. Fertilizers (in kg/ha)						
N	13.63	189.60	78.73	146.35	200.00	159.52
P	17.05	203.75	85.03	146.35	213.83	169.43
K	513.08	408.95	582.50	240.00	213.83	346.94
Income groups	I_1	I_2	I_3	I_4	I_5	**Average**
1. Family labour (in hrs)						
Male	2314.83	1049.38	668.75	666.68	436.38	879.02
Female	42.73	-	-	126.98	-	19.10
2. Hired labour (in hrs)						
Male	968.65	2028.23	1993.75	1873.03	2600.00	2036.81
Female	-	-	-	-	-	-
3. Fertilizers (in kg/ha)						
N	184.48	111.55	120.83	170.63	215.15	159.52
P	191.60	111.55	124.70	178.58	239.70	169.43
K	434.63	324.08	402.20	289.68	293.63	346.94

Table 6.50. Output of banana per hectare

Size groups	S_1	S_2	S_3	S_4	S_5	Average
Main product (value in Rs)	47940.34 (88.54)	38976.88 (89.39)	37267.00 (87.83)	39526.74 (88.82)	41055.85 (89.07)	40067.35 (88.90)
Byproduct (Rs)	6207.39 (11.46)	4624.28 (10.61)	5163.73 (12.17)	4973.26 (11.18)	5039.89 (10.93)	5000.88 (11.10)
Total output (Rs)	54147.73 (100.00)	43601.16 (100.00)	42430.73 (100.00)	44500.00 (100.00)	46095.74 (100.00)	45068.23 (100.00)

Income groups	I_1	I_2	I_3	I_4	I_5	Average
Main product (value in Rs)	42457.26 (89.33)	45308.64 (90.13)	34437.50 (87.25)	34968.25 (87.40)	42854.55 (89.64)	40067.35 (88.90)
Byproduct (Rs)	5071.23 (10.67)	4960.32 (9.87)	5031.25 (12.75)	5039.68 (12.60)	4954.55 (10.36)	5000.88 (11.10)
Total output (Rs)	47528.49 (100.00)	50268.96 (100.00)	39468.75 (100.00)	40007.93 (100.00)	47809.10 (100.00)	45068.23 (100.00)

(Figures in parentheses are percentages to total)

byproduct to total output was found to be 11.10 per cent. Among the income groups the output showed no consistent pattern.

D. Profitability of banana cultivation

b) Cost of production

Since it was difficult to collect data on the quantity of banana produced, cost of production per bunch was worked out and is presented in Table 6.51. Average cost of production amounted to Rs.13.02 per bunch at cost C. Production cost was found to decrease with an increase in size of farms - it was Rs.14.04 in S_1 and Rs.11.96 in S_5. The average cost of production at cost excluding rental value of land was worked out to be Rs.9.26 per bunch.

c) Measures of income

Table 6.52 presents the various income measures worked out for banana. The average net income at cost C was found to be Rs.8819.41. The net income per hectare was found to be the highest in S_1 (Rs.14,246.68) and the lowest in S_5 (Rs.6017.41). Income at cost excluding rental value of land was worked out to Rs.17,833.06, on an average. The highest net income at cost C was noticed in I_2 (Rs.13,160.11) among the income groups. The net income at cost excluding rental value of land was recorded to be the highest in I_5

Table 6.51. Cost of production of banana per bunch (in rupees)

Size groups	S_1	S_2	S_3	S_4	S_5	Average
Cost of production at						
a) Cost A	7.50	8.02	8.30	7.80	8.66	8.18
b) Cost B	12.22	11.91	12.00	11.68	11.61	12.09
c) Cost C	14.04	13.35	13.02	12.46	11.96	13.02
d) Cost excluding rental value of land	9.53	9.72	9.48	8.75	9.11	9.26
Income groups	I_1	I_2	I_3	I_4	I_5	**Average**
Cost of production at						
a) Cost A	7.81	7.91	7.60	7.11	9.41	8.18
b) Cost B	11.94	12.30	11.02	10.57	13.51	12.09
c) Cost C	14.44	13.40	11.72	11.33	13.97	13.02
d) Cost excluding rental value of land	10.60	9.21	8.43	8.00	9.98	9.26

Table 6.52. Measures of income and benefit cost ratios for banana

(in rupees)

Size groups	S_1	S_2	S_3	S_4	S_5	Average
Net income at cost C	14246.68	6938.05	6017.41	3614.69	12345.33	8819.41
Net income at cost excluding rental value of land	25076.23	15658.28	14503.56	18514.69	19187.96	17833.06
Farm business income	29939.83	19738.73	17354.59	20807.21	20269.40	20439.42
Family labour income	18614.58	10383.14	8470.18	11489.69	13180.44	11061.36
Farm investment income	25571.93	16293.64	14901.82	18932.21	19434.29	18197.47
Benefit-cost ratio at						
a) Cost C	1.36	1.19	1.17	1.28	1.37	1.24
b) cost excluding rental value of land	1.86	1.56	1.52	1.71	1.71	1.65
Income groups	I_1	I_2	I_3	I_4	I_5	Average
Net income at cost C	7802.48	13160.11	6310.50	7766.49	9335.12	8819.41
Net income at cost excluding rental value of land	17008.18	13213.90	14204.25	15768.08	18896.94	17833.06
Farm business income	23717.47	26326.15	16206.92	17895.79	20258.81	20439.42
Family labour income	13810.31	15783.57	7982.38	9591.89	10426.03	11061.36
Farm investment income	17709.64	23702.69	14535.04	16070.39	19167.90	18197.47
Benefit-cost ratio at						
a) cost C	1.20	1.35	1.19	1.24	1.24	1.24
b) total cost excluding rental value of land	1.56	1.86	1.56	1.65	1.65	1.65

(Rs.18,896.94). On an average, the benefit-cost ratio at cost C worked out to 1.24 while at cost excluding rental value of land 1.65.

COSTS AND RETURNS FROM LIVESTOCK PRODUCTION

Livestock form an important part of the economy of rural households. Dairy business is considered as a profitable enterprise and has drawn the attention of the farmers.

About 65 per cent of the sample households were found to maintain milch animals, either cows or buffaloes. Draught animals were maintained by some households, but not throughout the year. The farmers possessing large areas under paddy and with sufficient financial background, purchase bullocks whenever necessary and sell the animals after use.

The number of animals owned by the farmers are shown in Table 6.53 and 6.54.

The number of crossbred cows were found to be less than the desi ones, their respective numbers were 27 and 45. In the larger size groups and higher income groups, no farmers were found to maintain buffaloes.

Costs and returns from livestock

a) Maintenance of livestock

The maintenance costs vary with the type of animal. This was found to be different in different size and income

Table 6.53. Number of animals per household (size groupwise)

	S_1	S_2	S_3	S_4	S_5	Average
Cows in milk:						
a) Cross bred	0.14	0.11	0.14	0.15	0.21	0.15
b) Desi	-	0.11	0.27	0.46	0.17	0.19
Cows - dry						
a) Cross bred	0.07	0.19	0.05	0.08	0.17	0.12
b) Desi	0.14	0.22	0.32	0.23	0.33	0.26
Buffaloes in milk:						
a) Cross bred	-	-	-	-	-	-
b) Desi	0.29	-	0.14	-	-	0.07

Table 6.54. Number of animals per household (income groupwise)

	I_1	I_2	I_3	I_4	I_5	Average
Cows in milk:						
a) Cross bred	0.04	0.13	0.22	0.11	0.23	0.15
b) Desi	0.09	0.13	0.26	0.22	0.27	0.19
Cows - dry						
a) Cross bred	0.09	0.04	0.17	0.22	0.14	0.12
b) Desi	0.30	0.22	0.35	0.33	0.14	0.26
Buffaloes in milk						
a) Cross bred	-	-	-	-	-	-
b) Desi	0.09	0.04	0.13	-	0.05	0.07

Table 6.55. Maintenance cost per day per animal (size groupwise)
(in rupees)

	S_1	S_2	S_3	S_4	S_5	Average
Cows - cross bred:						
a) in milk	6.50	8.50	8.45	7.40	7.56	7.76
b) dry	5.85	6.11	5.85	4.35	4.93	5.53
Cows - Desi						
a) in milk	4.73	4.50	4.23	4.18	3.63	4.13
b) dry	3.40	2.83	3.65	3.60	3.40	3.36
Buffaloes						
a) in milk	9.50	-	8.57	-	-	9.10
b) dry	5.50	-	4.57	-	-	5.10

Table 6.56. Maintenance cost per day per animal (income groupwise)
(in rupees)

	I_1	I_2	I_3	I_4	I_5	Average
Cows - cross bred:						
a) in milk	8.80	8.00	8.68	7.70	6.51	7.76
b) dry	6.10	7.25	5.19	5.03	5.35	5.53
Cows - Desi:						
a) in milk	5.48	3.67	3.77	3.75	4.39	4.13
b) dry	3.13	2.58	3.39	3.97	4.52	3.36
Buffaloes:						
a) in milk	9.75	9.50	8.57	-	9.00	9.10
b) dry	5.75	5.50	4.57	-	5.00	5.10

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groups. The per day maintenance costs both during lactation period and dry period is given in Table 6.55 and 6.56. The total maintenance cost was worked out depending on the duration of lactating and dry periods.

On an average it was worked out that the number of lactating days per year in cows and buffaloes were 210 and 165 days respectively. The corresponding dry periods were 155 and 200 days respectively. The maintenance costs for lactating period and dry period were worked out at the daily rates and the annual cost of maintenance was computed.

b) Milk yield

On an average the calving interval of cows was found to be 470 days - of which 270 days in milk and 200 days dry. On an average the animals were in milk during 210 days in a year. In buffaloes the calving interval was found to be 720 days - with 300 days in milk and 420 days dry, and on an average the number of days in milk per year was 165 and the dry days were 200. The average milk yield per animal per day is presented in Tables 6.57 and 6.58 in litres per day.

The average milk yield per animal per each lactating day was found to be 4.62 litres for crossbred cows (which is lower than the potential of the crossbreds) and 2.95 litres in desi cows. The average milk yield of buffaloes were worked out to 6.67 litres per day which is also below potential.

Table 6.57. Milk yield per day per animal (size groupwise)

(in litres)

	S_1	S_2	S_3	S_4	S_5	Average
Cows:						
a) Cross bred	5.05	3.96	4.66	4.38	4.91	4.62
b) Desi	2.95	2.77	2.85	2.84	3.55	2.95
Buffaloes	6.55	-	6.83	-	-	6.67

Table 6.58. Milk yield per day per animal (income groupwise)

(in litres)

	I_1	I_2	I_3	I_4	I_5	Average
Cows:						
a) Cross bred	5.67	4.50	4.60	3.51	4.76	4.62
b) Desi	3.31	2.37	3.31	3.93	2.49	2.95
Buffaloes	6.68	6.80	6.51	-	7.00	6.67

c) Costs and returns from livestock

The costs and returns from the livestock in different size and income groups for different types of animals worked out and is given in Tables 6.59 to 6.64.

Table 6.59 shows the costs and returns from crossbred cows. It was found that since the yield obtained per animal was far below the potential for crossbred cows, the net income from crossbreds was not found to be attractive. The maintenance cost was almost on par with the gross returns leaving only a marginal profit of Rs.52.59 per farm and Rs.194.76 per animal annually.

The net income per farm was found to be the highest in S_5 (Rs.210.21) and the lowest in S_2 (loss of Rs.116.54). But net income per animal was recorded to be the highest in S_1 (Rs.688.58) and the lowest in S_2 (a loss of Rs.393.31).

Among the income groups (as shown in Table 6.60) the per farm net income was found to be the highest in I_5 (Rs.155.70) and the lowest in I_2 (a loss of Rs.32.96). The net income per animal was found to be the highest in I_1 (Rs.517.69) and the lowest in I_2 (a loss of Rs.189.50).

The rearing of non-descript cows involved comparatively lesser maintenance cost per animal (Rs.1389.73)as against Rs.2490.64 in the case of crossbreds). The costs and returns

Table 6.59. Costs and returns from cross bred cows per year (size groupwise)

	S_1	S_2	S_3	S_4	S_5	Average
Maintenance cost (in Rs)						
Total	6815.25	21856.40	10725.00	6684.75	21165.75	67247.15
Per farm	486.80	809.50	487.50	514.21	881.91	672.47
Per animal	2271.75	2732.05	2681.25	2228.25	2351.75	2490.64
Milk produced (in litres)						
Total	3181.50	6652.80	3914.40	2759.40	9279.90	25788.00
Per farm	227.21	246.40	177.93	212.26	386.66	257.88
Per animal	1060.50	831.60	978.60	919.80	1031.10	955.11
Income from milk (in Rs)						
Total	8430.98	17629.92	10373.16	7312.41	24591.74	68338.21
Per farm	602.21	652.96	471.51	562.49	1024.66	683.38
Per animal	2810.33	2203.74	2593.29	2437.47	2732.42	2531.04
Income from dung (in Rs)						
Total	450.00	1080.00	440.00	577.50	1620.00	4167.50
Per farm	32.14	40.00	20.00	44.42	67.50	41.68
Per animal	150.00	135.00	110.00	192.50	180.00	154.35
Gross receipt (in Rs)						
Total	8880.98	18709.92	10813.16	7889.91	26211.74	72505.71
Per farm	634.36	692.96	421.51	606.92	1092.16	725.06
Per animal	2960.33	2338.74	2703.29	2629.97	2912.42	2685.40
Profit or loss (in Rs)						
Total	+2065.73	-3146.48	88.16	1205.16	5045.00	5258.56
Per farm	147.55	-116.54	4.01	92.70	210.21	52.59
Per animal	688.58	-393.31	22.04	401.72	560.67	194.76

Table 6.60. Costs and returns from cross bred cows per year (income groupwise)

	I_1	I_2	I_3	I_4	I_5	Average
Maintenance cost (in Rs)						
Total	8380.50	11215.00	23645.25	6435.60	17570.80	67247.15
Per farm	364.37	487.61	1028.05	715.07	798.67	672.47
Per animal	2793.50	2803.75	2627.25	2145.20	2196.35	2490.64
Milk produced (in litres)						
Total	3572.10	3780.00	8624.00	2211.30	7530.59	25788.00
Per farm	155.31	164.35	378.00	245.70	342.30	257.88
Per animal	1190.70	945.00	966.00	737.10	941.32	955.11
Income from milk (In Rs)						
Total	9466.07	10017.00	23039.10	5859.95	19956.09	68338.21
Per farm	411.57	435.52	1001.70	651.11	907.10	683.38
Per animal	3155.36	2504.25	2559.90	1953.32	2494.51	2531.04
Income from dung (in Rs)						
Total	467.50	440.00	1620.00	600.00	1052.00	4167.50
Per farm	20.33	19.13	66.67	27.08	47.27	41.68
Per animal	155.83	110.00	180.00	200.00	130.00	154.35
Gross receipt (in Rs)						
Total	9933.57	10457.00	24659.10	6459.95	20996.09	72505.71
Per farm	431.89	454.65	1072.13	717.77	954.37	725.06
Per animal	3311.19	2614.25	2739.90	2153.32	2624.51	2685.40
Profit or loss (in Rs)						
Total	1553.07	-758.00	1013.85	24.35	3425.29	5258.56
Per farm	67.52	-32.96	44.08	2.71	155.70	52.59
Per animal	517.69	-189.50	112.65	8.12	428.16	194.76

in respect of non-descript cows are represented in Table 6.61. Eventhough the milk yield was higher in crossbreds, the overall net income per animal was found to be higher in desi cows than the crossbreds. The net income per animal was found to be Rs.194.76 in crossbred cows and Rs.456.52 for desi cows.

Among the size groups, the per farm net income from desi cows was found to be the highest in S_5 (Rs.417.30) and the lowest in S_1 (Rs.59.63). But net income per animal was found to be the highest in S_5 (Rs.834.61) and the lowest in S_3 (Rs.290.05).

Among the income groups (Table 6.62) the net income per animal was found to be the highest in I_4 (Rs.964.20) and the lowest in I_5 (Rs.111.77). The net income per farm was recorded the highest in I_4 (Rs.535.66) and the lowest in I_5 (Rs.45.73).

Compared to cows, buffaloes found to provide in higher net income. The size groupwise and income groupwise costs and returns were worked out and are presented in Tables 6.63 and 6.64.

Only in groups S_1 and S_3 the farmers were found to own buffaloes. The net income per animal was worked out to Rs.777.25 in S_1 and Rs.1237.85 in S_3, the average being Rs.974.65 per animal.

Table 6.61. Costs and returns from Desi cows per year (size groupwise)

	S_1	S_2	S_3	S_4	S_5	Average
Maintenance cost (in Rs)						
Total	2788.60	12452.85	18902.65	12922.20	15471.60	62537.90
Per farm	199.19	461.22	859.21	994.02	644.65	625.38
Per animal	1394.30	1383.65	1454.05	1435.80	1289.30	1389.73
Milk produced (in litres)						
Total	1239.00	5235.30	7780.50	5367.60	8946.00	28568.40
Per farm	88.50	193.90	353.66	412.89	372.75	285.68
Per animal	619.50	581.70	598.50	596.40	745.50	634.85
Income from milk (in Rs)						
Total	3283.35	13873.55	20618.34	14224.14	23706.90	75706.28
Per farm	234.53	513.84	937.20	1094.16	987.79	757.06
Per animal	1641.68	1541.51	1586.03	1580.46	1975.58	1682.36
Income from dung (in Rs)						
Total	340.00	1715.00	2055.00	1485.00	7374.96	7375.00
Per farm	24.29	63.52	93.41	114.23	307.29	73.75
Per animal	170.00	190.56	158.08	165.00	614.58	163.89
Gross receipt (in Rs)						
Total	3623.35	15588.55	22673.34	15709.14	25486.20	83081.28
Per farm	258.81	577.35	1030.61	1208.40	1061.95	830.81
Per animal	1811.68	1732.06	1744.10	1745.40	2123.91	1846.25
Profit or loss (in Rs)						
Total	834.75	3135.70	3770.69	2786.94	10015.30	20543.38
Per farm	59.63	116.14	171.40	214.38	417.30	205.43
Per animal	417.38	348.41	290.05	309.66	834.61	456.52

Table 6.62. Costs and returns from Desi cows per year (income groupwise)

	I_1	I_2	I_3	I_4	I_5	Average
Maintenance cost (in Rs)						
Total	14723.55	9364.80	18440.10	7014.25	12995.20	62537.90
Per farm	640.15	407.17	801.74	772.36	590.69	625.38
Per animal	1635.95	1170.60	1317.15	1402.85	1443.91	1389.73
Milk produced (in litres)						
Total	6255.90	3981.60	9498.30	4126.50	4706.10	28568.40
Per farm	272.00	173.11	412.97	458.50	213.91	285.68
Per animal	695.10	497.70	678.45	825.30	522.90	634.85
Income from milk (in Rs)						
Total	16578.14	10551.24	25170.50	10935.23	12471.17	75706.28
Per farm	720.79	458.75	1094.37	1215.03	566.87	757.06
Per animal	1842.02	1318.91	1797.89	2187.05	1385.69	1682.36
Income from dung (in Rs)						
Total	1545.00	1490.00	1910.00	900.00	1530.00	7375.00
Per farm	67.17	64.78	83.04	100.00	69.55	73.75
Per animal	171.67	186.25	136.43	180.00	170.00	163.89
Gross receipt (in Rs)						
Total	18123.14	12041.24	27080.50	11835.23	14001.17	83081.28
Per farm	787.96	523.53	1177.41	1315.03	636.42	830.81
Per animal	2013.68	1505.16	1934.32	2367.05	1555.69	1846.25
Profit or loss (in Rs)						
Total	3399.59	2676.44	8640.40	4820.98	1005.97	20543.38
Per farm	147.81	116.37	375.17	535.66	45.73	205.43
Per animal	377.73	334.56	617.17	964.20	111.77	456.52

Table 6.63. Costs and returns from Buffaloes per year (size groupwise)

	S_1	S_2	S_3	S_4	S_5	Average
Maintenance cost (in Rs)						
Total	10670.00	-	6984.00	-	-	17654.00
Per farm	762.14	-	317.45	-	-	176.54
Per animal	2667.50	-	2328.00	-	-	2522.00
Milk yield (in litres)						
Total	4323.00	-	3380.85	-	-	7703.85
Per farm	308.79	-	153.68	-	-	77.04
Per animal	1080.75	-	1126.95	-	-	1100.55
Income from milk (in Rs)						
Total	12969.00	-	10142.55	-	-	23111.55
Per farm	926.36	-	461.03	-	-	231.12
Per animal	3242.25	-	3380.85	-	-	3301.65
Income from dung (in Rs)						
Total	810.00	-	555.00	-	-	1365.00
Per farm	57.86	-	25.23	-	-	13.65
Per animal	202.50	-	185.00	-	-	195.00
Gross receipt (in Rs)						
Total	13779.00	-	10697.55	-	-	24476.55
Per farm	284.21	-	486.25	-	-	244.77
Per animal	3444.75	-	3565.85	-	-	3496.65
Profit or loss (in Rs)						
Total	3109.00	-	3713.55	-	-	6822.55
Per farm	222.07	-	168.80	-	-	68.23
Per animal	777.25	-	1237.85	-	-	974.65

Table 6.64. Costs and returns from Buffaloes per year (income groupwise)

	I_1	I_2	I_3	I_4	I_5	Average
Maintenance cost (in Rs)						
Total	5517.50	2667.50	6984.15	-	2485.00	17654.00
Per farm	239.89	115.98	303.66	-	112.95	176.54
Per animal	2758.75	2667.50	2328.05	-	2485.00	2522.00
Milk yield (in litres)						
Total	2204.40	1122.00	3222.45	-	1155.00	7703.85
Per farm	95.84	48.78	140.11	-	52.50	77.04
Per animal	1102.20	1122.00	1074.15	-	1155.00	1100.55
Income from milk (in Rs)						
Total	6613.20	3666.00	2667.35	-	3465.00	23111.55
Per farm	287.53	159.39	420.32	-	157.50	231.12
Per animal	3306.60	3666.00	3222.45	-	3465.00	3301.65
Income from dung (in Rs)						
Total	390.00	185.00	588.00	-	202.00	1365.00
Per farm	16.96	8.04	25.57	-	9.18	13.65
Per animal	195.00	185.00	196.00	-	202.00	195.00
Gross receipt (in Rs)						
Total	7003.20	3551.00	10255.35	-	3667.00	24476.55
Per farm	304.49	154.39	445.88	-	166.68	244.77
Per animal	3501.60	3551.00	3418.45	-	3667.00	3496.65
Profit or loss (in Rs)						
Total	1485.70	883.50	3271.00	-	1182.00	6822.55
Per farm	64.60	38.41	142.23	-	53.73	68.23
Per animal	742.85	883.50	1090.40	-	1182.00	974.65

Table 6.65. Net income per farm from livestock and poultry (size groupwise)

(in rupees)

	S_1	S_2	S_3	S_4	S_5	Average
I. Milch animals:						
a) Cross bred	147.55	-116.54	4.01	92.70	210.21	52.59
b) Indigenous	59.63	116.14	171.40	214.38	417.30	205.43
c) Buffaloes	227.07	-	168.80	-	-	68.23
d) Goats	118.57	159.26	157.82	155.38	109.17	137.22
II. Poultry	383.93	523.14	596.25	711.26	641.29	572.50
Total	931.75	682.00	1092.28	1173.72	1377.97	1035.97

Table 6.66. Net income per farm from livestock and poultry (income groupwise)

(in rupees)

	I_1	I_2	I_3	I_4	I_5	Average
I. Milch animals:						
a) Cross bred	67.52	-32.96	44.08	2.71	155.70	52.59
b) Indigenous	147.81	116.37	375.17	535.66	45.73	205.43
c) Buffaloes	64.60	38.41	142.23	-	53.73	68.23
d) Goats	108.70	178.20	119.13	158.11	134.55	137.22
II. Poultry	315.00	521.24	657.99	1125.00	580.00	572.50
Total	703.63	821.27	1338.60	1821.48	969.71	1035.97

Among the income groups, no farmer in I_4 was found to own buffaloes.

Net income from livestock and poultry

Table 6.65 shows the net income from livestock and poultry together, size groupwise. No maintenance charges were found incurred with regard to maintenance of goats and poultry. No purchased feed were given to them. On an average the net income was worked out to Rs.1035.97. This was found to be the highest in S_5 (Rs.1377.97) and the lowest in S_2 (Rs.682.00). Among the income groups, gross income was found to be the highest in I_4 (Rs.1821.48) and the lowest in I_1 (Rs.703.63).

FARMSTEAD ANALYSIS

A typical farm in the area of study has only a small area under cultivation. This available land is put under a number of crops - seasonals, annuals and perennials. Rearing of milch animals was also common in the area. It will be of interest to understand the pattern of income and expenditure from agriculture and allied activities.

In Table 6.67 the cropping pattern, the costs incurred, gross income and net income excluding rental value of land from the different agricultural and allied activities for

the different size groups on a per farm basis are presented. In general the area under different crops was found to increase with an increase in the size of the farm. So also the expenditure, gross income and net income.

The average expenditure per farm was worked out to Rs.6111.45, 24.13 per cent of which is on livestock including poultry. The proportional expenditure on livestock was found to be decreasing with an increase in the size of the holding. It was 49.92 per cent in S_1, 31.31 per cent in S_2, 31.77 per cent in S_3, 22.83 per cent in S_4 and 14.09 per cent in S_5. The bulk of this expenditure, 25.58 per cent was on coconut. The area under coconut is also high (0.44 hectare per farm).

On an average the gross income per farm was worked out to Rs.14,303.56, of which 17.55 per cent was contributed by livestock. It may be noted that though the proportional expenditure on livestock was 24.13 per cent, the contribution to gross income was only 17.55 per cent indicating a lower benefit-cost ratio for livestock enterprise than crop production. 43.08 per cent of gross income obtained was from coconut.

The net income at total cost excluding rental value of land per farm was found to be Rs.8192.11, of which 12.65 per cent net income from livestock and the rest from crop production. Net income was found to be the highest in S_5 Rs.18,324.78 and the lowest S_1 (Rs.2326.15).

In Table 7.7 of chapter VII, the expenditure pattern for the farmers is shown. It is seen that the average household expenditure worked out to Rs.8160.64. Assuming the farmers are to meet the entire household expenditure from the income obtained out of crops and livestock, it may require 1.21 hectares of land according to this pattern. If he has to depend solely upon net income from crops alone, then it may require 1.38 hectares of land. Only in S_4 and S_5 the net income per farm from crops and livestock is sufficient enough to meet the household expenditure. This points to the fact that while making land reform policies, the economic viability of the holdings should also be considered. Otherwise there won't be any incentive for the farmer to produce maximum from the land possessed by him and thus adversely affect production and productivity.

In S_1 the net income from farm and livestock enterprises covers only 34.42 per cent of the household expenditure, in S_2 it is 56.51 per cent and in S_3 72.40 per cent.

Table 6.68 shows the farm income, farm expenditure and net returns per hectare of land under the existing cropping pattern in the area. In general a hectare of land had 0.59 hectare under paddy (including both mundakan and puncha), 0.32 hectare under coconut, 0.04 hectare under arecanut, 0.02 hectare under various crops and 0.01 hectare each under banana, pepper and cashew.

The expenditure per hectare for crop production and livestock production on an average was worked out to Rs.4527.00 and the gross income Rs.10,595.23 leaving a net income of Rs.6068.23.

The area required to provide net income (at cost excluding rental value of land), from crops alone, sufficient enough to meet the household expenditure for various size groups were worked out and is given in Table 6.69. It can be seen that only the farmers in the largest holding size group had sufficient area under possession.

Table 6.69. Optimum land requirement under the existing cropping pattern

	S_1	S_2	S_3	S_4	S_5	Average
1. Net farm income at cost exclud-ing rental value of land (in rupees)	4980.00	5394.92	4845.74	5339.59	6619.85	5914.17
2. Household expenditure per year (in rupees)	6757.61	7029.99	8067.31	8029.39	10309.70	8160.64
3. Average area possessed (in hectares)	0.28	0.61	0.98	1.38	2.56	1.21
4. Area required to meet household expenditure (in hectares)	1.36	1.30	1.66	1.50	1.56	1.38

House hold economy

CHAPTER VII

HOUSEHOLD ECONOMY

The quantity and quality of goods and services which a family is accustomed to consume decide their standard of living and this is determined by the income of the family.

The farmers obtain money income from different sources - from crop and livestock production, through non-agricultural occupations like trade, service, etc., as also through remittances from relatives.

Net income, expenditure and savings

The net income at total cost obtained from different sources, household expenditure and savings are shown in Table 7.1 and 7.2. The net income per family on an average was worked out to Rs.27,357.70. It was the highest in S_3, Rs.51,191.45, 3 times higher than that in S_1. The average household expenditure amounted to Rs.8160.64. It was found to be increasing with an increase in the holding size.

The surplus left on the gross income after meeting the expenditure on different items is considered as net savings. On an average Rs.19,197.06 was left as savings per family per year. The average per capita savings worked out to Rs.2926.38 per annum. The extent of savings, both per family and per capita is seen to increase with an increase

Table 7.1. Net income, expenditure and net savings per family (size groupwise)

(in rupees)

	S_1	S_2	S_3	S_4	S_5	Average
1. Net income from agriculture and other sources	14194.00	12543.27	19550.21	41495.28	51191.45	27357.70
2. Family expenditure per year	6757.61	7029.99	8067.31	8029.39	10309.70	8160.64
3. Savings/dissavings						
a) Per family	7436.39	5513.28	11482.90	33465.89	40881.75	19197.06
b) Per capita	1169.24	918.88	1579.49	4943.26	6251.03	2926.38

Table 7.2. Net income, expenditure and net savings per family (Income groupwise)

(in rupees)

	I_1	I_2	I_3	I_4	I_5	Average
1. Net income from agriculture and other sources	4642.06	13300.53	19071.74	25583.94	75180.23	27357.70
2. Family expenditure per year	6423.15	7555.57	8580.68	9579.74	9548.78	8160.64
3. Savings/dissavings						
a) Per family	-1781.09	5744.96	10491.06	16004.20	65631.45	19197.06
b) Per capita	- 296.85	886.57	1536.03	2216.65	9825.07	2926.38

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in the size of holdings. While the savings per family was only Rs.5513.28 for S_2, the lowest, it was more than seven times higher for S_5 amounting to Rs.40,881.75.

A comparison of per capita savings showed that it was Rs.918.88 for S_2, the lowest, and Rs.6251.03 for S_5, the highest.

The per capita savings ranged from a deficit of Rs.296.85 in I_1 to savings of Rs.9825.07 in I_5. The extent of savings indicated that there was no margin left for investment and to meet any sudden unpredictable expenditure in the smallest income group.

Debt pattern

A split up of the sourcewise loans availed (as shown in Table 7.3 and 7.4) showed that the extent of loans advanced by the co-operatives and the Nationalised Banks on an average remained more or less the same. Other sources supplied about 12 per cent of the total loans. The average amount of loan taken per family worked out to Rs.850.50. The lower income groups were found to avail greater extent of loans.

Investment on household articles

Other than food, shelter and clothing, there are other items which adds comfort to life. Information on the materials possessed by the farm families give additional understanding about the standard of living. The total investment

Table 7.3. Extent of loans availed (size groupwise) (in rupees)

Sl. No.	Size groups	Average amount of loan per family			
		Co-operative Society	Nationalised Banks	Others	Total
1	S_1	276.79 (37.35)	214.29 (28.92)	250.00 (33.73)	741.08 (100.00)
2	S_2	188.89 (29.61)	344.44 (53.99)	104.63 (16.40)	637.96 (100.00)
3	S_3	704.55 (46.90)	663.64 (44.18)	134.09 (8.93)	1502.27 (100.00)
4	S_4	823.08 (63.32)	423.08 (32.54)	53.85 (4.14)	1300.01 (100.00)
5	S_5	83.33 (26.67)	208.33 (66.67)	20.83 (6.66)	312.49 (100.00)
Average		371.75 (43.71)	374.00 (43.97)	104.75 (12.32)	850.50 (100.00)

(Figures in parentheses are percentages to total for the respective groups)

Table 7.4. Extent of loans availed (income groupwise) (in rupees)

Sl. No.	Income groups	Average amount of loan per family			
		Co-operative Society	Nationalised Banks	Others	Total
1	I_1	655.43 (48.67)	478.26 (35.51)	213.04 (15.82)	1346.73 (100.00)
2	I_2	282.61 (39.33)	391.30 (54.46)	44.57 (6.21)	718.48 (100.00)
3	I_3	586.96 (55.90)	369.57 (35.20)	93.48 (8.90)	1050.01 (100.00)
4	I_4	233.33 (8.00)	333.33 (40.00)	266.67 (32.00)	833.33 (100.00)
5	I_5	-	268.18 (100.00)	-	268.18 (100.00)
Average		371.75 (43.71)	374.00 (43.97)	104.75 (12.32)	850.50 (100.00)

(Figures in parentheses are percentages to total for the respective groups)

per family and per capita were worked out and are presented in Table 7.5 and 7.6.

From the Table 7.5 it can be seen that the average expenditure per family on household articles was worked out to Rs.4036.50 and per capita expenditure Rs.615.32. Of the total investment, furniture accounted for 20.63 per cent, followed by moter vehicles (18.83 per cent), Almirah (10.75 per cent), fan (11.40 per cent), utensils (8.57 per cent), bicycles (5.00 per cent) and the rest 14.67 per cent accounted for items like sewing machine, pressure cooker, electric iron, boxes and wall clock. Among the size groups, the total expenditure per family was found to be increasing with an increase in the size of holdings.

With regard to different items the average number of radio per family was found to be increasing with an increase in the holding size. Same trend was noted in items like bicycle, fan, pressure cooker, electric iron and Almirah. The expenditure noticed to be increasing with an increase in income.

The number of almost all the items purchased per family was found to increase with an increase in income. The difference can be attributed to the purchasing power and preference of the highest income groups to buy these items - and it is a clear indication of the higher standard of living of the higher income groups.

Table 7.5. continued

		Boxes	Furniture	Utensils	Wall clock	Average
S_1	Per family	220.00	598.21	257.14	89.29	1834.64
	Per capita	34.61	94.10	40.45	14.04	288.60
	Percentage to total	11.99	32.61	14.02	4.85	100.00
S_2	Per family	284.26	634.26	306.48	83.33	4234.26
	Per capita	47.38	105.71	51.08	13.89	705.71
	Percentage to total	6.71	14.98	7.24	1.97	100.00
S_3	Per family	300.00	777.27	298.86	147.73	2848.18
	Per capita	41.25	106.88	41.09	20.31	391.63
	Percentage to total	10.53	27.29	10.49	5.19	100.00
S_4	Per family	346.15	875.00	280.77	134.62	3218.46
	Per capita	51.14	129.26	41.48	19.89	475.47
	Percentage to total	10.76	27.19	8.72	4.18	100.00
S_5	Per family	340.63	1219.79	520.83	245.83	6630.83
	Per capita	52.07	186.46	79.62	37.58	1013.63
	Percentage to total	5.14	18.40	7.85	3.71	100.00
Average:						
	Per family	300.30	832.50	346.00	144.00	4036.50
	Per capita	45.78	126.91	52.74	21.95	615.32
	Percentage to total	7.44	20.63	8.57	3.57	100.00

Table 7.6. continued

		Boxes	Furniture	Utensils	Wall clock	Average
I_1	Per family	195.65	502.17	246.74	54.35	1670.22
	Per capita	32.61	83.70	41.12	9.06	278.37
	Percentage to total	11.71	30.07	14.77	3.25	100.00
I_2	Per family	254.57	719.57	281.52	65.22	4173.04
	Per capita	39.30	111.07	43.46	10.07	644.16
	Percentage to total	6.10	17.24	6.75	1.56	100.00
I_3	Per family	298.91	935.87	357.61	208.70	3749.57
	Per capita	43.79	137.10	52.39	30.57	549.30
	Percentage to total	7.97	24.96	9.54	5.57	100.00
I_4	Per family	400.00	972.22	411.11	244.44	4584.44
	Per capita	55.38	134.62	56.92	33.85	634.77
	Percentage to total	8.72	21.20	8.97	5.33	100.00
I_5	Per family	418.18	1130.68	478.41	211.36	6443.41
	Per capita	62.59	169.22	71.60	31.63	964.33
	Percentage to total	6.49	17.55	7.42	3.28	100.00
Average:						
	Per family	300.30	832.50	346.00	144.00	4036.50
	Per capita	45.78	126.91	52.74	21.95	615.32
	Percentage to total	7.44	20.63	8.57	3.57	100.00

Constituents of family expenditure and standard of living

The average expenditure per family per year for the different items are presented in Table 7.7, size groupwise and in 7.8 income groupwise. The expenditure per adult unit is also worked out and are shown.

The average expenditure per family was found to be Rs.8160.64 per year and Rs.1433.25 per adult unit per year. it was observed that the food items accounted for the major portion of expenditure of farm families, accounting for 67 per cent of the total. The expenditure per family on food items alone on an average was Rs.5467.27 which worked out to Rs.960.21 per adult unit.

Among the food items, protective foods constituted an expenditure of 54.17 per cent, and cereals 44.21 per cent. The expenditure on pulses was only 1.62 per cent.

The next important item was clothing which constituted 13.95 per cent of the total expenditure. The expenses on education, travel, fuel and lighting, recreation, etc. together was around 20 per cent.

It was found that the percentage expenditure on food decreased with the increase in the size of the holding ranging between 75 per cent in S_1 to 60 per cent in S_5. The percentage expenditure on clothing, education and house tax etc. found to increase with an increase in size of the holdings.

Table 7.8. continued

Sl. No.	Items		I_1 Value (in Rs)	I_2 Value (in Rs)	I_3 Value (in Rs)	I_4 Value (in Rs)	I_5 Value (in Rs)	Average Value (in Rs)
10	Recreation	Per family	116.30	132.61	189.13	183.30	529.50	233.75
		Per adult unit	22.30	23.60	31.90	29.50	91.10	41.05
		Percentage to total	1.81	1.76	2.20	1.91	5.55	2.86
11	House tax	Per family	7.79	15.26	28.39	27.00	32.00	21.30
		Per adult unit	7.00	2.70	4.80	4.30	5.50	3.70
		Percentage to total	0.12	0.21	0.34	0.28	0.33	0.26
12	Tobacco	Per family	36.52	20.87	34.26	13.30	19.10	26.48
		Per adult unit	7.00	3.70	5.80	2.10	3.30	4.65
		Percentage to total	0.57	0.28	0.40	0.14	0.20	0.32
13	Social and other items	Per family	110.65	149.13	155.43	200.00	178.40	152.75
		Per adult unit	21.20	26.50	26.30	32.20	30.70	26.83
		Percentage to total	1.72	1.97	1.81	2.09	1.87	1.87
14	Land cess	Per family	3.40	3.98	7.38	6.70	8.70	5.91
		Per adult unit	0.70	0.70	1.20	1.10	1.50	1.04
		Percentage to total	0.05	0.05	0.09	0.06	0.09	0.07
	Total	Per family	6423.15	7555.57	8580.68	9579.74	9548.78	8160.64
		Per adult unit	1230.59	1342.64	1449.44	1542.36	1643.25	1433.25
		Percentage to total	100.00	100.00	109.00	100.00	100.00	100.00
	Adult units		120.05	129.43	136.16	55.90	127.84	569.38

With regard to education and recreation, the proportional expenditure in S_5 was found to be much higher than in S_1, 7.95 and 1.06 per cent for education and 5.23 and 1.64 for recreation respectively for S_5 and S_1.

Among the size groups the expenditure per farm was found to increase with an increase in the size of the holding. It was Rs.10,309.70 in S_5, 52.56 per cent higher than that recorded in S_1 (Rs.6757.61).

In general the expenditure on the various items among income groups was found to be increasing with the increase in income. The details are presented in Table 7.8.

Eventhough the absolute expenditure per family on protective foods was found to be increasing with increase in income, the percentage expenditure on those item was found to be almost the same among the various income groups. While taking into consideration the expenditure on total food - comprising cereals, pulses and protective foods - the percentage contribution to total expenditure was found to be decreasing with an increase in income. Percentage expenditure on clothing, education and recreation was found to increase with an increase in income while that on fuel decrease.

Consumption of protective foods

Protective food is an important item of diet. Foods rich in proteins, vitamins and minerals are termed as protective food. This group of foods include milk, meat, fish, egg, vegetables, fruits, etc.

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The expenditure on important items of protective foods per family and per adult unit in different size groups of holdings is presented in Table 7.9.

It can be observed that the expenditure on protective foods per family was Rs.2961.77 per year on an average, which worked out to Rs.520.17 per adult unit per year. Among the items of protective foods, the expenditure on milk and milk products were the maximum accounting for 23.43 per cent followed by fish (12.78 per cent), meat (12.31 per cent), vegetables (11.52 per cent), edible oils (10.88 per cent). Among the size groups, the expenditure on protective food was found to be the maximum in S_5 - both per family and per adult unit - which worked out to Rs.3681.28 per family and Rs.649.55 per adult unit. The expenditure on protective food was found to be higher in the larger size groups than the smaller groups indicating that the farmers having larger holdings have a better standard of living than those with smaller holdings.

Among the income groups, the expenditure per family as well as per adult unit on protective foods was found to be increasing with an increase in income (Table 7.10). The expenditure per adult unit was higher for I_5 (Rs.587.26). The percentage expenditure on milk and milk products, meat, fish and egg was relatively higher in the higher income groups, indicating a better standard of living.

Summary

SUMMARY

The present study was conducted with a view to understand the socio-economic status of farmers in Irinjalakkuda Block in the Peechi Command Area. The specific objectives of the investigation were the following.

1. To study the methods and practices followed for cultivation;
2. To study infrastructural facilities available;
3. To understand general, social and economic conditions of farmers in the locality;
4. To study cost and income structure of the farm business;
5. To assess the availability and use of resources;
6. To study savings, investments, assets and debts pattern; and
7. To understand the consumption pattern and standard of living of the farmers.

One hundred farm families were selected at random from five Panchayat wards in the Block. The data were collected by survey method during the months of March, April and May 1982 and the reference period was the agricultural year 1981-82.

1. Methods and practices followed for cultivation

Farm holdings in the area were very small. Yet, each farmer was found to possess more than one fragment consisting of wet lands and garden lands. Wet lands were under paddy. Garden lands were put under a variety of crops such as coconut, arecanut, banana, cashew, pepper, etc. The cultivation practices of paddy, coconut, arecanut and banana only were studied.

Paddy

Paddy is grown in two seasons, namely Mundakan and Puncha. For both these seasons, the cultivation practices remains more or less the same with slight variations to adjust to the prevailing climatic conditions. Paddy cultivation is concentrated in 'kole lands' which remain submerged under water for almost six months in an year. Ploughing is done either by tractor or by bullocks. Seed treatment is not practised. Cowdung is the organic manure commonly applied. Fertilizers are applied by majority of the farmers. Hand-weeding is the common practice. Plant protection chemicals of different varieties are in use. Women are generally employed for harvesting.

Coconut

Before monsoon starts in May, the basins of coconut trees are cleared and fertilizers or manures are applied. By January basins are opened up to enable irrigation. Palms are irrigated

2 to 3 times a week. Harvesting is done 6 to 7 times in an year.

Arecanut

The maintenance operations in respect of arecanut were more or less similar to that for coconut. Irrigation and manures were not applied regularly. No farmer was found to apply fertilisers for this crop. Sale of produce was mainly on contract.

Banana

Systematic planting of banana was not found common and it was planted mixed with other crops. As a rainfed crop planting new suckers is undertaken during April-May and wherever irrigation facilities are available the crop is planted during August-September. No definite spacing was seen adopted. Fertilisers are rarely applied. Irrigation is given twice a week. Plant protection measures are not adopted. Propping is done to avoid damages.

2. Infrastructural facilities in the block area

The infrastructural facilities available were found to be satisfactory. The services of primary co-operatives as well as commercial banks were available in the block area. The block is well connected by roads. National Highway-47 passes through the eastern part of this block. Peechi and Chalakkudy irrigation projects supply irrigation water to the various

parts of the block. Eventhough in some parts of the block, the farm to market transportation facilities were found to be insufficient, generally the communication and marketing facilities can be said to be satisfactory.

3. General characteristics of the sample farms

The total members in the respondents families were 656, of which 51.98 per cent were males and 48.02 per cent females, the average family size was 6.56. 68.44 per cent of the people came in the age group of between 15 and 60. The literacy percentage of the males was found to be 87.68 and that of females 82.54, the average being 85.21. About 64 per cent of the sample families were found to get income from other occupations also. The net cropped area on an average worked out to 1.21 hectares. The total cropped area on an average for the selected farms worked out to 1.35 hectares. Paddy, coconut and arecanut occupied 58.51, 32.97 and 3.64 per cent of the total cropped area respectively. The cropping intensity was found to be 111.

4. Cost and income structure of farm business

Costs and returns of paddy (Mundakan and Puncha), coconut, arecanut and banana were worked out. The cost of cultivation per hectare on the average for high yielding varieties and local varieties during Mundakan worked out to Rs.4186.60 and Rs.3426.70 with an yield of 33.58 quintals and 23.79 quintals of paddy respectively. The total cost

excluding rental value of land were worked out to Rs.2860.60 and Rs.2411.21 respectively. The value of straw obtained were Rs.1285.82 and Rs.1101.82. The value of total output worked out to Rs.6629.98 and Rs.5064.62. Cost per quintal for Mundakan HYVs was Rs.73.13 and LVs Rs.86.21. Excluding rental value of land cost per quintal worked out to Rs.35.51 and Rs.47.33 for HYVs and LVs, respectively during Mundakan season. The benefit-cost ratios worked out at total cost to 1.58 and 1.48 respectively.

The cost of cultivation per hectare on the average for HYVs and LVs during Puncha worked out to Rs.4959.11 and Rs.4498.27 with an yield of 33.82 quintals and 25.89 quintals of paddy respectively. The total cost excluding rental value of land worked out to Rs.3688.42 for HYVs and Rs.3402.43 for LVs. The value of straw obtained were Rs.1177.92 and Rs.1334.22 for HYVs and LVs respectively. The total value of output worked out to Rs.6453.48 and Rs.5479.18. Cost per quintal at total cost and at cost excluding rental value of land were Rs.104.29 and Rs.67.78 for Puncha HYVs and Rs.115.30 and Rs.77.44 for Puncha LVs respectively. The benefit-cost ratios at cost C were 1.30 and 1.22 respectively.

The average cost of maintenance of coconut per hectare worked out to Rs.6330.79 and average yield was found to be 9995.83 nuts per hectare. The total maintenance cost exoluding rental value of land worked out to Rs.3552.44. The

value of total output was Rs.13,891.77 with a net return of Rs.7560.98 over variable cost.

The total cost of maintenance per hectare for arecanut worked out to Rs.4565.16, while the gross income Rs.5728.74, resulting in a net return over variable cost of Rs.1163.58.

The cost of cultivation of banana per hectare, on an average, worked out to Rs.36248.82 and excluding rental value of land it was Rs.27235.17. The gross income was Rs.45068.23 giving a net return of Rs.8819.41 over total cost.

The costs and returns for milch animals were also worked out. The maintenance cost of crossbred cows and desi cows worked out to Rs.2490.64 and Rs.1389.73 per animal per year. Total receipts amounted to Rs.2685.40 and Rs.1846.25 per animal per year for cross-bred cows and desi cows respectively giving a marginal return over variable cost of Rs.194.76 and Rs.456.52 per year. Maintenance of buffaloes was found to give a profit of Rs.974.65 per animal per year. Draft animals were not maintained throughout the year. The net income per farm from livestock and poultry was Rs.2510.36 on an average.

From an analysis of farmstead as a whole it was found that the average expenditure per farm on crop and livestock amounted to Rs.6111.45 of which 24.13 per cent was on livestock. The gross income worked out to Rs.14303.56 of which 17.55 per cent from livestock. The net income per farm worked out to Rs.8192.11. The study showed that in order to meet the

household expenditure at the current level from net income from crops and livestock alone, the average farmer in the study area should possess a net area of 1.21 hectares. But if he has to depend solely upon crop production alone, then he must have an area of 1.58 hectares in his possession. The smaller farms were not in a position to meet the household expenditure from the tiny area they possess.

5. Use of resources

The cultivation operations were carried out mostly by human and bullock labour. For paddy cultivation on an average 72.21 hours of male labour and 988.17 hours of female labour were found to be employed. For the crops coconut, arecanut and banana, the respective figures were 169.08 and 20.28; 108.16 hours of male labour with no female labour and 2915.83 and 19.10 respectively. Tractor was also employed to a limited extent substituting bullock labour mainly for the preparation of land for paddy cultivation. On an average 29.02 hours of bullock labour and 3.79 hours of tractor were found to be employed for one hectare of paddy cultivation. Dependence of family labour was found to be more in the smaller size groups than in the larger size groups. The utilization of fertilizers was far below the recommendations. On an average 26.38 kg N, 16.12 kg P and 26.33 kg K were found to be applied per hectare of paddy. As area of holding increased

fertiliser use per hectare was found to decrease while as income of households increased, fertiliser use was found to increase.

6. Savings, investments, assets and debts pattern

On an average the savings per family worked out to Rs.19,197.06 and the per capita savings was Rs.2926.38. The average value of household articles per family worked out to Rs.4036.50 and per capita investment on these items was Rs.615.32. The total investment per farm in different capital assets such as land, livestock, implements, buildings and others worked out to Rs.4,12,672.25. Land accounted for 94.13 per cent of the total assets. The average amount of loans taken per family worked out to Rs.850.50. The extent of loans taken from the co-operatives and the nationalised commercial banks on an average remained more or less the same, around 43 per cent.

7. Consumption pattern and standard of living

Of the average household expenditure per farm of Rs.8160.64 per year, expenditure on food accounted for 67 per cent. Of the total expenses on food, cereals accounted for 44.21 per cent and pulses constituted 1.62 per cent. Proportion of expenditure on food to total expenditure decreased with an increase in the size of the holding as well as income. The expenditure on costly food items like fish, meat and milk

showed a positive relationship with the size of holding and gross income of the families depicting the higher standard of living of the larger holding size groups and higher income groups.

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Appendices

APPENDIX I

INTERVIEW SCHEDULE

DATE:

IDENTIFICATION:

1. Name & Address :

2. Religion :

3. Ward :

I. FAMILY DETAILS

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

II. 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

III. 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/tank	Type of tenure	Present value of land	Rent	Crops grown	Remarks

IV. CROPS GROWN (PADDY)

Season	Fragment No.	Area	Variety	Irrigated/ rainfed	Yield (kg)		Quantity utilised (kg)		Quantity sold (kg)		Rate		Total amount		Remarks
					MP	BP	MP	BP	MP	BP	MP	BP	MP	BP	

V. OTHER CROPS

Crop	Fragment No.	Area	No. of plants/ palms	No. of palms yielding	Total yield		Value		Remarks
					MP	BP	MP	BP	
1. Coconut									
2. Arecanut									
3. Cashew									
4. Pepper									
5. Banana									

VI. BUILDINGS & OTHER STRUCTURES

Sl. No.	Particulars	Specification floor area	Year of construction/ purchase	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							

VII. FARM IMPLEMENTS & MACHINERY

Item	Specification	No.	Year 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. Tractor							
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							

VIII. IRRIGATION 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							

IX. OPERATIONAL COSTS

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

X. INCOME FROM RENTING OUT

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

XI. LIVESTOCK

Description	Breed	Age	Home bred/ purchase	Year 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							

XII. MAINTENANCE CHARGES OF LIVESTOCK/DAY/ANIMAL

Type of animals	No. of animals	Green fodder				Dry fodder				Concentrates				Mineral mixture		Veterinary expenses	Remarks
		Qty.		Value		Qty.		Value		Qty		Value		Qty.	Value		
		Home produced	Purchased	HP	Pur.	HP	Pur.	HP	Pur.	HP	Pur.	HP	Pur				

XIII. STATUS OF MILCH ANIMALS

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

XIV. INCOME FROM BIRDS

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

XV. INCOME FROM DUNG

Approximate quantity available	Used within the farm	Quantity sold	Total amount

XVI. HOUSEHOLD ARTICLES

Sl. No.	Item	Year of purchase	Purchase price	Maintenance cost	Present worth	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						

XVII. SOURCES OF POWER

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

XVIII. MARKETING OF FARM PRODUCE

Sl. No.	Item	Quantity sold	To whom sold	Where sold	Distance to the nearest market	Mode of transport	Marketing problems if any

XIX. 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				
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				

XX. LOANS AND SAVINGS:

i. 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

XXI. SAVINGS & INVESTMENTS:

A. Acquisition of real estate, buildings, vehicles

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

B. DISPOSAL

Sl.No.	Item	Year	Disposal value	Remarks

XXII. INPUT AND OUTPUT USE DURING 1980-82

Sl. No.	Name of crop	Variety	Area (in cents) Irrigated	Area (in cents) Unirrigated	No. of plants or trees for annual or perennial	Preparatory cultivation: Bullock pairs No.	Hrs.	Days	Amount	Men Family No.	Men Family Days	Men Family Amt.	Men Hired No.	Men Hired Days	Men Hired Amt.	Women Family No.	Women Family Days	Women Family Amt.	Women Hired No.	Women Hired Days	Women Hired Amt.

1. Seasonal
2. Annual
3. Perennial

XXIII.

Sl. No.	Name	Qty.	Value	SEEDS AND SOWING: Men Family No.	Men Family Days	Men Family Amt.	Men Hired No.	Men Hired Days	Men Hired Amt.	Women Family No.	Women Family Days	Women Family Amt.	Women Hired No.	Women Hired Days	Women Hired Amt.	AFTER CULTIVATION OPERATIONS: Type of operation	Men Family No.	Men Family Days	Men Family Amt.	Men Hired No.	Men Hired Days	Men Hired Amt.	Women Family No.	Women Family Days	Women Family Amt.	Women Hired No.	Women Hired Days	Women Hired Amt.

1. Seasonal
2. Annual
3. Perennial

XXIV

Sl. No.	Name of crop	Name of chemical	PLANT PROTECTION						IRRIGATION					
			Qty.	Value	Labour for application									
					Men				Women				Men	
					Family		Hired		Family		Hired		Family	
					No.	Days	Amt.	No.	Days	Amt.	No.	Days	Amt.	No.	Days	Amt.

1. Seasonal
2. Annual
3. Perennial

XXV. FERTILIZERS AND MANURES AND THEIR APPLICATION

Sl. No.	Name of crop	Fertilizers			Manures			Application									
								Men						Women			
								Family			Hired			Family			Hired
		Name	Qty.	Value	Name	Qty.	Value	No.	Days	Amt.	No.	Days	Amt.	No.	Days	Amt.	No.	Day	Amt.

1. Seasonal
2. Annual
3. Perennial

XXVI.

Sl. No.	Name of crop	HARVESTING								KIND PAYMENTS		YIELD			
		Men				Women				Quantity (kg)	Value (Rs)	Main product		By products	
		Family			Hired	Family			Hired			Quantity (in kg)	Value (in Rs)	Quantity (in kg)	Value (in Rs)
		No.	Days	Amt.	No. Days Amt.	No.	Days	Amt.	No. Days Amt.						
1	Seasonal														
2	Annual														
3	Perennial														

XXVII. CONSTRAINTS IN PRODUCTION:

Sl. No.	Description	Rating in a scale according to magnitude of the problems
1	Availability of fertilizers	
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 II

Table II.1. Inputwise cost of cultivation per hectare of HYV paddy - Puncha (size groupwise)

(in rupees)

Sl. No.	Items	S_1	S_2	S_3	S_4	S_5	Average
1	Tractor	-	18.98 (0.36)	226.30 (4.32)	342.20 (7.02)	158.59 (3.41)	172.63 (3.48)
2	Animal labour	362.60 (6.12)	399.95 (7.49)	321.41 (6.14)	147.75 (3.03)	183.39 (3.95)	248.68 (5.01)
3	Hired human labour	1634.10 (27.56)	1474.66 (27.63)	1279.04 (24.42)	1313.53 (26.96)	1374.15 (29.57)	1366.04 (27.55)
4	Seed material	556.30 (9.38)	448.48 (8.40)	432.54 (8.26)	419.92 (8.62)	414.93 (8.93)	429.78 (8.67)
5	Manures	129.77 (2.19)	97.61 (1.83)	106.10 (2.03)	103.43 (2.12)	48.80 (1.05)	79.27 (1.60)
6	Fertilizers	738.07 (12.45)	586.20 (10.98)	690.54 (13.18)	521.29 (10.70)	491.54 (10.58)	565.71 (11.41)
7	Pesticides	383.11 (6.46)	236.55 (4.43)	244.90 (4.68)	254.82 (5.23)	184.04 (3.96)	222.47 (4.49)
8	Irrigation	296.09 (4.99)	372.93 (6.99)	379.71 (7.25)	280.32 (5.75)	311.00 (6.69)	331.80 (6.69)
9	Depreciation	118.40 (2.00)	50.96 (0.95)	41.52 (0.79)	32.42 (0.67)	23.69 (0.51)	35.11 (0.70)
10	Interest on working capital	168.74 (2.85)	147.45 (2.76)	148.88 (2.84)	136.65 (2.80)	127.60 (2.75)	138.06 (2.78)
	Cost A	4387.18 (73.99)	3833.07 (71.82)	3870.94 (73.90)	3552.31 (72.92)	3317.69 (71.39)	3589.55 (72.38)
11	Rental value	1268.89 (21.40)	1333.16 (24.98)	1265.37 (24.16)	1273.05 (26.13)	1297.97 (27.93)	1290.69 (26.03)
12	Interest on fixed capital	66.10 (1.11)	33.09 (0.62)	26.42 (0.50)	19.01 (0.39)	17.71 (0.38)	23.96 (0.48)
	Cost B	5722.17 (96.51)	5199.32 (97.41)	5162.73 (98.56)	4844.37 (99.45)	4633.37 (99.70)	4904.20 (98.89)
13	Family labour charges	207.03 (3.49)	138.10 (2.59)	75.23 (1.44)	26.90 (0.55)	14.03 (0.30)	54.91 (1.11)
	Cost C	5929.20 (100.00)	5337.42 (100.00)	5237.96 (100.00)	4871.27 (100.00)	4647.40 (100.00)	4959.11 (100.00)

Figures in parentheses are percentages to total

Table II.2. Inputwise cost of cultivation per hectare of HYV paddy - Purulia (Income groupwise)

(in rupees)

Sl. No.	Items	I_1	I_2	I_3	I_4	I_5	Average
1	Tractor	18.50 (0.36)	214.35 (4.33)	312.12 (6.27)	327.25 (6.64)	63.04 (1.28)	172.63 (3.48)
2	Animal labour	417.69 (8.16)	270.12 (5.46)	236.49 (4.75)	130.80 (2.65)	238.22 (4.85)	248.68 (5.01)
3	Hired human labour	1186.76 (23.20)	1304.13 (26.34)	1298.80 (26.08)	1223.46 (24.81)	1552.12 (31.58)	1366.04 (27.55)
4	Seed material	451.91 (8.83)	452.76 (9.14)	370.87 (7.45)	400.91 (8.13)	456.39 (9.29)	429.78 (8.67)
5	Manures	149.82 (2.93)	59.06 (1.19)	120.12 (2.41)	92.55 (1.88)	37.21 (0.76)	79.27 (1.60)
6	Fertilizers	652.20 (12.75)	571.03 (11.53)	563.02 (11.31)	682.38 (13.84)	486.81 (9.91)	565.71 (11.41)
7	Pesticides	245.78 (4.80)	253.17 (5.11)	262.42 (5.27)	172.61 (3.50)	199.24 (4.05)	222.47 (4.49)
8	Irrigation	308.89 (6.04)	359.14 (7.25)	309.33 (6.21)	366.93 (7.44)	324.23 (6.60)	331.80 (6.69)
9	Depreciation	65.02 (1.27)	47.02 (0.95)	29.17 (0.59)	23.77 (0.48)	30.65 (0.62)	35.11 (0.71)
10	Interest on working capital	139.86 (2.73)	141.23 (2.85)	140.19 (2.81)	136.83 (2.77)	135.52 (2.76)	138.06 (2.78)
	Cost A	3636.43 (71.08)	3672.01 (74.17)	3642.43 (73.14)	3557.49 (72.14)	3523.43 (71.70)	3569.55 (72.38)
11	Rental value	1264.37 (24.71)	1177.21 (23.78)	1267.15 (25.44)	1327.81 (26.93)	1351.41 (27.50)	1290.69 (26.05)
12	Interest on fixed capital	37.42 (0.73)	28.95 (0.58)	18.69 (0.38)	16.10 (0.33)	22.91 (0.47)	23.96 (0.48)
	Cost B	4938.22 (96.52)	4878.17 (98.53)	4928.27 (98.96)	4901.40 (99.39)	4897.75 (99.66)	4904.20 (98.89)
13	Family labour charges	177.89 (3.48)	72.89 (1.47)	51.86 (1.04)	29.88 (0.61)	16.63 (0.34)	54.91 (1.11)
	Cost C	5116.11 (100.00)	4951.06 (100.00)	4980.13 (100.00)	4931.28 (100.00)	4914.38 (100.00)	4959.11 (100.00)

Figures in parentheses are percentages to total

Table II.3. Operationwise cost of cultivation per hectare of HYV paddy - Puncha (size groupwise)

(in rupees)

Sl. No.	Items	S_1	S_2	S_3	S_4	S_5	Average
1	Preparation of land	610.69 (10.30)	573.48 (10.74)	656.13 (12.53)	556.44 (11.42)	434.69 (9.35)	528.76 (10.66)
2	Seed materials and sowing	812.98 (13.71)	717.43 (13.44)	645.06 (12.32)	614.07 (12.61)	684.12 (14.72)	675.50 (13.62)
3	Manuring	163,17 (2.75)	132.86 (2.49)	127.79 (2.44)	128.55 (2.64)	59.37 (1.28)	98.60 (1.99)
4	Fertilizer application	792.94 (13.37)	621.45 (11.64)	718.04 (13.71)	539.02 (11.07)	521.23 (11.22)	595.10 (12.00)
5	Plant protection	514.79 (8.68)	308.95 (5.79)	294.00 (5.61)	329.88 (6.77)	243.82 (5.25)	286.20 (5.77)
6	Weeding	282.44 (4.76)	236.44 (4.43)	176.58 (3.37)	203.90 (4.19)	167.53 (3.60)	188.23 (3.80)
7	Irrigation	296.09 (4.99)	372.93 (6.99)	379.71 (7.25)	280.32 (5.75)	313.24 (6.74)	331.80 (6.69)
8	Harvesting	833.97 (14.07)	809.92 (15.17)	758.46 (14.48)	757.98 (15.56)	756.47 (16.28)	767.12 (15.47)
9	Depreciation	118.40 (2.00)	50.96 (0.95)	41.52 (0.79)	32.42 (0.67)	23.69 (0.51)	35.11 (0.70)
	Total	4425.47 (74.64)	3823.72 (71.64)	3797.29 (72.50)	3442.58 (70.67)	3204.12 (68.94)	3506.40 (70.71)
10	Interest on working capital	168.74 (2.85)	147.45 (2.76)	148.88 (2.84)	136.63 (2.80)	127.60 (2.75)	138.06 (2.78)
11	Rental value	1268.89 (21.40)	1333.16 (24.98)	1265.37 (24.16)	1273.05 (26.13)	1297.97 (27.93)	1290.69 (26.03)
12	Interest on fixed capital	66.10 (1.11)	33.09 (0.62)	26.42 (0.50)	19.01 (0.39)	17.71 (0.38)	23.96 (0.48)
	Total cost	5929.20 (100.00)	5337.42 (100.00)	5237.96 (100.00)	4871.27 (100.00)	4647.40 (100.00)	4959.11 (100.00)

Figures in parentheses are percentages to total

Table II.4. Operationwise cost of cultivation per hectare of HYV paddy - Puncha (income groupwise)

(in rupees)

Sl. No.	Items	I_1	I_2	I_3	I_4	I_5	Average
1	Preparation of land	605.73 (11.84)	583.99 (11.80)	630.26 (12.66)	540.72 (10.97)	415.98 (8.46)	528.76 (10.66)
2	Seed materials and sowing	642.73 (12.56)	700.35 (14.15)	587.23 (11.79)	502.34 (10.19)	795.99 (16.20)	675.50 (13.62)
3	Manuring	205.38 (4.01)	76.56 (1.55)	144.52 (2.90)	99.95 (2.03)	47.54 (0.97)	98.60 (1.99)
4	Fertiliser application	687.28 (13.43)	605.43 (12.23)	583.94 (11.73)	704.09 (14.28)	519.46 (10.57)	595.10 (12.00)
5	Plant protection	316.37 (6.18)	318.94 (6.44)	339.65 (6.82)	254.05 (5.15)	244.82 (4.98)	286.20 (5.77)
6	Weeding	104.50 (2.04)	227.03 (4.59)	158.60 (3.18)	143.04 (2.90)	233.15 (4.74)	188.28 (3.80)
7	Irrigation	308.80 (6.04)	359.14 (7.25)	309.33 (6.21)	366.93 (7.44)	324.23 (6.60)	331.80 (6.69)
8	Harvesting	738.56 (14.44)	685.21 (13.84)	771.50 (15.49)	815.65 (16.54)	792.72 (16.13)	767.12 (15.47)
9	Depreciation	65.02 (1.27)	47.02 (0.95)	29.17 (0.59)	23.77 (0.48)	30.65 (0.62)	35.11 (0.70)
	Total	3674.46 (71.82)	3603.67 (72.79)	3554.10 (71.37)	3450.54 (69.97)	3404.54 (69.28)	3506.40 (70.71)
10	Interest on working capital	139.86 (2.73)	141.23 (2.85)	140.19 (2.81)	136.83 (2.77)	135.52 (2.76)	138.06 (2.78)
11	Rental value	1264.37 (24.71)	1177.21 (23.78)	1267.15 (25.44)	1327.81 (26.93)	1351.41 (27.50)	1290.69 (26.03)
12	Interest on fixed capital	37.42 (0.73)	28.95 (0.58)	18.69 (0.38)	16.10 (0.33)	22.91 (0.47)	23.96 (0.48)
	Total cost	5116.11 (100.00)	4951.06 (100.00)	4980.13 (100.00)	4931.28 (100.00)	4914.38 (100.00)	4959.11 (100.00)

Figures in parentheses are percentages to total

Table II.5. Inputwise cost of cultivation per hectare of LV paddy - Puncha (size groupwise)

(in rupees)

Sl. No.	Items	S_1	S_2	S_3	S_4	S_5	Average
1	Tractor	-	40.78 (0.88)	124.56 (2.89)	14.62 (0.30)	217.92 (5.01)	139.73 (3.11)
2	Animal labour	515.15 (8.70)	577.56 (12.48)	296.56 (6.88)	371.99 (7.70)	299.13 (6.88)	347.49 (7.72)
3	Hired human labour	1587.12 (26.79)	1354.25 (29.27)	1304.60 (30.25)	1390.70 (28.78)	1328.32 (30.45)	1341.99 (29.83)
4	Seed materials	587.12 (9.91)	424.10 (9.16)	373.07 (8.65)	403.51 (8.35)	438.28 (10.09)	422.42 (9.39)
5	Manures	492.42 (8.31)	71.57 (1.55)	184.16 (4.27)	112.09 (2.32)	139.42 (3.21)	134.78 (3.00)
6	Fertilizers	246.20 (4.16)	300.60 (6.50)	291.41 (6.76)	523.36 (10.83)	275.06 (6.33)	335.00 (7.45)
7	Pesticides	76.97 (1.30)	171.10 (3.70)	176.28 (4.09)	135.56 (2.81)	148.21 (3.41)	150.63 (3.35)
8	Irrigation	353.60 (5.97)	301.02 (6.51)	266.42 (6.19)	397.46 (8.23)	280.46 (6.45)	307.87 (6.84)
9	Depreciation	118.40 (2.00)	50.96 (1.10)	41.52 (0.96)	42.42 (0.88)	23.69 (0.55)	35.11 (0.78)
10	Interest on working capital	159.08 (2.69)	131.68 (2.85)	122.36 (2.84)	135.67 (2.81)	125.82 (2.90)	128.60 (2.86)
	Cost A	4136.06 (69.81)	3423.62 (73.99)	3181.44 (73.78)	3527.38 (73.01)	3271.31 (75.28)	3343.60 (74.33)
11	Rental value	1400.38 (23.64)	1134.82 (24.52)	1067.14 (24.75)	1231.06 (25.48)	1034.07 (23.80)	1095.84 (24.36)
12	Interest on fixed capital	66.10 (1.12)	33.09 (0.72)	26.42 (0.61)	19.01 (0.39)	17.71 (0.41)	23.96 (0.53)
	Cost B	5602.54 (94.57)	4591.53 (99.22)	4275.00 (99.14)	4777.45 (98.88)	4323.09 (99.49)	4462.71 (99.21)
13	Family labour charges	321.97 (5.43)	35.88 (0.78)	37.07 (0.86)	54.04 (1.12)	22.34 (0.51)	35.56 (0.79)
	Cost C	5924.51 (100.00)	4627.41 (100.00)	4312.07 (100.00)	4831.49 (100.00)	4345.43 (100.00)	4498.27 (100.00)

Figures in parentheses are percentages to total

Table II.6. Inputwise cost of cultivation per hectare of LV paddy - Puncha (income groupwise)

(in rupees)

Sl. No.	Items	I_1	I_2	I_3	I_4	I_5	Average
1	Tractor	-	35.49 (0.79)	106.19 (2.31)	125.00 (3.10)	301.13 (6.68)	139.73 (3.11)
2	Animal labour	430.69 (9.56)	473.60 (10.58)	294.52 (6.42)	223.00 (5.53)	344.70 (7.64)	347.49 (7.72)
3	Hired human labour	1401.82 (31.10)	1221.57 (27.29)	1373.51 (29.94)	1389.30 (34.44)	1335.02 (29.59)	1341.93 (29.83)
4	Seed materials	420.26 (9.32)	378.88 (8.46)	415.44 (9.05)	413.00 (10.24)	460.02 (10.20)	422.42 (9.39)
5	Manures	57.54 (1.28)	146.41 (3.27)	204.12 (4.45)	79.50 (1.97)	79.45 (1.76)	134.78 (3.00)
6	Fertilizers	251.21 (5.57)	347.16 (7.76)	351.11 (7.65)	226.65 (5.62)	366.45 (8.12)	335.00 (7.45)
7	Pesticides	134.29 (2.98)	178.79 (3.99)	148.47 (3.24)	75.45 (1.87)	162.70 (3.61)	150.63 (3.35)
8	Irrigation	391.79 (8.69)	301.34 (6.73)	351.43 (7.66)	288.00 (7.14)	227.34 (5.04)	307.87 (6.84)
9	Depreciation	65.02 (1.44)	47.02 (1.05)	29.17 (0.64)	23.77 (0.59)	30.65 (0.68)	35.11 (0.78)
10	Interest on working capital	126.10 (2.80)	125.31 (2.80)	130.96 (2.85)	113.75 (2.82)	132.30 (2.93)	128.60 (2.86)
	Cost A	3278.72 (72.75)	3255.47 (72.72)	3404.92 (74.21)	2957.42 (73.32)	3439.76 (76.24)	3343.60 (74.33)
11	Rental value	1120.11 (24.85)	1141.83 (25.51)	1118.34 (24.38)	1060.00 (26.28)	1039.54 (23.04)	1095.84 (24.36)
12	Interest on fixed capital	37.42 (0.83)	28.95 (0.65)	18.69 (0.41)	16.10 (0.40)	22.91 (0.51)	23.86 (0.53)
	Cost B	4436.25 (98.43)	4426.25 (98.88)	4541.95 (99.00)	4033.52 (100.00)	4502.21 (99.80)	4462.71 (99.21)
13	Family labour charges	70.66 (1.57)	50.20 (1.12)	46.10 (1.00)	-	8.97 (0.20)	35.56 (0.79)
	Cost C	4506.91 (100.00)	4476.45 (100.00)	4588.05 (100.00)	4033.52 (100.00)	4511.18 (100.00)	4498.27 (100.00)

Figures in parentheses are percentages to total

Table II.7. Operationwise cost of cultivation per hectare of LV paddy - Puncha (size groupwise)

(in rupees)

Sl. No.	Items	S_1	S_2	S_3	S_4	S_5	Average
1	Preparation of land	723.35 (12.21)	711.65 (15.38)	548.64 (12.72)	550.68 (11.40)	606.39 (13.95)	599.65 (13.33)
2	Seed materials and sowing	1018.94 (17.20)	726.36 (15.70)	694.25 (16,10)	708.19 (15.90)	678.53 (15.61)	708.94 (15.76)
3	Manuring	738.64 (12.47)	86.55 (1.87)	220.49 (5.11)	134.02 (2.77)	159.85 (3.68)	159.05 (3.54)
4	Fertiliser application	265.15 (4.48)	323.08 (6.98)	304.76 (7.07)	545.70 (11.29)	292.82 (6.74)	353.57 (7.86)
5	Plant protection	114.96 (1.94)	218.04 (4.71)	272.66 (6.32)	178.12 (3.69)	210.40 (4.84)	210.73 (4.68)
6	Weeding	215.90 (3.64)	263.65 (5.70)	110.91 (2.57)	200.78 (4.16)	274.23 (6.31)	236.15 (5.25)
7	Irrigation	353.60 (5.97)	301.02 (6.51)	266.92 (6.19)	397.46 (8.23)	280.46 (6.45)	307.87 (6.84)
8	Harvesting	750.00 (12.66)	646.62 (13.97)	636.00 (14.75)	628.38 (13.01)	641.45 (14.76)	639.50 (14.22)
9	Depreciation	118.40 (2.00)	50.96 (1.10)	41.52 (0.96)	32.42 (0.67)	23.69 (0.55)	35.11 (0.78)
	Total	4298.95 (72.56)	3327.82 (71.92)	3096.15 (71.80)	3445.75 (71.32)	3167.83 (72.90)	3250.56 (72.26)
10	Interest on working capital	159.08 (2.69)	131.68 (2.85)	122.36 (2.84)	135.67 (2.81)	125.82 (2.90)	128.60 (2.86)
11	Rental value	1400.38 (23.64)	1134.82 (24.52)	1067.14 (24.75)	1231.06 (25.48)	1034.07 (23.80)	1095.84 (24.36)
12	Interest on fixed capital	66.10 (1.12)	33.09 (0.72)	26.42 (0.61)	19.01 (0.39)	17.71 (0.41)	23.96 (0.53)
	Total cost	5924.51 (100.00)	4627.41 (100.00)	4312.07 (100.00)	4831.49 (100.00)	4345.43 (100.00)	4498.97 (100.00)

Figures in parentheses are percentages to total

Table II.8. Operationwise cost of cultivation per hectare of LV paddy - Punchha (income groupwise)

(in rupees)

Sl. No.	Items	I_1	I_2	I_3	I_4	I_5	Average
1	Preparation of land	545.49 (12.10)	673.25 (15.04)	498.88 (10.87)	583.00 (14.45)	699.64 (15.51)	599.65 (13.33)
2	Seed materials and sowing	900.01 (19.97)	529.70 (11.83)	701.70 (15.29)	608.00 (15.07)	789.99 (17.51)	708.94 (15.76)
3	Manuring	88.50 (1.96)	166.37 (3.72)	233.28 (5.08)	92.00 (2.28)	95.97 (2.13)	159.05 (3.54)
4	Fertiliser application	264.67 (5.87)	364.91 (8.15)	374.68 (8.17)	239.15 (5.93)	388.48 (8.61)	353.57 (7.86)
5	Plant protection	172.98 (3.84)	248.89 (5.56)	202.80 (4.42)	103.95 (2.58)	240.86 (5.34)	210.73 (4.68)
6	Weeding	154.10 (3.42)	199.40 (4.45)	281.40 (6.13)	150.00 (3.72)	249.96 (5.54)	236.15 (5.25)
7	Irrigation	391.79 (8.69)	301.34 (6.73)	351.43 (7.66)	288.00 (7.14)	227.34 (5.04)	307.87 (6.84)
8	Harvesting	641.72 (14.24)	649.31 (14.51)	646.72 (14.10)	755.80 (18.74)	593.54 (13.16)	639.50 (14.22)
9	Depreciation	65.02 (1.44)	47.02 (1.05)	29.17 (0.64)	23.77 (0.59)	30.65 (0.68)	35.11 (0.78)
	Total	3223.28 (71.52)	3180.46 (71.05)	3320.06 (72.36)	2843.67 (70.50)	3316.43 (73.52)	3250.56 (72.26)
10	Interest on working capital	126.10 (2.80)	125.31 (2.80)	130.96 (2.85)	113.75 (2.82)	132.30 (2.93)	128.60 (2.86)
11	Rental value	1120.11 (24.85)	1141.83 (25.51)	1118.34 (24.38)	1060.00 (26.28)	1039.54 (23.04)	1095.84 (24.36)
12	Interest on fixed capital	37.42 (0.83)	28.95 (0.65)	18.69 (0.41)	16.10 (0.40)	22.91 (0.51)	23.96 (0.53)
	Total cost	4506.91 (100.00)	4476.45 (100.00)	4588.05 (100.00)	4033.52 (100.00)	4511.18 (100.00)	4498.97 (100.00)

Figures in parentheses are percentages to total

Table II.9. Inputwise cost of cultivation per hectare of HYV paddy - Mundakan (size groupwise)

(in rupees)

Sl. No.	Items	S_1	S_2	S_3	S_4	S_5	Average
1	Tractor	-	150.86 (3.70)	44.43 (0.98)	-	60.88 (1.45)	68.47 (1.64)
2	Animal labour	454.55 (10.57)	86.21 (2.12)	153.06 (3.39)	337.50 (9.35)	130.79 (3.12)	143.81 (3.44)
3	Hired human labour	1542.42 (35.85)	1334.84 (32.76)	1635.84 (36.25)	1125.00 (31.16)	1595.69 (38.12)	1539.44 (36.77)
4	Seed materials	549.24 (12.77)	459.77 (11.29)	375.00 (8.31)	350.00 (9.69)	463.85 (11.08)	453.49 (10.83)
5	Manures	189.39 (4.40)	211.93 (5.20)	191.33 (4.24)	62.50 (1.73)	188.67 (4.51)	187.00 (4.47)
6	Fertilisers	100.38 (2.33)	269.94 (6.63)	245.79 (5.45)	233.13 (6.46)	138.34 (3.30)	169.45 (4.05)
7	Pesticides	233.14 (5.42)	150.17 (3.69)	61.61 (1.37)	156.38 (4.33)	78.59 (1.88)	95.32 (2.28)
8	Irrigation	-	-	-	-	-	-
9	Depreciation	118.40 (2.75)	50.96 (1.25)	41.52 (0.92)	32.42 (0.90)	23.69 (0.57)	35.11 (0.84)
10	Interest on working capital	127.50 (2.96)	108.59 (2.67)	109.94 (2.44)	91.88 (2.54)	107.22 (2.56)	107.68 (2.56)
	Cost A	3315.02 (77.06)	2823.26 (69.30)	2858.52 (63.34)	2388.81 (66.17)	2787.72 (66.60)	2799.77 (66.80)
11	Rental value	674.75 (15.68)	1171.03 (28.74)	1577.04 (34.94)	1040.00 (28.81)	1363.15 (32.57)	1326.00 (31.67)
12	Interest on fixed capital	66.10 (1.54)	33.09 (0.81)	26.42 (0.59)	19.01 (0.53)	17.71 (0.42)	23.96 (0.57)
	Cost B	4055.87 (94.28)	4027.38 (98.85)	4461.98 (98.87)	3447.82 (95.50)	4168.58 (99.59)	4149.73 (99.12)
13	Family labour charges	246.21 (5.72)	46.70 (1.15)	51.02 (1.13)	162.50 (4.50)	17.29 (0.41)	36.87 (0.88)
	Cost C	4302.08 (100.00)	4074.08 (100.00)	4513.00 (100.00)	3610.32 (100.00)	4185.87 (100.00)	4186.60 (100.00)

Figures in parentheses are percentages to total

Table II.10. Inputwise cost of cultivation per hectare of HYV paddy - Mundakan (income groupwise)

(in rupees)

Sl. No.	Items	I_1	I_2	I_3	I_4	I_5	Average
1	Tractor	-	-	181.39 (4.53)	110.71 (2.61)	7.15 (0.16)	68.47 (1.64)
2	Animal labour	180.72 (4.67)	-	147.87 (3.69)	85.71 (2.02)	153.31 (3.57)	143.81 (3.44)
3	Hired human labour	1334.64 (34.49)	-	1355.24 (33.86)	1342.50 (31.65)	1719.07 (40.00)	1539.44 (36.77)
4	Seed material	519.58 (13.43)	-	379.53 (9.48)	472.14 (11.13)	476.90 (11.10)	453.49 (10.83)
5	Manures	150.60 (3.89)	-	155.76 (3.89)	250.00 (5.89)	190.11 (4.42)	187.00 (4.47)
6	Fertilisers	115.21 (2.98)	-	246.25 (6.15)	213.26 (5.03)	124.44 (2.90)	169.45 (4.05)
7	Pesticides	181.85 (4.70)	-	124.07 (3.10)	81.10 (1.91)	72.62 (1.69)	95.32 (2.28)
8	Irrigation	-	-	-	-	-	-
9	Depreciation	65.02 (1.68)	-	29.17 (0.73)	23.77 (0.56)	30.65 (0.71)	35.11 (0.84)
10	Interest on working capital	101.90 (2.63)	-	104.77 (2.62)	103.17 (2.43)	110.97 (2.58)	107.68 (2.58)
	Cost A	2649.52 (68.47)	-	2724.05 (68.06)	2682.46 (63.24)	2885.22 (67.14)	2799.77 (66.86)
11	Rental value	1024.80 (26.48)	-	1210.57 (30.24)	1482.29 (34.95)	1381.99 (32.16)	1326.00 (31.67)
12	Interest on fixed capital	37.42 (0.97)	-	18.69 (0.47)	16.10 (0.38)	22.91 (0.53)	23.96 (0.57)
	Cost B	3711.74 (95.91)	-	3953.31 (98.77)	4180.85 (98.57)	4290.12 (99.83)	4149.73 (99.12)
12	Family labour charges	158.13 (4.09)	-	49.29 (1.23)	60.71 (1.43)	7.15 (0.17)	36.87 (0.88)
	Cost C	3869.87 (100.00)	-	4002.60 (100.00)	4241.56 (100.00)	4297.27 (100.00)	4186.60 (100.00)

Figures in parentheses are percentages to total

Table II.11. Operationwise cost of cultivation per hectare of HYV paddy - Mundakam (size groupwise)

(in rupees)

Sl. No.	Items	S_1	S_2	S_3	S_4	S_5	Average
1	Preparation of land	833.33 (19.37)	337.64 (8.29)	274.23 (6.08)	437.50 (12.12)	305.92 (7.31)	328.17 (7.84)
2	Seed materials and sowing	1079.55 (25.09)	761.49 (18.69)	779.34 (17.27)	400.00 (11.08)	57.71 (1.38)	824.09 (19.68)
3	Manuring	340.89 (7.92)	283.76 (6.97)	245.97 (5.45)	162.50 (4.50)	223.27 (5.33)	234.71 (5.60)
4	Fertilizer application	119.32 (2.77)	287.90 (7.07)	252.16 (5.59)	245.63 (6.80)	143.60 (3.43)	177.36 (4.24)
5	Plant protection	308.90 (7.18)	166.34 (4.08)	71.17 (1.58)	181.38 (5.02)	85.73 (2.05)	106.58 (2.55)
6	Weeding	151.52 (3.52)	186.78 (4.58)	153.06 (3.39)	400.00 (11.08)	197.68 (4.72)	199.64 (4.77)
7	Irrigation	-	-	-	-	-	-
8	Harvesting	481.82 (11.20)	686.49 (16.85)	982.14 (21.76)	600.00 (16.62)	860.19 (20.55)	823.30 (19.68)
9	Depreciation	118.40 (2.75)	50.96 (1.25)	41.52 (0.92)	32.42 (0.90)	23.69 (0.57)	35.11 (0.84)
	Total	3433.73 (79.82)	2761.36 (67.78)	2799.59 (62.05)	2459.43 (68.12)	2697.79 (64.45)	2728.96 (65.18)
10	Interest on working capital	127.50 (2.96)	108.59 (2.67)	109.94 (2.44)	91.88 (2.54)	107.22 (2.56)	107.68 (2.58)
11	Rental value	674.75 (15.68)	1171.03 (28.74)	1577.04 (34.94)	1040.00 (28.81)	1363.15 (32.57)	1326.00 (31.67)
12	Interest on fixed capital	66.10 (1.54)	33.09 (0.81)	26.43 (0.59)	19.01 (0.53)	17.71 (0.42)	23.96 (0.57)
	Total cost	4302.08 (100.00)	4074.08 (100.00)	4513.00 (100.00)	3610.32 (100.00)	4185.87 (100.00)	4186.60 (100.00)

Figures in parentheses are percentages to total

Table II.12. Operationwise cost of cultivation per hectare of HYV paddy - Mundakkan (Income groupwise)

(in rupees)

Sl. No.	Items	I_1	I_2	I_3	I_4	I_5	Average
1	Preparation of land	421.69 (10.90)	-	408.12 (10.20)	267.86 (6.32)	291.29 (6.78)	328.17 (7.84)
2	Seed materials and sowing	911.14 (23.54)	-	655.56 (16.38)	686.43 (16.18)	938.88 (21.85)	824.09 (19.68)
3	Manuring	240.96 (6.23)	-	199.12 (4.97)	307.14 (7.24)	230.99 (5.38)	234.71 (5.60)
4	Fertilizer application	122.74 (3.17)	-	258.08 (6.45)	216.93 (5.11)	131.59 (3.06)	177.36 (4.24)
5	Plant protection	219.50 (5.67)	-	138.86 (3.47)	93.60 (2.21)	78.24 (1.82)	106.58 (2.55)
6	Weeding	135.54 (3.50)	-	240.54 (6.01)	128.56 (3.03)	207.48 (4.83)	199.64 (4.77)
7	Irrigation	-	-	-	-	-	-
8	Harvesting	589.16 (15.22)	-	739.12 (18.47)	915.71 (21.59)	872.28 (20.30)	823.30 (19.66)
9	Depreciation	65.02 (1.68)	-	29.17 (0.73)	23.77 (0.56)	30.65 (0.71)	35.11 (0.84)
	Total	2705.75 (69.92)	-	2668.57 (66.67)	2640.00 (62.24)	2781.40 (64.73)	2728.96 (65.18)
10	Interest on working capital	101.90 (2.63)	-	104.77 (2.62)	103.17 (2.43)	110.97 (2.58)	107.68 (2.58)
11	Rental value	1024.80 (26.48)	-	1210.57 (30.24)	1482.29 (34.95)	1381.99 (32.16)	1326.00 (31.67)
12	Interest on fixed capital	37.42 (0.97)	-	18.69 (0.47)	16.10 (0.38)	22.91 (0.53)	23.96 (0.57)
	Total cost	3869.87 (100.00)	-	4002.60 (100.00)	4241.56 (100.00)	4297.27 (100.00)	4186.60 (100.00)

Figures in parentheses are percentages to total

Table II.13. Inputwise cost of cultivation per hectare of LV paddy - Purchs (size groupwise)

(in rupees)

Sl. No.	Items	S_1	S_2	S_3	S_4	S_5	Average
1	Tractor	-	-	233.33 (7.37)	148.75 (4.31)	181.19 (5.36)	150.05 (4.38)
2	Animal labour	281.25 (7.92)	300.67 (8.71)	100.00 (3.16)	115.80 (3.36)	120.41 (3.56)	143.88 (4.21)
3	Hired human labour	1002.56 (28.25)	707.00 (20.47)	876.35 (27.69)	1173.86 (34.02)	1081.25 (32.00)	1097.23 (32.02)
4	Seed material	375.00 (10.57)	497.22 (14.40)	233.33 (7.37)	381.53 (11.06)	425.00 (12.58)	415.02 (12.11)
5	Manures	250.00 (7.04)	125.28 (3.63)	250.00 (7.90)	267.84 (7.76)	172.02 (5.09)	179.34 (5.23)
6	Fertilisers	73.75 (2.08)	175.53 (5.08)	97.92 (3.09)	184.23 (5.34)	183.06 (5.42)	175.00 (5.11)
7	Pesticides	83.13 (2.34)	84.38 (2.44)	100.00 (3.16)	100.03 (2.90)	78.64 (2.33)	85.37 (2.49)
8	Irrigation	-	-	-	-	-	-
9	Depreciation	118.40 (3.34)	50.96 (1.48)	41.52 (1.31)	32.42 (0.94)	23.69 (0.70)	35.11 (1.02)
10	Interest on working capital	84.04 (2.37)	92.19 (2.67)	77.78 (2.46)	91.78 (2.66)	90.43 (2.68)	91.24 (2.66)
	Cost A	2185.00 (61.56)	2396.93 (69.41)	2022.23 (63.89)	2386.24 (69.16)	2351.10 (69.57)	2372.22 (69.23)
11	Rental value	1063.75 (29.97)	974.44 (28.22)	1083.00 (34.22)	1033.43 (29.95)	1010.60 (29.90)	1015.49 (29.63)
12	Interest on fixed capital	66.10 (1.86)	33.09 (0.96)	26.42 (0.83)	19.01 (0.55)	17.71 (0.52)	23.96 (0.70)
	Cost B	3314.85 (93.40)	3404.46 (98.59)	3131.65 (98.95)	3438.68 (99.65)	3379.41 (100.00)	3411.67 (99.56)
13	Family labour charges	234.38 (6.60)	48.72 (1.41)	33.33 (1.05)	11.88 (0.34)	-	15.03 (0.44)
	Cost C	3549.23 (100.00)	3453.18 (100.00)	3164.98 (100.00)	3450.66 (100.00)	3379.41 (100.00)	3426.70 (100.00)

Figures in parentheses are percentages to total

Table II.14. Inputwise cost of cultivation per hectare of LV paddy - Mundakkan (income groupwise)

(in rupees)

Sl. No.	Items	I_1	I_2	I_3	I_4	I_5	Average
1	Tractor	-	-	196.52 (5.26)	28.46 (0.91)	183.04 (5.51)	150.03 (4.38)
2	Animal labour	173.08 (5.93)	281.25 (7.37)	144.23 (3.86)	146.34 (4.69)	133.93 (4.03)	143.88 (4.21)
3	Hired human labour	782.69 (26.79)	1356.25 (35.55)	1195.93 (32.01)	1025.00 (32.86)	1062.05 (31.97)	1097.23 (32.02)
4	Seed material	500.00 (17.12)	459.38 (12.05)	353.26 (9.45)	411.38 (13.19)	451.64 (13.60)	415.02 (12.11)
5	Manures	153.85 (5.27)	312.50 (8.19)	170.36 (4.56)	73.17 (2.35)	220.24 (6.63)	179.34 (5.25)
6	Fertilizers	-	-	207.25 (5.55)	242.58 (7.78)	149.18 (4.49)	175.00 (5.11)
7	Pesticides	78.84 (2.70)	-	112.16 (3.00)	57.46 (1.84)	81.08 (2.44)	85.37 (2.49)
8	Irrigation	-	-	-	-	-	-
9	Depreciation	65.02 (2.23)	47.02 (1.23)	29.17 (0.78)	23.77 (0.76)	30.65 (0.92)	35.11 (1.02)
10	Interest on working capital	70.14 (2.40)	98.26 (2.57)	96.36 (2.58)	80.33 (2.57)	92.47 (2.78)	91.24 (2.66)
	Cost A	1823.62 (62.45)	2554.66 (66.92)	2505.24 (67.05)	2088.49 (66.95)	2404.28 (72.38)	2372.22 (69.23)
11	Rental value	925.38 (31.68)	983.75 (25.77)	1198.91 (32.09)	1012.07 (32.44)	894.64 (26.93)	1015.49 (29.63)
12	Interest on fixed capital	37.42 (1.28)	28.95 (0.76)	18.69 (0.50)	16.10 (0.52)	22.91 (0.69)	23.96 (0.70)
	Cost B	2786.42 (95.39)	3567.36 (93.45)	3722.84 (99.64)	3116.66 (99.90)	3321.83 (100.00)	3411.67 (99.56)
13	Family labour charges	134.62 (4.61)	250.00 (6.55)	13.58 (0.36)	3.05 (0.10)	-	15.03 (0.44)
	Cost C	2921.04 (100.00)	3817.36 (100.00)	3736.42 (100.00)	3119.71 (100.00)	3321.83 (100.00)	3426.70 (100.00)

Figures in parentheses are percentages to total

Table II.15. Operationwise cost of cultivation per hectare of LV paddy - Mundakkan (size groupwise)

(in rupees)

Sl. No.	Items	S_1	S_2	S_3	S_4	S_5	Average
1	Preparation of land	468.75 (13.21)	423.16 (12.25)	366.67 (11.59)	359.56 (10.42)	354.36 (10.49)	366.86 (10.71)
2	Seed materials and sowing	437.50 (12.33)	767.26 (22.22)	266.67 (8.43)	752.67 (21.81)	720.87 (21.33)	708.59 (20.68)
3	Manuring	343.75 (9.69)	164.25 (4.76)	316.67 (10.01)	252.38 (7.31)	205.28 (6.07)	218.52 (6.38)
4	Fertiliser application	-	188.06 (5.45)	106.25 (3.36)	193.14 (5.60)	192.80 (5.71)	184.63 (5.39)
5	Plant protection	90.94 (2.56)	91.34 (2.65)	118.33 (3.74)	110.42 (3.20)	88.96 (2.63)	95.36 (2.78)
6	Weeding	281.25 (7.92)	116.93 (3.39)	166.67 (5.27)	121.73 (3.53)	109.52 (3.24)	119.22 (3.48)
7	Irrigation	-	-	-	-	-	-
8	Harvesting	593.75 (16.73)	551.50 (15.97)	595.00 (18.80)	575.56 (16.68)	565.19 (16.72)	567.72 (16.57)
9	Depreciation	118.40 (3.34)	50.96 (1.48)	41.52 (1.31)	32.42 (0.94)	23.69 (0.70)	35.11 (1.02)
	Total	2335.34 (65.80)	2353.46 (68.15)	1977.78 (62.49)	2306.34 (66.84)	2260.67 (66.90)	2296.01 (67.01)
10	Interest on working capital	84.04 (2.37)	92.19 (2.67)	77.78 (2.46)	91.78 (2.66)	90.43 (2.68)	91.24 (2.66)
11	Rental value	1063.75 (29.97)	974.44 (28.22)	1083.00 (34.22)	1033.43 (29.95)	1010.60 (19.90)	1015.49 (29.63)
12	Interest on fixed capital	66.10 (1.86)	33.09 (0.96)	26.42 (0.83)	19.01 (0.55)	17.71 (0.52)	23.96 (0.70)
	Total cost	3549.23 (100.00)	3453.18 (100.00)	3164.98 (100.00)	3450.66 (100.00)	3379.41 (100.00)	3426.70 (100.00)

Figures in parentheses are percentages to total

Table II.16. Operationwise cost of cultivation per hectare of LV paddy - Mundakam (income groupwise)

(in rupees)

Sl. No.	Items	I_1	I_2	I_3	I_4	I_5	Average
1	Preparation of land	288.46 (9.88)	531.25 (13.92)	386.91 (10.36)	272.36 (8.73)	385.42 (11.60)	366.86 (10.71)
2	Seed materials and sowing	519.23 (17.78)	1021.88 (26.77)	658.44 (17.62)	622.70 (19.96)	796.79 (23.99)	708.59 (20.68)
3	Manuring	211.54 (7.24)	359.37 (9.41)	205.69 (5.51)	91.46 (2.93)	267.86 (8.06)	218.52 (6.38)
4	Fertiliser application	-	-	220.84 (5.91)	253.76 (8.13)	156.62 (4.71)	184.63 (5.39)
5	Plant protection	88.46 (3.03)	-	122.61 (3.28)	68.64 (2.20)	90.38 (2.72)	95.36 (2.78)
6	Weeding	211.54 (7.24)	187.50 (4.91)	122.28 (3.27)	142.28 (4.56)	98.21 (2.96)	119.22 (3.48)
7	Irrigation	-	-	-	-	-	-
8	Harvesting	503.85 (17.25)	559.38 (14.65)	676.32 (18.10)	539.84 (17.30)	505.95 (15.23)	567.72 (16.57)
9	Depreciation	65.02 (2.23)	47.02 (1.23)	29.17 (0.78)	23.77 (0.76)	30.65 (0.92)	35.11 (1.02)
	Total	1888.10 (64.64)	2706.40 (70.90)	2422.46 (64.83)	2011.21 (64.47)	2311.82 (69.59)	2296.01 (67.01)
10	Interest on working capital	70.14 (2.40)	98.26 (2.57)	96.36 (2.58)	80.33 (2.57)	92.47 (2.78)	91.24 (2.66)
11	Rental value	925.38 (31.68)	983.75 (25.77)	1198.91 (32.09)	1012.07 (32.44)	894.64 (26.93)	1015.49 (29.63)
12	Interest on fixed capital	37.42 (1.28)	28.95 (0.76)	18.69 (0.50)	16.10 (0.52)	22.91 (0.69)	23.96 (0.70)
	Total cost	2921.04 (100.00)	3817.36 (100.00)	3736.42 (100.00)	3119.71 (100.00)	3321.83 (100.00)	3426.70 (100.00)

Figures in parentheses are percentages to total

Table II.17. Inputwise cost of maintenance per hectare of coconut (size groupwise)

(in rupees)

Sl. No.	Items	S_1	S_2	S_3	S_4	S_5	Average
1	Hired human labour	229.51 (3.56)	307.53 (4.53)	316.91 (5.11)	309.73 (4.86)	362.66 (5.84)	335.20 (5.29)
2	Irrigation	669.48 (10.39)	366.92 (5.40)	228.49 (3.68)	206.95 (3.25)	169.20 (2.72)	233.24 (3.68)
3	Manures	529.52 (8.21)	652.52 (9.61)	744.65 (12.00)	489.87 (7.69)	545.30 (8.78)	590.11 (9.32)
4	Fertilisers	137.71 (2.14)	73.29 (1.08)	128.32 (2.07)	139.14 (2.18)	95.08 (1.53)	104.02 (1.64)
5	Plant protection	10.54 (0.16)	16.38 (0.24)	14.26 (0.23)	15.85 (0.25)	15.16 (0.24)	15.32 (0.24)
6	Harvesting charges	554.64 (8.60)	843.54 (12.43)	663.76 (10.69)	613.50 (9.63)	664.47 (10.70)	682.37 (10.78)
7	Miscella-neous	595.56 (9.24)	520.82 (7.67)	550.86 (8.88)	614.93 (9.65)	624.71 (10.06)	593.51 (9.38)
8	Depreciation	327.99 (5.09)	344.75 (5.08)	222.91 (3.59)	226.82 (3.56)	135.21 (2.18)	201.52 (3.18)
	Total working capital	3054.95 (47.39)	3125.75 (46.04)	2870.16 (46.24)	2616.79 (41.06)	2611.79 (42.05)	2755.18 (43.52)
9	Interest on working capital	366.59 (5.69)	375.09 (5.53)	344.42 (5.55)	314.01 (4.93)	313.41 (5.05)	330.62 (5.22)
	Cost A	3421.54 (53.08)	3500.84 (51.57)	3214.58 (51.79)	2930.80 (45.99)	2925.20 (47.10)	3085.80 (48.74)
10	Rental value	2230.10 (34.60)	2464.82 (36.31)	2459.18 (39.62)	2888.73 (45.33)	2994.32 (48.21)	2778.35 (43.89)
11	Interest on fixed capital	495.70 (7.69)	635.36 (9.36)	398.26 (6.42)	417.52 (6.55)	246.32 (3.97)	364.41 (5.76)
	Cost B	6147.34 (95.37)	6601.02 (97.24)	6072.02 (97.83)	6237.05 (97.88)	6165.84 (99.28)	6228.56 (98.39)
12	Family labour charges	298.43 (4.63)	187.54 (2.76)	134.41 (2.17)	135.41 (2.12)	44.70 (0.72)	102.23 (1.61)
	Cost C	6445.77 (100.00)	6788.56 (100.00)	6206.43 (100.00)	6372.46 (100.00)	6210.54 (100.00)	6330.79 (100.00)

Figures in parentheses are percentages to total

Table II.18. Inputwise cost of maintenance per hectare of coconut (income groupwise)

(in rupees)

Sl. No.	Items	I_1	I_2	I_3	I_4	I_5	Average
1	Hired human labour	225.63 (3.59)	326.08 (4.56)	305.86 (5.23)	402.58 (6.18)	366.62 (5.84)	335.20 (5.29)
2	Irrigation	389.23 (6.20)	306.78 (4.29)	252.98 (4.33)	400.80 (6.15)	116.92 (1.86)	233.24 (3.68)
3	Manures	668.09 (10.64)	737.96 (10.32)	500.00 (8.55)	445.77 (6.84)	611.77 (9.74)	596.11 (9.32)
4	Fertilizers	53.72 (0.86)	215.68 (3.02)	26.74 (0.46)	497.31 (7.63)	30.05 (0.48)	104.02 (1.64)
5	Plant protection	14.20 (0.23)	9.02 (0.13)	22.33 (0.38)	14.08 (0.22)	13.01 (0.21)	15.32 (0.24)
6	Harvesting charges	613.14 (9.76)	705.67 (9.87)	670.42 (11.47)	600.73 (9.22)	716.85 (11.41)	682.37 (10.78)
7	Miscellaneous	441.14 (7.03)	1123.58 (15.71)	485.34 (8.30)	493.09 (7.57)	524.67 (8.35)	593.61 (9.38)
8	Depreciation	388.94 (6.19)	271.33 (3.79)	181.42 (3.10)	163.38 (2.51)	151.65 (2.41)	201.52 (3.18)
	Total working capital	2794.09 (44.50)	3696.04 (51.68)	2445.09 (41.82)	3017.74 (46.32)	2514.44 (40.04)	2755.18 (43.52)
9	Interest on working capital	335.29 (5.34)	443.52 (6.20)	293.41 (5.02)	362.13 (5.56)	301.73 (4.80)	330.62 (5.22)
	Cost A	3129.38 (49.84)	4139.56 (57.89)	2738.50 (46.84)	3379.87 (51.88)	2816.17 (44.84)	3085.80 (48.74)
10	Rental value	2196.30 (34.98)	2381.16 (33.30)	2678.36 (45.81)	2742.99 (42.11)	3134.03 (49.90)	2778.35 (43.89)
11	Interest on fixed capital	701.46 (11.17)	488.79 (6.83)	330.79 (5.66)	302.31 (4.64)	270.96 (4.31)	364.41 (5.76)
	Cost B	6027.14 (95.99)	7009.51 (98.02)	5747.65 (98.31)	6425.17 (98.63)	6221.16 (99.06)	6228.56 (98.39)
12	Family labour Charges	251.88 (4.01)	141.80 (1.98)	98.98 (1.69)	89.20 (1.37)	58.95 (0.94)	102.23 (1.61)
	Cost C	6279.02 (100.00)	7151.31 (100.00)	5846.63 (100.00)	6514.37 (100.00)	6280.11 (100.00)	6330.79 (100.00)

Figures in parentheses are percentages to total

Table II.19. Operationwise cost of maintenance per hectare of coconut (size groupwise)

(in rupees)

Sl. No.	Items	S_1	S_2	S_3	S_4	S_5	Average
1	Weeding and intercultural operations	144.56 (2.24)	144.93 (2.13)	136.10 (2.19)	150.45 (2.36)	141.43 (2.28)	142.18 (2.25)
2	Irrigation	883.32 (13.70)	569.08 (8.38)	358.37 (5.77)	371.44 (5.83)	289.40 (4.66)	376.37 (5.95)
3	Manuring	662.93 (10.28)	775.13 (11.42)	891.12 (14.36)	585.96 (9.20)	659.69 (10.62)	709.55 (11.21)
4	Fertiliser application	173.84 (2.70)	98.66 (1.45)	167.19 (2.69)	173.24 (2.72)	125.42 (2.02)	136.49 (2.16)
5	Plant protection	10.54 (0.16)	16.38 (0.24)	14.26 (0.23)	15.85 (0.25)	15.16 (0.24)	15.32 (0.24)
6	Harvesting	554.64 (8.60)	843.54 (12.43)	663.76 (10.69)	613.52 (9.63)	664.47 (10.70)	682.37 (10.78)
7	Miscellaneous	595.56 (9.24)	520.82 (7.67)	550.86 (8.88)	614.92 (9.65)	624.71 (10.06)	593.61 (9.38)
8	Depreciation	327.99 (5.09)	344.75 (5.08)	222.91 (3.59)	226.82 (3.47)	135.21 (2.18)	201.52 (3.18)
	Total	3353.38 (52.02)	3313.29 (48.81)	3004.57 (48.41)	2752.20 (43.19)	2656.49 (42.77)	2857.41 (45.14)
9	Interest on working capital	366.59 (5.69)	375.09 (5.53)	344.42 (5.55)	314.01 (4.93)	313.41 (5.05)	330.62 (5.22)
10	Rental value	2230.10 (34.60)	2464.82 (36.31)	2459.18 (39.62)	2888.73 (45.33)	2994.32 (48.21)	2778.35 (43.89)
11	Interest on fixed capital	495.70 (7.69)	635.36 (9.36)	398.26 (6.42)	417.52 (6.55)	246.32 (3.97)	364.41 (5.75)
	Total cost	6445.77 (100.00)	6788.56 (100.00)	6206.43 (100.00)	6372.46 (100.00)	6210.54 (100.00)	6330.89 (100.00)

Figures in parentheses are percentages to total

Table II.20. Operationwise cost of maintenance per hectare of coconut (Income groupwise)

(in rupees)

Sl. No.	Items	I_1	I_2	I_3	I_4	I_5	Average
1	Weeding and intercultural operations	155.78 (2.48)	128.57 (1.80)	140.49 (2.40)	133.80 (2.05)	147.38 (2.35)	142.18 (2.25)
2	Irrigation	581.44 (9.26)	449.94 (6.29)	403.66 (6.90)	508.78 (7.81)	252.42 (4.02)	376.37 (5.95)
3	Manuring	778.77 (12.40)	873.14 (12.21)	608.15 (10.40)	537.32 (8.25)	742.01 (11.82)	709.55 (11.21)
4	Fertiliser application	72.56 (1.16)	276.59 (3.87)	32.36 (0.55)	655.76 (10.07)	42.50 (0.68)	136.49 (2.16)
5	Plant protection	14.20 (0.23)	9.02 (0.13)	22.33 (0.38)	14.08 (0.22)	13.01 (0.21)	15.32 (0.24)
6	Harvesting	613.14 (9.76)	705.67 (9.87)	670.42 (11.47)	600.73 (9.22)	716.83 (11.41)	682.37 (10.78)
7	Miscellaneous	441.14 (7.03)	1123.58 (15.71)	485.34 (8.30)	493.09 (7.57)	524.67 (8.35)	593.61 (9.38)
8	Depreciation	388.94 (6.19)	271.33 (3.79)	181.42 (3.10)	163.38 (2.51)	151.65 (2.41)	201.52 (3.18)
	Total	3045.97 (48.51)	3837.84 (53.67)	2544.07 (43.51)	3107.94 (47.68)	2573.39 (40.98)	2857.41 (45.14)
9	Interest on working capital	335.29 (5.34)	443.52 (6.20)	293.41 (5.02)	362.13 (5.56)	301.73 (4.80)	330.62 (5.22)
10	Rental value	2196.30 (34.98)	2381.16 (33.30)	2678.36 (45.81)	2743.99 (42.11)	3134.03 (49.90)	2778.35 (43.89)
11	Interest on fixed capital	701.46 (11.17)	488.79 (6.83)	330.79 (5.66)	302.31 (4.64)	270.96 (4.31)	364.41 (5.75)
	Total cost	6279.02 (100.00)	7151.31 (100.00)	5846.63 (100.00)	6514.37 (100.00)	6280.11 (100.00)	6330.89 (100.00)

Figures in parentheses are percentages to total

Table II.21. Inputwise cost of maintenance per hectare of Arecanut (size groupwise)

(in rupees)

Sl. No.	Items	S_1	S_2	S_3	S_4	S_5	Average
1	Hired human labour	47.83 (1.03)	508.79 (10.42)	532.54 (12.17)	793.65 (14.96)	844.53 (19.63)	677.33 (14.84)
2	Irrigation	671.30 (15.24)	528.67 (10.82)	478.96 (10.95)	317.33 (5.98)	259.79 (6.04)	376.27 (8.24)
3	Organic manures	892.85 (20.27)	1070.35 (21.91)	1088.48 (24.88)	1211.74 (22.85)	1095.43 (25.46)	1093.93 (23.96)
4	Miscellaneous	110.50 (2.51)	125.44 (2.57)	126.67 (2.89)	139.68 (2.63)	142.22 (3.31)	134.63 (2.95)
5	Depreciation	327.99 (7.44)	344.75 (7.06)	222.91 (5.09)	226.82 (4.28)	135.21 (3.14)	201.52 (4.41)
	Total working capital	2050.47 (46.54)	2577.90 (52.77)	2449.56 (55.98)	2689.22 (50.70)	2477.19 (57.58)	2483.68 (54.41)
6	Interest on working capital	246.06 (5.58)	309.35 (6.33)	293.95 (6.72)	322.71 (6.08)	297.26 (6.91)	298.04 (6.53)
	Cost A	2296.53 (52.13)	2887.25 (59.10)	2743.51 (62.70)	3011.93 (56.79)	2774.45 (64.49)	2781.72 (60.93)
7	Rental value	864.16 (19.61)	831.66 (17.02)	753.94 (17.23)	1672.34 (31.53)	1223.12 (28.43)	1145.75 (25.10)
8	Interest on fixed capital	495.70 (11.25)	635.36 (13.01)	398.26 (9.10)	417.52 (7.87)	246.32 (5.73)	364.41 (7.98)
	Cost B	3656.39 (82.99)	4354.27 (89.13)	3895.71 (89.03)	5101.79 (96.19)	4243.89 (98.65)	4291.78 (94.01)
9	Family labour charges	749.36 (17.01)	530.78 (10.87)	479.87 (10.97)	201.96 (3.81)	58.24 (1.35)	273.38 (5.99)
	Cost C	4405.75 (100.00)	4885.05 (100.00)	4375.58 (100.00)	5303.75 (100.00)	4302.13 (100.00)	4565.16 (100.00)

Figures in parentheses are percentages to total

Table II.22. Inputwise cost of maintenance per hectare of Arecanut (income groupwise)

(in rupees)

Sl. No.	Items	I_1	I_2	I_3	I_4	I_5	Average
1	Hired human labour	212.31 (4.62)	674.08 (13.78)	816.40 (17.69)	489.46 (21.63)	797.65 (16.42)	677.33 (14.84)
2	Irrigation	717.06 (15.61)	421.27 (8.61)	333.26 (7.22)	296.23 (13.09)	250.57 (5.16)	376.27 (8.24)
3	Organic manures	829.35 (18.06)	1295.81 (26.49)	1128.05 (24.44)	214.61 (9.48)	1232.95 (25.38)	1093.93 (23.96)
4	Miscellaneous	115.62 (2.52)	133.70 (2.73)	140.82 (3.05)	124.47 (5.50)	139.88 (2.88)	134.63 (2.95)
5	Depreciation	388.94 (8.47)	271.33 (5.55)	181.42 (3.93)	163.38 (7.22)	151.65 (3.12)	201.52 (4.41)
	Total working capital	2263.28 (49.28)	2796.19 (57.16)	2599.95 (56.34)	1288.15 (56.93)	2572.70 (52.97)	2483.68 (54.41)
6	Interest on working capital	271.59 (5.91)	335.54 (6.86)	311.99 (6.76)	154.58 (6.83)	308.72 (6.36)	298.04 (6.53)
	Cost A	2534.87 (55.20)	3131.73 (64.02)	2911.94 (63.10)	1442.73 (63.76)	2881.42 (59.32)	2781.72 (60.93)
7	Rental value	699.31 (15.23)	869.11 (17.77)	1216.12 (26.35)	451.81 (19.97)	1528.25 (31.46)	1145.75 (25.10)
8	Interest on fixed capital	701.46 (15.27)	488.79 (9.99)	330.79 (7.17)	302.31 (13.36)	270.96 (5.58)	364.41 (7.98)
	Cost B	3935.64 (85.70)	4489.63 (91.77)	4458.85 (96.62)	2196.85 (97.09)	4680.63 (96.36)	4291.78 (94.01)
9	Family labour charges	656.85 (14.30)	402.49 (8.23)	155.83 (3.38)	65.89 (2.91)	176.57 (3.64)	273.38 (5.99)
	Cost C	4592.49 (100.00)	4892.12 (100.00)	4614.68 (100.00)	2262.74 (100.00)	4857.20 (100.00)	4565.16 (100.00)

Figures in parentheses are percentages to total

Table II.23. Operationwise cost of maintenance per hectare of Arecanut (size groupwise)

(in rupees)

Sl. No.	Items	S_1	S_2	S_3	S_4	S_5	Average
1	Weeding and intercultural operations	430.48 (9.77)	483.57 (9.90)	485.72 (11.10)	517.29 (9.75)	474.91 (11.04)	481.48 (10.55)
2	Irrigation	910.46 (20.67)	805.15 (16.48)	718.89 (16.43)	515.75 (9.72)	418.84 (9.74)	579.26 (12.69)
3	Organic manures and application	1020.41 (23.16)	1349.87 (27.63)	1375.23 (31.43)	1491.64 (28.12)	1364.25 (31.71)	1360.17 (29.79)
4	Miscellaneous	110.50 (2.51)	125.44 (2.57)	126.67 (2.89)	139.68 (2.63)	142.23 (3.31)	134.63 (2.95)
5	Depreciation	327.99 (7.44)	344.75 (7.06)	222.91 (5.09)	226.82 (4.28)	135.21 (3.14)	201.52 (4.41)
	Total working capital	2799.83 (63.55)	3108.68 (63.64)	2929.42 (66.95)	2891.18 (54.51)	2535.43 (58.93)	2757.06 (60.39)
6	Interest on working capital	246.06 (5.58)	309.35 (6.33)	293.95 (6.72)	322.71 (11.74)	297.26 (6.91)	298.04 (6.53)
7	Rental value	864.16 (19.61)	831.66 (17.02)	753.94 (17.23)	1672.34 (31.53)	1223.12 (28.43)	1145.75 (25.10)
8	Interest on fixed capital	495.70 (11.25)	635.36 (13.01)	398.26 (9.10)	417.52 (7.87)	246.32 (5.73)	364.41 (7.98)
	Total cost	4405.75 (100.00)	4885.05 (100.00)	4375.58 (100.00)	5303.75 (100.00)	4302.13 (100.00)	4565.16 (100.00)

Figures in parentheses are percentages to total

Table II.24. Operationwise cost of maintenance per hectare of Arecanut (Income groupwise)

(in rupees)

Sl. No.	Items	I_1	I_2	I_3	I_4	I_5	Average
1	Weeding and intercultural operations	471.07 (10.26)	490.84 (10.03)	508.12 (11.01)	376.51 (16.64)	474.91 (9.78)	481.48 (10.55)
2	Irrigation	969.18 (21.10)	663.42 (13.56)	553.45 (11.99)	428.01 (18.92)	408.87 (8.42)	579.26 (12.69)
3	Organic manures and application	975.32 (21.24)	1639.40 (33.51)	1371.95 (29.73)	261.67 (11.56)	1573.96 (32.40)	1360.17 (29.79)
4	Miscellaneous	115.62 (2.52)	133.70 (2.73)	140.82 (3.05)	124.47 (5.50)	139.88 (2.88)	134.63 (2.95)
5	Depreciation	388.94 (8.47)	271.33 (5.55)	181.42 (3.93)	163.38 (7.22)	151.65 (3.12)	201.52 (4.41)
	Total working capital	2920.13 (63.58)	3198.69 (65.38)	2755.68 (59.72)	1354.04 (59.84)	2749.27 (56.60)	2757.06 (60.39)
6	Interest on working capital	271.59 (5.91)	335.54 (6,86)	311.99 (6.76)	154.58 (6.83)	308.72 (6.36)	298.04 (6.53)
7	Rental value	699.30 (15.23)	869.11 (17.77)	1216.12 (26.35)	451.81 (19.97)	1528.25 (31.46)	1145.75 (25.10)
8	Interest on fixed capital	701.46 (15.27)	488.79 (9.99)	330.79 (7.17)	302.31 (13.36)	270.96 (5.58)	364.41 (7.98)
	Total cost	4592.49 (100.00)	4892.12 (100.00)	4614.68 (100.00)	2262.74 (100.00)	4857.20 (100.00)	4565.16 (100.00)

Figures in parentheses are percentages to total

Table II.25. Inputwise cost of cultivation of Banana (size groupwise)

(in rupees)

Sl. No.	Items	S_1	S_2	S_3	S_4	S_5	Average
1	Hired human labour	4403.41 (11.04)	4263.01 (11.63)	5418.62 (14.88)	4765.63 (13.66)	6063.83 (17.97)	5108.47 (14.09)
2	Suckers	3451.70 (8.65)	3815.03 (10.41)	3772.04 (10.36)	3171.88 (9.09)	3848.40 (11.40)	3689.64 (10.18)
3	Manures	7386.36 (18.51)	6835.26 (18.64)	7273.30 (19.97)	6302.08 (18.07)	6409.57 (18.99)	6700.49 (18.48)
4	Fertilizers	1441.76 (3.61)	2749.71 (7.50)	2240.24 (6.15)	3148.70 (9.03)	3033.64 (8.99)	2758.79 (7.61)
5	Irrigation	1378.55 (3.45)	283.53 (0.77)	209.63 (0.58)	304.84 (0.87)	560.61 (1.66)	435.41 (1.20)
6	Miscellaneous	696.02 (1.74)	528.90 (1.44)	799.75 (2.20)	708.33 (2.03)	494.68 (1.47)	595.70 (1.64)
7	Propping	2528.41 (6.34)	2485.55 (6.78)	2455.92 (6.74)	2526.08 (7.24)	2513.30 (7.45)	2499.99 (6.90)
8	Depreciation	327.99 (0.82)	344.75 (0.94)	222.91 (0.61)	226.82 (0.65)	135.21 (0.40)	201.52 (0.56)
9	Interest on working capital	2593.70 (6.50)	2556.69 (6.97)	2686.73 (7.38)	2538.51 (7.28)	2767.11 (8.20)	2638.80 (7.28)
	Cost A	24207.90 (60.67)	23862.43 (65.09)	25076.14 (68.87)	23692.79 (67.92)	25826.35 (76.52)	24628.81 (67.94)
10	Rental value	10829.55 (27.14)	8720.23 (23.78)	8486.15 (23.31)	8900.00 (25.51)	6842.64 (20.27)	9013.65 (24.87)
11	Interest on fixed capital	495.70 (1.24)	635.36 (1.73)	398.26 (1.09)	417.52 (1.20)	246.32 (0.73)	364.41 (1.01)
	Cost B	35533.15 (89.05)	33218.02 (90.60)	33960.55 (93.26)	33010.31 (94.65)	32915.31 (97.53)	34006.87 (93.82)
12	Family labour charges	4367.90 (10.95)	3445.09 (9.40)	2452.77 (6.74)	1875.00 (5.37)	835.11 (2.47)	2241.95 (6.18)
	Cost C	39901.05 (100.00)	36663.11 (100.00)	36413.32 (100.00)	34885.31 (100.00)	33750.42 (100.00)	36248.82 (100.00)

Figures in parentheses are percentages to total

Table II.26. Inputwise cost of cultivation of Banana
(Income groupwise)

(in rupees)

Sl. No.	Item	I_1	I_2	I_3	I_4	I_5	Average
1	Hired human labour	2421.65 (6.10)	4769.34 (12.85)	5000.00 (15.08)	4682.54 (14.52)	6545.45 (17.01)	5108.47 (14.09)
2	Suckers	3782.05 (9.52)	3712.52 (10.00)	3409.38 (10.28)	3619.05 (11.22)	3933.33 (10.22)	3689.64 (10.18)
3	Manures	8796.30 (22.14)	6878.31 (18.54)	6093.75 (18.38)	3928.57 (12.18)	7333.33 (19.06)	6700.49 (18.48)
4	Fertilisers	2457.86 (6.19)	2343.05 (6.31)	2445.16 (7.37)	3015.48 (9.35)	3377.28 (8.78)	2758.79 (7.61)
5	Irrigation	307.62 (0.77)	378.35 (1.02)	427.28 (1.29)	1373.65 (4.26)	178.64 (0.46)	435.41 (1.20)
6	Miscellaneous	555.56 (1.40)	542.33 (1.46)	700.00 (2.11)	436.50 (1.35)	609.09 (1.58)	595.70 (1.64)
7	Propping	2549.86 (6.42)	2482.30 (6.69)	2512.50 (7.58)	2523.80 (7.83)	2469.70 (6.42)	2499.99 (6.90)
8	Depreciation	388.94 (0.98)	271.33 (0.73)	181.42 (0.55)	163.38 (0.51)	151.65 (0.39)	201.52 (0.56)
9	Interest on working capital	2551.18 (6.42)	2565.30 (6.91)	2492.34 (7.52)	2369.16 (7.35)	2951.82 (7.67)	2638.80 (7.28)
	Cost A	23811.02 (59.94)	23942.81 (64.52)	23261.83 (70.15)	22112.14 (68.58)	27550.29 (71.61)	24628.81 (67.94)
10	Rental value	9205.70 (23.17)	10053.79 (27.09)	7893.75 (23.81)	8001.59 (24.82)	9561.82 (24.85)	9013.65 (24.87)
11	Interest on fixed capital	701.46 (1.77)	488.79 (1.32)	330.79 (1.00)	302.31 (0.94)	270.96 (0.70)	364.41 (1.01)
	Cost B	33718.18 (84.88)	34485.39 (92.93)	31486.37 (94.96)	30416.04 (94.34)	37383.07 (97.16)	34006.87 (93.82)
12	Family labour charges	6007.83 (15.12)	2623.46 (7.07)	1671.88 (5.04)	1825.40 (5.66)	1090.91 (2.84)	2241.95 (6.18)
	Cost C	39726.01 (100.00)	37108.85 (100.00)	33158.25 (100.00)	32241.44 (100.00)	38473.98 (100.00)	36248.82 (100.00)

Figures in parentheses are percentages to total

Table II.27. Operationwise cost of cultivation per hectare of Banana (size groupwise)

(in rupees)

Sl. No.	Item	S_1	S_2	S_3	S_4	S_5	Average
1	Seeds and sowing	3451.70 (8.65)	3815.03 (10.41)	3772.04 (10.36)	3171.88 (9.09)	3848.40 (11.40)	3689.64 (10.18)
2	Preparatory cultivation	3870.74 (9.70)	3271.68 (8.92)	3287.15 (9.03)	2838.54 (8.14)	3122.34 (9.25)	3188.86 (8.80)
3	Intercultural operations	2095.17 (5.25)	1907.51 (5.20)	2030.86 (5.58)	1666.64 (4.78)	1795.21 (5.32)	1858.82 (5.12)
4	Manuring	9801.14 (24.56)	8786.13 (23.96)	9319.90 (25.59)	7994.79 (22.92)	7912.23 (23.44)	8502.45 (23.46)
5	Fertiliser application	1832.39 (4.59)	3327.75 (9.08)	2744.02 (7.54)	3591.40 (10.29)	3512.37 (10.41)	3259.58 (8.98)
6	Irrigation	1378.55 (3.45)	283.52 (0.77)	209.63 (0.58)	304.84 (0.87)	560.61 (1.66)	435.40 (1.20)
7	Miscellaneous	696.02 (1.74)	528.90 (1.44)	799.75 (2.20)	708.33 (2.03)	494.68 (1.47)	595.70 (1.64)
8	Propping	2528.40 (6.34)	2485.55 (6.78)	2455.92 (6.74)	2526.04 (7.24)	2513.30 (7.45)	2499.99 (6.90)
9	Depreciation	327.99 (0.82	344.75 (0.94)	222.91 (0.61)	226.82 (0.65)	135.21 (0.40)	201.52 (0.56)
	Total	25982.10 (65.12)	24750.82 (67.52)	24842.18 (68.22)	23029.28 (66.01)	23894.35 (70.80)	24231.96 (66.84)
10	Interest on working capital	2593.70 (6.50)	2556.69 (6.97)	2686.73 (7.38)	2538.51 (7.28)	2767.11 (8.20)	2638.80 (7.28)
11	Rental value	10829.55 (27.14)	8720.23 (23.78)	8486.15 (23.31)	8900.00 (25.51)	6842.64 (20.27)	9013.65 (24.87)
12	Interest on fixed capital	495.70 (1.24)	635.36 (1.73)	398.26 (1.09)	417.52 (1.20)	246.32 (0.73)	364.41 (1.01)
	Total cost	39901.05 (100.00)	36663.10 (100.00)	36413.32 (100.00)	34885.31 (100.00)	33750.42 (100.00)	36248.82 (100.00)

Figures in parentheses are percentages to total

Table II.28. Operationwise cost of cultivation per hectare of banana (Income groupwise)

(in rupees)

Sl. No.	Item	I_1	I_2	I_3	I_4	I_5	Average
1	Seeds and sowing	3882.11 (9.52)	3712.52 (10.00)	3409.38 (10.28)	3619.05 (11.22)	3933.33 (10.22)	3689.64 (10.18)
2	Preparatory cultivation	3636.10 (9.15)	3217.50 (8.67)	2968.75 (8.95)	3134.92 (9.72)	3212.12 (8.35)	3188.86 (8.80)
3	Intercultural operations	2207.98 (5.56)	1895.94 (5.11)	1671.88 (5.04)	1309.52 (4.06)	2075.76 (5.40)	1858.82 (5.13)
4	Manuring	10861.84 (27.34)	8672.66 (23.37)	7703.13 (23.23)	5198.41 (16.12)	9212.12 (23.94)	8502.45 (23.46)
5	Fertiliser application	2977.56 (7.50)	2828.04 (7.62)	2867.03 (8.65)	3809.13 (11.81)	3846.97 (10.00)	3239.65 (8.98)
6	Irrigation	307.62 (0.77)	378.35 (1.02)	427.28 (1.29)	1373.65 (4.26)	178.64 (0.46)	435.40 (1.20)
7	Miscellaneous	555.66 (1.40)	542.33 (1.46)	700.00 (2.11)	436.51 (1.35)	609.09 (1.58)	595.70 (1.64)
8	Propping	2549.86 (6.42)	2482.30 (6.69)	2512.50 (7.58)	2523.81 (7.83)	2469.70 (6.42)	2499.99 (6.90)
9	Depreciation	388.94 (0.98)	271.33 (0.73)	181.42 (0.55)	163.38 (0.51)	151.65 (0.39)	201.52 (0.56)
	Total	27267.67 (68.64)	24000.97 (64.68)	22441.37 (67.68)	21568.38 (66.90)	25689.38 (66.77)	24231.96 (66.84)
10	Interest on working capital	2551.18 (6.42)	2565.30 (6.91)	2492.34 (7.52)	2369.16 (7.35)	2951.82 (7.67)	2638.80 (7.28)
11	Rental value	9205.70 (23.17)	10053.79 (27.09)	7893.75 (23.81)	8001.59 (24.82)	9561.82 (24.85)	9013.65 (24.87)
12	Interest on fixed capital	701.46 (1.77)	488.79 (1.32)	330.79 (1.00)	302.31 (0.94)	270.96 (0.70)	364.41 (1.01)
	Total cost	39726.01 (100.00)	37108.85 (100.00)	33158.25 (100.00)	32241.44 (100.00)	38473.98 (100.00)	36248.82 (100.00)

Figures in parentheses are percentages to total

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

By

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ABSTRACT OF THE THESIS

Submitted in partial fulfilment of the
requirement for the degree of

Master of Science in Agriculture

Faculty of Agriculture
Kerala Agricultural University

Department of Agricultural Economics
COLLEGE OF HORTICULTURE
Vellanikkara - Trichur

1982

ABSTRACT

The study was undertaken with the following objectives, viz., to study the methods and practices followed for cultivation, the general, social and economic characteristics of the farmers in the study area, cost and income structure of the farm business, the resource use; and the savings, investment, assets and debts pattern.

One hundred farm families were selected by two stage random sampling, from whom the relevant data were collected using a well structured schedule.

The methods and practices followed for cultivation of different crops were found to be more or less the same in different parts of the block. Generally, two crops of paddy (Mundakan and Puncha), coconut, arecanut and banana were the major crops grown.

Dependence on hired labour was high in the area. Tractor power was substituted for bullock power to a limited extent. Dependence of family labour was more in smaller size groups. The utilization of fertilizers was below the recommended levels. The per hectare use was found to decrease with increase in the size of the holdings and increase with increase in income.

The cost of cultivation for Mundakan season was found to be lower than that of Puncha, mainly due to differences

in cultivation operations. Eventhough yield was slightly higher, the cost per quintal was also higher during Puncha than Mundakan. Thus the study showed that Mundakan paddy was more profitable than Puncha due to lower cost of cultivation.

Eventhough cost of cultivation was found to decrease with increase in size of holding no clearcut association was found between family income and cost of cultivation.

Though the cultivation of coconut and banana resulted in high net returns they involved heavy investment also. Arecanut cultivation in the area was found to be in a declining stage.

Expenditure on food did not show much difference among different holding size groups and income groups except in the highest income group and largest holding size group. Expenditure on costly food items like, fish, meat and milk showed a positive relationship with the size of holding and gross income of the families. Only the farmers in the higher income groups were able to meet the household expenditure from the net income obtained from crop production and livestock.

The infrastructural facilities in the area were found to be satisfactory. There were sufficient credit, communication and marketing facilities in the area. But in some parts of the block, transport facilities are yet to be developed.