

**INCOME, SAVINGS AND CAPITAL FORMATION  
IN FARM HOUSEHOLDS OF KODAKARA  
DEVELOPMENT BLOCK**

By  
**PREMA. A.**

**THESIS**

submitted in partial fulfilment of the  
requirement for the degree of

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DEPARTMENT OF AGRICULTURAL ECONOMICS  
**COLLEGE OF HORTICULTURE**  
VELLANIKKARA THRISSUR  
Kerala

**1996**

## DECLARATION

I hereby declare that the thesis entitled **Income Savings and Capital Formation in Farm Households of Kodakara Development Block** is a bonafide record of research work done by me during the course of research and that the thesis has not previously formed the basis for the award to me of any degree diploma fellowship associateship or other similar title of any other university or society

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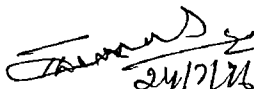
  
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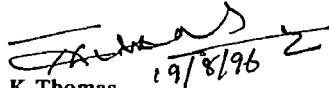


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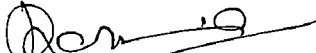
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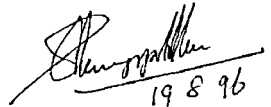
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EXTERNAL EXAMINER

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**PREMA A**

# *Introduction*

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## INTRODUCTION

The saga of agricultural development in India since the advent of independence is an inspiring one. Among the developing countries, India has shown relatively faster rate of economic development through the various Five Year Plans. But agricultural development was slow during the earlier two decades and has picked up during the mid sixties. Remarkable changes have taken place in Indian agriculture with the evolution of high yielding varieties and adoption of modern and improved farm practices. Capital investment is inevitable for increasing agricultural production and more so with the capital and technology intensive modern farming.

The rate of growth in agriculture in India has been steadily increasing since 1950 s till 1981-82. Since then it has not increased or decreased but has stagnated (Mallick, 1993). It is now widely accepted that without adequate investment of capital, agriculture cannot make substantial contribution to the economic development of the country. It requires huge investments in working capital to buy inputs which is part of private capital formation. Such investments facilitates more effective use of public sector investments in augmenting irrigation and infrastructure facilities.

In India, the Gross Capital Formation in Agriculture (GCFAGR) has been steadily rising from 6.05 per cent of GDP in 1950-51 to 14.05 per cent of GDP in 1979-80. Since then it has been persistently declining and has reached 7.02 in 1990-91. The GCFAGR at current price during 1993-94 is estimated as Rs 15,642 crores (CMIE, 1995). Similarly, the fixed capital formation in agriculture has

shown a fairly steady rise upto the beginning of the eighties and has tended to decline thereafter This would probably explain for the recent stagnation in Indian Agriculture Capital formation thus indicates both the present attitudes and future abilities for development For a typical developing agricultural society like India with high demographic pressure falling land man ratio low farm income and relatively small net savings ratio the problem of agricultural development is directed towards a long run objective of farm investment and capital formation

The main source of private capital formation is savings which are subsequently influenced by levels of income Studies have shown that percentage of investment to total income varied from 7.20 to 14.77 At the micro level the savings of the farmers should be invested on capital assets like irrigation farm machinery livestock etc to generate a sustained growth Only if sufficient income is generated savings could occur For a farm household the total income may be stated as gross income from crop livestock and other allied activities which in turn is influenced by size of farm technology adopted size of family education credit facilities nature of employment etc A clear understanding of income and expenditure pattern of households is essential for estimating the savings behaviour of rural households Saving potential of the farmers is decided by their marginal propensity to save which is about 9.21 at an all India basis (Choudhury 1988)

Though we have several studies on pattern and distribution of income and savings and capital formation in India as a whole and also for some states in particular studies of the similar type are scanty in Kerala Significant among such studies was the study on household savings and investment conducted by the State Planning Board during 1977-80 The present study is an attempt to understand the

sources and pattern of income estimate the income consumption and savings among the farm households Equal emphasis is given to study the capital formation in these farm households and the constraints faced by the farmers in capital investments The specific objectives of the study are

- 1 To analyse the sources and amounts of income of farm households
- 2 To estimate costs and associated variables influencing the income and savings pattern
- 3 To assess the capital output ratio on farms
- 4 Extent of capital formation in the farms
- 5 To identify constraints/factors influencing capital formation

#### **Scope of the study**

In an era of decentralised planning it becomes imperative to build up economic data and information at the micro level Absence of data in respect of many socio economic variables has been proving a serious handicap in the conception and formulation of plans at the regional level Data on income consumption cropping pattern etc from the grass root level can be used for formulating location specific and target group oriented plans for the overall development of the region The study may help farmers in visualising how improvements in farm business by way of investing in agricultural machinery land improvements, agricultural enterprises like animal husbandry can generate higher income with resultant higher savings The official development wing of the State Government may get a further insight into these aspects of rural development which require more attention Moreover based on the socio economic characteristics income savings and

investment pattern of rural households financial institutions can plan for effective lending and deposit mobilisation

### **Limitations of the study**

This study is based on farm level data generated through sample survey. The main limitation of the study is that farmers do not maintain any basic farm records as a result of which reliance has to be made on their memory. Moreover, people are usually reluctant in giving correct information on income and savings. In spite of all these every effort has been made to generate as reliable information as possible. The study involves a lot of concepts and definitions and hence working definitions have been used wherever required.

### **Plan of work**

This thesis is divided into six chapters including the present introductory chapter. The second chapter deals with a review of past studies relevant to the present investigation. The third chapter deals with a description of the study areas and the fourth chapter deals with the methodology used. This is followed by the presentation of results and the discussion of findings in the fifth chapter. Chapter sixth summarises the findings of the study followed by references and abstract.



# *Review of Literature*

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## REVIEW OF LITERATURE

A comprehensive review of the past studies is useful to formulate concepts methodology and tools of analysis to be used for any research In this chapter an attempt has been made to define the concepts and review of past studies related to income consumption savings and capital formation The first section deals with the review of earlier studies on income consumption and saving pattern and reviews on investment and capital formation is given in the second section Concepts used for the present study are included in third section

### 2.1 Income Consumption and Savings

Bansal (1968) conducted a sample survey on level of farm income consumption and saving pattern in the Meerut region of Uttar Pradesh during 1962-63 to 1964-65 using a multi stage stratified random sampling design Crop enterprise analysis revealed that farm business income per hectare tended to increase with decrease in size of farm Input output ratio and percentage of net income to gross income revealed that increased use of inputs had failed to bring proportional increase in output Saving income ratio increased with increase in size of holding

Bal and Singh (1970) in a comparative study of the per capita distribution of income among farm families farm labour families and non farm families of Ludhiana district using random sampling procedure showed that the farm families enjoyed the highest income and the farm labour families the lowest Lorenz curve was drawn to depict the concentration of income Gini ratio for income distribution

showed that household income were more evenly distributed among non farm families

Galgalikar *et al* (1970) in a cross section analysis of 67 families in a village in Parbhani district showed that crop production accounted for 80 per cent of their gross income and that in small sized holdings wages formed a substantial portion of gross income No definite pattern of investment was identified Low and middle income groups resorted to borrowing to meet their consumption expenditure People spent their meagre savings for the purchase of silver and gold Savings with the co operatives were of compulsory nature in the form of shares required to secure loans

A random sample of 63 cultivators of Sangli district in Maharashtra studied by Pawar (1970) for a period of six years observed that the cultivators had invested a large amount for the building up of fixed capital assets on their holding and use of modern inputs for crop production The average farm income during the period increased from Rs 8 676 to Rs 21 094 The remaining part of farm income was used for consumption and savings The farmers used their savings either to buy share certificates in co operative banks or deposits in sugar factory or repayment of loans The author also had reported tremendous increase in expenditure on luxuries and marriages

A random sample of fifty progressive and fifty less progressive farmers were studied by Sisodia and Agarkar (1970) to know the effect of adoption of new *technology* of agriculture on the magnitude and pattern of income savings and expenditure The study revealed that among the modern farms tangible assets accounted for 89 per cent financial assets eight per cent and consumer durables

three per cent of the total assets whereas in the traditional farms the percentage share of the above three components were 86.8 and 6 respectively. Average annual income (gross) of small and medium cultivators of modern farm was reported to be almost twice compared to the same category of farmers of traditional farms and capital expenditure was eight times that in the traditional farms. Per capita saving of progressive farmers was eight times greater than the less progressive ones. Marginal propensity to save was found to be higher for medium farms in the modern group (133.8 per cent).

Sohni and Khandarkar (1970) in a paper based on a sample of 99 selected cultivators from the command area of Bor project in Wardha district of Maharashtra had attributed the increase in income of the cultivators to assured irrigation facilities. It was observed that availability of increased irrigation facilities had not only increased the income of the cultivator but also created the ability to raise loans for making greater investment on crop production. The changes in income distribution, expenditure, saving and consumption led to larger allocation of income to annual production expenditure and further capital formation in the farm business.

Bal *et al.* (1972) while studying the income levels, pattern of investment and savings of farm families showed that adoption of modern technology had increased the gross income of farmers in Ludhiana district. A substantial portion of the increased gross income was spent on the purchase of modern inputs such as new seeds and chemical fertilizers which augmented farm production. Heavy investments were made in building infrastructure, household expenditure and socio-religious ceremonies which resulted in the decline of savings. The study

indicated that disparity in distribution of savings has declined and that relative savings of small farmers was small compared to that of medium and large farmers.

A comparative study on the level of income and savings of tribal and non tribal farms in the Nainital Tarai conducted by Bhati *et al* (1972) found that non tribal farms invested about four times more than tribal farms on items like fertilizer HYV and irrigation. Tribal farms were labour intensive and had made heavy investment on farm buildings and irrigation equipments. Analysis showed that marginal propensity to save in the tribal farms was lower, relative to the non tribal farms.

Chauhan *et al* (1972) in a study of the income savings and investment behaviour of small farmers coming under and outside the purview of Integrated Area Development Scheme in Sangli district of Maharashtra obtained the following results (1) Mean income of these non participant farmers was higher (2) Irrigated farm households had a much higher net household income and farm business income than un irrigated farms. For both type of respondents income was the single most important determinant of savings and consumption behaviour. Marginal propensity to save was higher for the non participants than the participant small farmers. Farm investment increased over years for both categories and livestock followed by land improvements were the dominant items of investment.

Dash and Gupta (1972) reported one hundred per cent increase in farm business income and total disposable income by providing irrigation facilities to small farmers in Banarpal Block in Orissa. Their consumption expenditure also registered about 81 per cent increase. They estimated the marginal propensity to

consume and save from the consumption function and observed that MPC was significantly lower in the irrigated village

An examination of the skewed nature of the increase in income towards some categories of farm due to technological developments by Miglani *et al* (1972) revealed that there was a wide gap between different size group farms with respect to the farm business income which varied from Rs 4 214/- on farms below 5 ha to Rs 37 949/- in the case of largest size group of farms. Also farmers having assured water supply earned higher farm business income as compared to farmers without irrigation

Nandal (1972) examined the relative changes in the gross income of farmers of different socio economic characteristics the concentration in income distribution and the average and marginal rates of savings and investment in selected farms in Haryana. Lorenz curve and Gini ratios showed that the spread of Green Revolution over time tended to aggravate the income disparities among the farmers. Percentage of total income invested increased with the increase in farm size level of mechanization and formal education of head of the family. Farm family expenditure also showed similar pattern. The author had reported that net savings showed a progressive fall among progressive farmers. The average saving income ratio increased with increase in farm size level of mechanization and education. It was observed that the new prosperity in agriculture had a salutary effect on propensity to save and invest among progressive farmers

A study on the effect of increase in income owing to the adoption of new technology of agriculture in a relatively less progressive region (Varanasi) and less progressive region (Deoria) conducted by Nath *et al* (1972) observed an increasing

trend of income with decreasing farm size. Farmers of Varanasi had higher income and small farmers in both districts had dis savings. Small farmers never had investment but with increase in total income gross savings and farm size there was an evidence of increasing investment per farm. They also had reported a negative correlation of MPC with disposable income and a positive correlation of MPS with disposable income.

Parthasarathy and Satyanarayana (1972) while studying the income expenditure and investment pattern of agricultural families of Guntur district in Andhra Pradesh observed a direct relationship of capital investment per acre with farm size in irrigated and garden land farms. Crop enterprise was the main source of income and a direct relationship was observed between farm size and income from crop enterprise. Family expenses was the major item of expenditure followed by crop and livestock enterprises. Per capita monthly expenditure increased with farm size and family size. Main sources of investment were reported as past savings, net income from farm family and borrowings.

Rai *et al* (1972) studied the impact of Green Revolution on investment and saving pattern of different sized farms in irrigated and unirrigated zones of Haryana. It was observed that the working capital, fixed investment, consumption and income were highest in the farms of irrigated zone which had increased the income disparity between the zones. A positive association was reported between consumption and income to size of holding and adoption of modern inputs. They suggested a simultaneous improvement in the economic conditions of small and marginal farmers in order to accelerate agricultural development with social justice.

A study to find the level of income and savings and its sources of financing among the farmers of Varanasi district conducted by Shah (1972) showed that progressive farmers incurred larger working expenditure on new inputs higher per farm and per capita consumption expenditure and registered higher level of income than their less progressive counterparts. Except progressive large and medium farmers all others had negative savings.

Singh *et al* (1972) in a comparative study among consolidated and unconsolidated farms in Uttar Pradesh observed that their important source of income was crop raising followed by non agricultural sources. Disposable income consumption expenditure as well as savings were higher on the consolidated farms. They also observed that consolidated farms invested more on implements and machinery while unconsolidated farms spent major proportion of investment on construction of dwelling houses. Marginal propensity to save of the consolidated farms was higher than the unconsolidated farms.

Agarwal and Verma (1975) examined the possibilities of increasing farm incomes and resource use pattern on different types of small farms under limited and unlimited capital in Jaipur district of Rajasthan. The study indicated substantial potentialities for increasing farm incomes on all categories of small farms with the allocation of farm resources especially human labour. If the small farmers were educated and trained in farm planning and arrangements were made for supply of capital farm income could be increased substantially.

Gugnani and Singh (1975) used the village level data collected by Prasad from Muzaffarnagar district of West Uttar Pradesh to estimate the average and marginal propensity to save. They estimated savings for modern and traditional



farms separately and found that technology had contributed significantly in raising savings and investment. Marginal rate of savings was reported to be higher for modern farms. It was also found that a very high percentage of the savings was effected in the form of productive investment on land.

Kumar *et al* (1975) attempted to assess the savings and banking habits among farmers of Hissar district using a multistage purposive cum stratified random sampling technique. It was reported that savings potential of farmer was affected by size of holding, occupational pattern, type of family and educational level of chief earner. They associated increase in size of land holding, multiplicity of occupation and increasing educational level of the chief earner with increased saving and banking habits. The authors opined that for getting deposits, bankers should first approach the farmers with high education, medium or large sized farms belonging to nuclear family with multiplicity of occupation.

Singh *et al* (1975) analysed the income and expenditure at the family level to work out the investible surplus and the pattern of investment in agriculture and net savings available for mobilisation. The analysis revealed that family income consisted of income from crop production, wages and salaries, milk production and sale of livestock, income from hiring out machinery etc. Annual income per family per family, annual consumption and expenditure on goods and services changed positively with holding size.

Meyappan (1976) compared the pattern of income, consumption and savings among the farmers of Parambikulam Aliyar project region during project year 1973-74 and non project year 1974-75 using information from 104 randomly selected farm households. The study revealed a great deal of inequality in income

distribution and concentration between the sample villages in both the years. It was found that in the case of large farms crop enterprises contributed more to the total per household gross income and in small farms off farm income was more. Crops accounted for major expenditure followed by livestock, attached labour, repairs and maintenance. The study also revealed the inelasticity of per capita expenditure on food items.

Sarma (1980) computed Lorenz ratio for the year 1975-76 based on the data from NCAER study Household Income and Its Disposition and compared them with those for the year 1967-68. He concluded that the degree of inequality in income was less for 1975-76 than <sup>n</sup>1967-68. He obtained a Lorenz ratio of 0.416 in 1975-76 as against 0.463 in 1967-68.

The household savings and investment survey conducted during the period 1976-78 in Kerala by the State Planning Board used a multistage random sampling design to collect information on the composition and magnitude of physical and financial asset formation and the pattern of consumption expenditure of households. According to the survey the total household savings in the state during 1977-78 amounted to Rs 436 crores of which about 44 per cent constituted savings in the form of various financial assets. Fifty five per cent of the investment in physical assets was on land development, plantations, cattle rearing, renovation of wells and tanks and on farm implements. The survey revealed that higher the expenditure the more was the savings per household. The average annual savings per household thrown up by the survey was Rs 1032.

Rao (1982) in a socio economic study of farmers in Ollukkara block in the command area of Peechi Irrigation Project has brought out the fact that there was

no relationship between income and family size. The influence of income on consumption was found to be more conspicuous and the savings in the lower income group and small holding group was too low to meet the working capital requirements in crop production in the subsequent season.

Subramanyam and Reddy (1987) conducted a study on behalf of NAFSCOB on the socio-economic characteristics of rural households in Kheda District of Gujarat to assess their saving behaviour and potential to facilitate the effective mobilization of public deposits. Through a three stage stratified random sampling procedure they selected 90 depositor and non depositor households as respondents. Agriculture followed by dairy was the major source of income and cost of cultivation was the main item of operational expenditure and food items accounted for maximum consumer expenditure. Family size, number of earning members, education level of household head and land owned were identified as the factors influencing per capita savings.

Bhatty and Vashishtha (1988) studied rural household savings and investment behaviour at all India level. According to them, the rate of physical savings had increased much faster for marginal land owner than for small and large ones. Saving rate for rural households increased significantly from 4 per cent in 1970-71 to 10 per cent in 1981-82 and the financial component of savings had risen faster than the physical component thereby lowering the investment in physical assets.

Taneja (1988) established that the average income per household was highest for farm households and lowest for labour households in the rural Punjab. The income disparity among farm households was reported to be greater than

that

between non farm households He got a positive relationship among the number of earners in a household family size level of education and age of household head and average income

A study on the estimation of the magnitude of income inequalities among the farmers of Haryana state by Paul (1989) used cross sectional data for the period 1983 July to 1984 June In rural Haryana agriculture alone contributed half of the total household income and income disparity was more pronounced among farm households than non farm households Household income was found to be positively influenced by family size number of earners in the family age of the chief earner and his level of education

Chahal (1990) studied the income levels and the disparity in farm income among paddy and maize farmers in the central plain region of Punjab selecting the respondents by multistage sampling The data collected during 1982-83 showed greater disparity in case of farm income distribution than per capita income distribution Analysis showed an inverse relationship between farm income disparity and farm size and a positive relationship between the per capita income and size of farm Major share of gross farm income came from crops followed by dairying Maximum disparity in farm income was created by farm size followed by machinery and implements milch animals plant protection measures and seeds It was found that farm income inequality could be reduced by using more irrigation fertilizer and manures and human labour

Bhatty *et al* (1991) used the data collected in the household survey conducted by the National Council of Applied Economic Research to highlight the distribution of households in the country by income classes occupation age and

education level of the head and by household size. They showed that the lower income classes accounted for 89 per cent of all households. Southern states reported the highest proportion of households in the lowest income classes, followed by North East and West. Agriculture was the principal occupation of over two thirds of the household population and as much as 43 per cent of households in the country had as their head a person who had no education and above 60 per cent of the heads were in the age group of 40 years and above.

Fernando (1991) identified the determinants of rural savings in Papua New Guinea. Rural savings were influenced by small holder export earnings and the size and productivity of food gardens of rural households. Economic and cultural computability of savings instruments offered by the formal sector, consumption and distribution oriented socio-cultural system and accessibility to institutional facilities had influenced the volume of rural savings.

A study by Onyenwaku and Ozoh (1992) designed to investigate the savings behaviour of rural households in Anambra state of Nigeria, showed that household income, farm size, farming experience and proximity to bank were positively and significantly associated with rural savings, while loan volume and household size showed negative but significant relationship with savings.

A study on the consumption pattern of rural households in Kallur village of Thrissur by Bhagilal (1993) revealed that salaried people spent income more in consumption of food articles whereas agriculturists spent more on non food items. There existed a direct relationship between household size and families total expenditure and an inverse relationship between household size and per capita expenditure.

Rao and Bathah (1993) studied the income consumption and saving behaviour of tribal farmers in Andhra Pradesh. It was noticed that net income per farm increased and family labour income per hectare decreased with increase in size group. Small farmers in tribes under study got more farm and non farm income than farmers of other size groups. Average propensity to consume showed a decreasing trend with increase in size of holding whereas a reverse trend was observed for Average Propensity to save. MPC and MPS were highest among the medium size farmers.

A study to investigate the inequality in distribution of household income and assets in Thrikkur village in Thrissur by Savithri (1993) indicated a high degree of inequality in the distribution of physical assets. Inequalities in distribution of income and assets were studied using Lorenz curve and Gini ratio. The exercise supported the view that inequalities in income in rural areas was due to unequal distribution of land and other productive assets.

Acharya (1994) computed the agricultural incomes of farmers by crop regions and by states and explained their variation based on the cost of cultivation surveys for the period of eighties. The observations based on cross sectional data showed that absolute income derived from crop agriculture were not impressive when compared to the subsistence needs of the people. High value cereals, cash crops and oil seeds yielded a higher income compared to coarse cereals and some pulses. States with better controlled irrigation facilities yielded higher income compared to rainfed ones.

Birthal and Singh (1995) analysing the impact of income sources on rural income distribution in Western Uttar Pradesh identified agriculture salaries

transfers and business and art crafts as inequality increasing sources of income while livestock farm wages and non farm wages reduced income inequality Due to decreasing size of land holding development of subsidiary activities seem to be the only way to reduce inequalities in rural income

Economic and Political weekly Research Foundation (1995) analysed the behaviour of domestic saving and investment during the post reform period and had reported a persistant decline in domestic saving and capital formation ratios in spite of a rise in overall GDP growth rates from 0.9 per cent to 4 per cent The study reviewed the methodology for estimating savings and capital formation and pointed out that the existing procedures had given rise to over estimation of household saving and overall domestic savings Provisions should be given for relative price increases for goods and for the estimated depreciation of physical assets to get a more realistic picture of gross or net capital formation

## 2.2 Capital Formation

Bhanja (1965) suggested that any activity on the part of the farmers which was directed towards augmenting production and income might be taken as index of capital formation He widened the definition of capital formation including expenditure on working capital and durable consumer goods like gold ornaments Purchase of land was the major item of capital investment followed by construction and repair of houses reclamation of waste land and irrigation works It was suggested that development of institutional credit system would add to capital formation

Misra *et al* (1965) in a study on the effects of irrigation and size of farms on capital formation in agriculture in Cuttack region of Orissa observed that irrigated village had relatively higher level of farm business income, but the level of total income remained same due to the greater reliance of unirrigated farmers on supplementary enterprises. Irrigated large farmers had higher level of income greater family expenses and superior ability to save. They spent more amount on the acquisition of new capital assets and on improvement of farms.

Misra *et al* (1965) in an enquiry into the pattern of farm investment and capital formation in agriculture in the irrigated and unirrigated villages of Cuttack district reported that the amount invested by agriculturists on farming business was not sufficient. In the agricultural sector majority of the investment was on purchase of land while in the non agricultural sector large sums of money saved were spent on ornaments construction of houses etc. They found that farmer's own capital was the major source of finance co-operatives and government agencies were insignificant in rural financing.

Patel (1965) while studying the investment pattern of a tribal village in Madhya Pradesh reported that small farmers had invested more amount on farms and received larger gross farm income. He had observed income oriented investment pattern in big and medium farms while it was subsistence oriented in small farms. The small farmers borrowed more for farm investment and consumption than medium farmers. He had established a positive influence of literacy on per capita income.

Sen (1965) in a study to estimate the overall investment and capital formation in agriculture in Bihar emphasised the importance of investments in



public and private sectors and the harmonious utilisation of labour and material resources to boost up agricultural income. The author observed that only those households having farm size more than the average farm size could contribute to capital formation and hence the agro-economic status of cultivators should also be considered. If the private sector investment is ignored, irrigation schemes contributed the highest share for capital formation during the first three Five Year Plans.

Shastri (1965) showed that the investment pattern did not vary significantly among various size groups of farmers in Bihar. Small farmers invested relatively more on productive livestock as compared to medium and large farmers and net investment increased with increase in size of holding. It was also observed that past savings and current income accounted for a major portion of investment.

A study on the level and pattern of investment factors influencing and sources financing investment among farmers from the village of Baroda district in Gujarat by Desai (1969) observed a higher level of investment in the progressive villages than backward areas. Progressive nature and entrepreneurship of the farmers and the potential productivity of the area contributed to higher investment of the progressive villages who invested mostly on assuring irrigation facilities followed by modern farm equipments. Negative correlation between capital and family sizes in both areas and stronger complimentary relationship between capital and land in backward areas were observed. Owned funds were the major sources of finance for investment in both areas, but backward areas depended more on credit both institutional and private.

Kurian (1969) based on the report of All India Rural Debt and Investment Survey 1961-62 and other relevant secondary data concluded that the capital expenditure of rural household was in three major items land improvement agricultural implements machinery and minor irrigation

To study the effect of irrigation urbanisation and size of holding on capital formation in Andhra Pradesh and Orissa Misra and Mallick (1969) used the cross sectional data of samples selected using two stage random sampling method The study revealed a positive effect of these factors on capital formation and at higher income a greater percentage of income was devoted to capital formation

Panikar (1969) considered capital formation as a function of level of technology and the low rate of capital formation in Indian Agriculture was due to primitive and unchanging technology He abandoned hypothesis of low lending to low rate of investment The author established a significant correlation between capital formation and growth rate in agricultural productivity and identified land house property livestock household durables farm and non farm equipments as major items He opined that higher income might facilitate higher capital formation rather than a cause of higher capital formation

Rao (1969) analysing the plan investment in agriculture in Andhra Pradesh reported that although material capital formation in agriculture was gradually rising in both private and public sector the rise in agricultural production was not sufficient He recommended the nationalisation of banks and channelisation of institutional means to provide production credit to poor farmers to boost up agricultural production

Roy (1969) using cross sectional data reported an increase in total investment in agriculture over the initial point in the villages of West Bengal and found that tenant farmers showed lower tendency for capital formation per farm than the owner cultivators. His study revealed that external factors like irrigation facilities, extension services, credit facilities etc. augmented capital formation in farms. He also observed that the pattern of capital formation depended on the various inherent characteristics of villages.

An attempt to estimate the gross capital formation in an average farm in Assam by Saha and Bora (1969) indicated that under the existing level of technology capital formation was not occurring and the surplus generated in agriculture was being invested in consumer goods. They had reported that the vicious circle of poverty could be broken through higher price of agricultural produce, supply of inputs at subsidized rate and cheap credit.

A comparative study by Shah (1969) in North Western Uttar Pradesh using cross sectional data among progressive and less progressive farmers by size of holding found that all the types of farmers were taking to new technology and were using their increased income, borrowings and credit for creating capital assets like tube wells, pump sets, tractors and power threshers and in farm expenditure. Regression analysis showed that capital formation depended upon size of holding, the level of technology and geographical region.

A study to analyse the trends and rate of growth in the stock of capital formation in selected districts of Madhya Pradesh using time series analysis by Sisodia (1969) revealed rapid increase in the stock of durable assets. Interdistrict

differences in the growth rate of stock of capital on farms were attributed to degree of urbanization, size of holding extent of commercialization and income level. Irrigation showed greater percentage of change followed by non traditional implements.

Triwari (1970) studied the investment in agriculture in the hills of Uttar Pradesh. Gathering information from 120 sample farmers following a two-stage random sampling procedure he found that 80.49 per cent of investment was on land. The remaining 19.51 per cent was invested on building irrigation structures, machinery, equipments and livestock.

Singh *et al* (1978) examined the pace and pattern of capital formation in the Punjab over two time periods viz 1967-68 to 1969-70 and 1969-70 to 1973-74 and identified base year capital, farm size, lagged net income and family size as the important variables that affected capital formation. The change from bullocks to tractors made a substantial difference to capital formation which was captured through a dummy variable. It was also observed that farmers in the high income group did not make substantial capital investment.

Nair (1982) while estimating gross capital formation in the agricultural sector of Kerala has mentioned about expenditure approach and commodity flow approach. He reported that in all the plan periods land reclamation formed the major item of capital formation in agriculture. Contribution from livestock to total capital formation was around 20 per cent and that from agricultural implements was significantly low. Contribution from irrigation was less than 15 per cent hence capital investment in irrigation should be enhanced.

Borah (1985) assessed the nature of income distribution saving and expenditure behaviour in the rural areas of Assam and also the extent of capital formation and factors affecting investment decisions. He established an inverse relationship between household size and per capita monthly expenditure. Asset pattern showed that the highest percentage share was accounted for by buildings followed by land, livestock and household durables. Major capital expenditure by the villagers was on construction and repairs of houses rather than on improvement in the methods of cultivation. He also reported a positive relationship between per household income and size of family.

Kaur *et al* (1990) examined the pattern of production resources owned by various categories of rural poor households in Haryana and their income and consumption pattern. Discussions regarding the ownership of assets revealed very low resource base among the sample households. Availability of land and capital were highly inadequate in relation to that of human labour. The authors suggested the need for diversification of various activities from agriculture to non agriculture sector.

Bhuvaneswari (1993) assessed the extent and the nature of capital formation sources of finance and the share of institutional finance to it in the Dindigul taluk of Madurai. A two stage random sampling procedure was followed for selecting 120 respondents. A comparative study of farms with and without capital formation showed that the former group had larger values than the latter in operational area of farms, asset holding, income of the household and their annual expenditure. The rate of capital formation was 4.49 per cent and about 70 per cent of the investment was on traditional assets like livestock and wells. About 94 per

cent of farms depended on borrowed funds for making investment in farms and institutional credit was the major source of finance. She had established a positive and statistically significant elasticity of net capital formation to the amount borrowed.

Mallick (1993) empirically analysed the change in gross capital formation in agricultural sector under the changed structure of the Indian economy. He showed that in absolute terms the gross capital formation has been declining since 1980s. Technology, demographic pressure, average farm size and credit facilities were identified as the factors influencing private investment. Capital formation gained momentum in such areas where conditions for transforming the traditional agriculture into modern one existed. He had suggested some key actions like reduction of subsidies, focussing on smaller array of programmes, reduction of expenditures, priority fixing, budgeting and stimulating private investment for improving the impact of public expenditure.

## 2.3 Concepts

The concepts and the operational definitions used in this study are described here. Wherever possible standard concepts and definitions are adopted for the present study also.

### 2.3.1 Household

According to National Council of Applied Economic Research, a household is one which consists of a group of persons usually living together for not less than six months and taking principal meals from a common kitchen.

### 2 3 2 Gross income

Gross income of a household consisted of (a) farm income which includes the value of crop and livestock products receipts from the sale of farm assets custom hire services and rent from leased out land (b) non farm income which includes the earning by services business trade sale of non farm assets and current borrowings received during the reference period (Kahlon *et al* 1972 Nandal 1972, Sharma *et al* 1972 Bhuvanewari 1993)

### 2 3 3 Net income

Net income for each of the sample household has been computed as gross income less of business/operating costs of the respective household Operating costs includes both variable and fixed costs involved in agricultural productions and maintenance of livestock

### 2 3 4 Consumption expenditure

Consumption expenditure is conceived as current consumer expenditure on food clothing, fuel and light education recreation stimulants social ceremonies etc (Shastri 1963 Misra *et al* 1965 Sate Planning Board Govern ment of Kerala 1981)

### 2 3 5 Savmgs

Saving means the excess of income over consumption expenditure or the difference between income and expenditure on consumer goods (Keynes 1936)

Here savings of a farm house hold was estimated as the difference between total income (farm + off farm) and the working expenditure on farms and consumption expenditure (Bhati *et al* 1972)

$$ie S = Y (A + C)$$

where S = Saving

Y – Gross income

A = Farm expenditure

C – Consumption expenditure

The percentage share of savings in net income of the sample households is also estimated, which is treated as rate of savings

### 2 3 6 Investment

Investment has been defined as the expenditure necessary for maintaining and improving the productivity of land resources through reclamation of land promotion of irrigation facilities investments made in machinery and major implements plant protection equipments and also investments made in livestock farm building and structures (Singh and Kahlon, 1972 Varadarajan 1995)

### 2 3 7 Capital

Capital consists of those goods produced by man and used in further production (Dictionary of Social Sciences)



## 2 3 8 Capital formation

According to Rural Credit Survey Committee Report (1954) capital formation in agriculture refers to reclamation of land bunding and other land improvements digging and repair of wells development of minor irrigation laying of orchards and plantation purchase of implements machinery and transport equipments and farm building construction

Capital formation for the present study has been defined as additions to physical man made productive assets that are durable and capable of yielding mcome over a period of time (Bhuvanewari 1993)

Items of capital formation included are

### a) Land Improvements

Improvements to land such as reclamation drainage soil conservation measures fencing etc

### b) Purchase of livestock

The purchase of livestock for expanding the size of farming busmess done during the reference year

c) Purchase of implements machinery and transport equipments and irrigation appliances

d) Digging and repair of wells

e) Construction of farm buildings

Expenditure on the construction and major repairs of cattle shed pump house and other farm sheds

f) Farm residence

Since mostly the farm produces are stored in the house itself it is also considered (In Kerala separate farm godowns are not available)

g) Purchase of land

Amount spend on purchase of land during the reference period is also included since we are considered with the capital structure of individual farmers But the land inherited to the farmer is excluded

Since the physical assets depreciate over time net capital formation becomes important Net capital formation (NCF) in the farms is estimated by subtracting depreciation and other losses from gross capital formation (GCF)

*Area of Study*

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## AREA OF STUDY

Agricultural production is very much dependent upon the climate and geographical conditions such as temperature rainfall soil etc Besides the natural factors economic factors such as population structure availability of land livestock position investment in fixed assets like implements and machinery which influence the efficiency in farming are also largely responsible in bringing about desirable changes in the farm economy Since the present study is in Kodakara Block of Thrissur district it is appropriate that as background information socio economic and related aspects of the district in general and the block in particular are examined The present chapter is intended to serve this purpose

### 3 1 Thrissur district

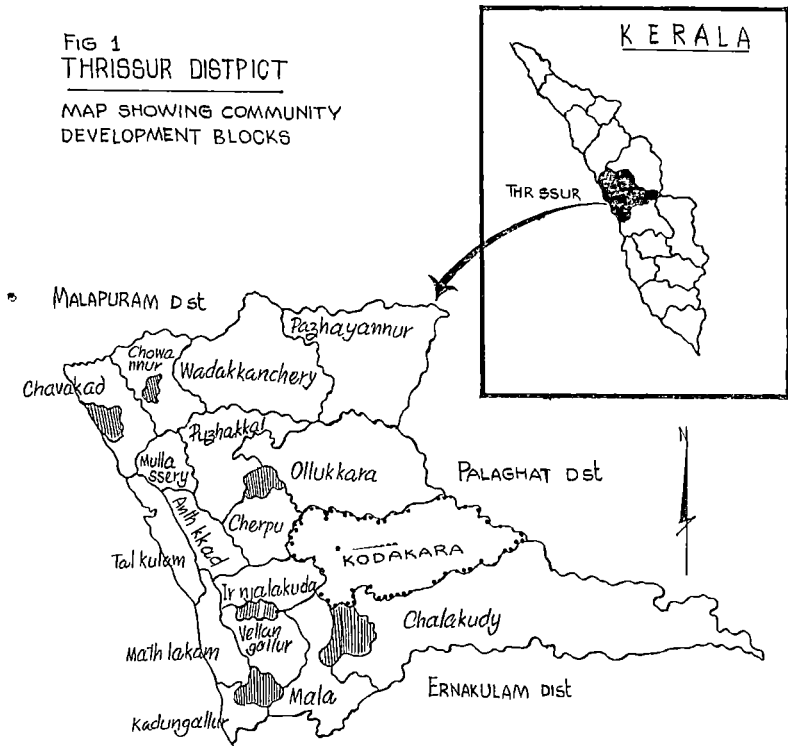
#### 3 1 1 Location and geological features

Thrissur the cultural capital of Kerala located at the central region of the state has a coastal line along its western boundary The district has a total geographical area of 299390 ha which includes high land mid land and low land Soil is mainly of laterite origin even though sandy alluvial and forest soils are also seen in certain belts Forest constitute about 34.6 per cent of the total area The net area sown is 156492 ha and area sown more than once is 57056 ha

#### 3 1 2 Climate

Thrissur experiences a tropical humid climate Annual rainfall of 3624.7 mm was received during 1993-94 of which 80 per cent was received during the South west monsoon season There were 112 rainy days in 1993 and 128 rainy days

Fig.1. Map of Thrissur District showing Community Development Blocks



in 1994. The minimum temperature goes down to 22°C and maximum temperature may go upto 36°C. The mean monthly humidity varies from 80-90 per cent during June-September and is about 58 per cent in January.

### 3.1.3 Socio economic features

More than half of the income of the district is generated from agriculture and allied activities. Important crops cultivated include paddy, coconut, arecanut, banana, rubber, cashew, betel vine, pineapple and tapioca. The land holding pattern of Thrissur shows the predominance of marginal holdings (75.4%). According to 1991 census, the district has a population of 27.34 lakh persons, out of which 20.15 lakh live in rural area. There are 13,09,751 male persons and 14,24,582 female persons, the sex ratio being 1088. The density of population per km<sup>2</sup> is fairly high viz. 902. The district was declared 100 per cent literate in 1991.

Agriculture is the major occupation of the people and other industries include tile making, coir, matches, textiles, oil mills and toddy tapping.

## 3.2 Kodakara

### 3.2.1 Location and geographic distribution

Kodakara block situated on the eastern side of the district is about 12 km from Thrissur. It is fringed by Ollukkara, Cherpu, Irinjalakuda and Chalakudy blocks and Palghat district on the eastern side. The block comes in the Mukundapuram Taluk.

Kodakara block has a total geographical area of 29,780 ha. Land use pattern for Kodakara block and Thrissur district are given in Table 3.1. Forest

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Fig.2 Map of Kodakara Block showing Panchayats

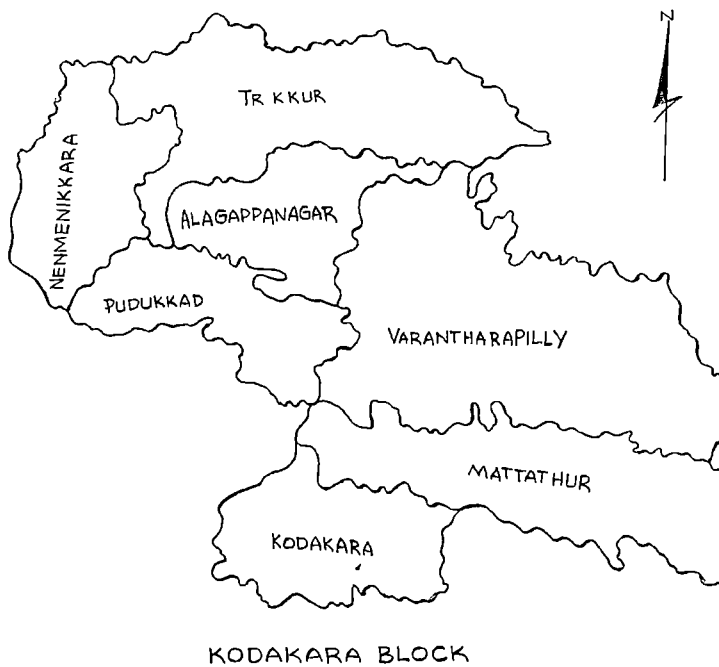


Table 3 1 Land use pattern in Thrissur district and Kodakara block (in hectare)

Items	Thrissur district	Kodakara block
Geographical area	299390 00 (100 00)	29780 00 (100 00)
Forest	103619 00 (34 61)	12411 00 (41 68)
Land put to non agricultural use	27613 00 (9 22)	2031 00 (6 82)
Other uncultivable area	8765 00 (2 97)	1951 00 (6 55)
Current fallow	4701 00 (1 57)	498 00 (1 68)
Net area sown	154692 00 (51 66)	12888 38 (43 27)
Area sown more than once	57056 00	2860 62
Total cropped area	211748 00	157490 00
Cropping intensity	136 88	122 19

Figures in parantheses show percentages to total area

Source Farm Guide and Block Development Office Kodakara



constitute relatively more area in Kodakara block (41.6 % of total area) than Thrissur district (34.61% total area). Also uncultivable area is much higher in Kodakara block compared to Thrissur district. Cropping intensity for Kodakara block is seen to be less than that of Thrissur district.

### 3.2.2 Climate

The block experiences a similar moderate climate as that of Thrissur. Extremes of temperatures are not felt. The minimum temperature goes down to 21.22°C and maximum upto 36.38°C. The rainfall distribution is bimodal. South west monsoon extends from June to September and North east monsoon from middle of October to November. Rainfall data for the year 1993-94 is given in Table 3.2. The mean annual rainfall was 3699.5 mm of which 74.50 per cent was received during the south west monsoon.

Humidity of the atmosphere influences the crop production, pest and disease emergence etc. The mean monthly humidity varied from 80-90 per cent during June to September and is about 58 per cent in January.

### 3.2.3 Soil

Soil is mostly laterite in origin but alluvial forest soil is abundant in Mattathur and Varandarappilly panchayats. In the sampled panchayats, the soil is laterite with above average fertility.

### 3.2.4 Irrigation

The main sources of irrigation water for Kodakara block are the branch canals of Peechi irrigation project, Chimony project and Chalakudy project. Major

Table 3 2 Monthly rainfall of Thrissur for the year 1993 94

Month	Rainfall (mm)
1993 July	661 60
August	286 70
September	853 00
October	519 00
November	74 60
December	18 00
1994 January	19 40
February	1 70
March	21 00
April	165 20
May	124 20
June	955 10
Total	3699 50
Average	308 20

Source Department of Ag Metereology College of Horticulture Vellanikkara

schemes cover an area of 2000 ha. Apart from this, the minor irrigation section operates through lift irrigation schemes and check dams built in various rivers. The minor irrigation schemes have a potential of irrigating 5286 ha. There are about 53 public tanks built for the purpose of irrigation. Apart from this, the Command Area Development Authority (CADA) has brought 1000 ha under irrigation and other development activities. More than 60 per cent of the farmers own wells and pumpsets, either kerosene or electric.

### 3.2.5 Cropping pattern

Coconut, paddy, arecanut, banana, rubber and betel vine are the major crops cultivated. Paddy is usually taken for two seasons, and if irrigation is there, a third crop is also cultivated. The cropping pattern of the block is given in Table 3.3. Coconut accounted for the main crop, followed by paddy. Area under rubber has increased over the years.

### 3.2.6 Land holding pattern

Table 3.4 presents the land holding pattern of the block. It can be seen that 93 per cent of the total number of holdings are owned by small farmers having less than one hectare of agricultural land and they occupied an area of 10262 ha (81.1%) only seven per cent of the number of holdings had more than one hectare of holding size and they accounted for 9.9 per cent of the total area in the block.

### 3.2.7 Demographic features

#### 3.2.7.1 Population

According to 1991 census, Kodakara block is having a population of

Table 3.3 Cropping pattern in Kodakara Block

Crop	Area (hectares)	Percentage
Paddy	2785.00 (3 seasons)	17.68
Coconut	6026.00	38.26
Arecanut	753.00	6.05
Banana	1325.00	8.41
Rubber	2689.00	17.07
Tapioca	474.00	3.05
Vegetable	402.00	2.55
Pepper	225.00	1.42
Cashew	670.00	4.25
Betel	50.00	0.31
Others	150.00	0.95
Total	15749.00	100.00

Source: Block Development Office, Kodakara

Table 3 4 Land holding pattern of Kodakara Block

Size	Number of holdings	Percentage	Area	Percentage
Below 0 02	3002	8 30	45	0 003
0 02 0 5	27001	74 70	8782	69 68
0 5 1 0	3989	11 04	1435	11 39
1 0 2 0	1645	4 55	1414	11 22
2 0 4 0	447	1 23	317	2 51
4 0 10 0	31	0 008	424	3 36
10 00 and above	11	0 003	186	1 48
<b>Total</b>	<b>36126</b>	<b>100 00</b>	<b>12603</b>	<b>100 00</b>

196268 persons of which 95485 are male and 100783 are females. The details are given in Table 3.5. The sex ratio is 1055 and the density of population is 659 per sq km. There are 38947 residential houses in the block. Literacy rate in the block is 78.2 per cent.

### 3.2.7.2 Occupation

Agriculture is the main occupation of the people and more than 85 per cent of the population depends on it. Most of the farmers are marginal and small farmers. Small and cottage industries also flourish in Pudukkad, Thrikkur and Kodakara panchayats. Tile making, coir, cardboard, paper industry, oil mills and toddy tapping are some of them.

### 3.2.8 Other infrastructural facilities

Agriculture is capital intensive and timely availability of money to dispense with the farming operations is of utmost importance. To cater to the needs of the people, nine nationalised bank branches, 12 private commercial bank branches and 13 co-operative banks (PACS) operate in this area. Cochin Co-operative Agricultural and Rural Development Bank, Irinjalakuda has its operation area in this block too.

To impart education, 27 primary schools, 17 upper primary schools and 18 high schools are functioning in the block area. Higher education scenario is not very bright, barring one polytechnic near Pudukkad. Health facilities in the form of allopathic, ayurvedic and homeopathic hospitals are available in the block.

Agricultural extension work is being effectively carried out through the Krishi Bavans in each panchayat and the Veterinary hospitals and dairy extension offices.

Table 3 5 Panchayat wise population in Kodakara Block

Particulars	Alagappa Nagar	Kodakara	Mattathur	Nenmeni kkar	Pudukkad	Thrikkur	Varanda rappilly	Total
1 Number of households	5028	5599	8655	3594	4096	4675	7601	39248
2 Total population	25353	27859	42043	18664	20871	23807	37771	196268
a) Male	12441	13472	20353	9150	10031	11567	18371	95485
b) Female	12912	14387	21690	9514	10740	12140	19400	100783
c) Scheduled Caste	2090	3561	4636	2093	3298	2354	2711	20743
d) Scheduled Tribe	42		154	3		18	270	464
3 Literates								
a) Male	10359	11071	16218	7423	8363	9450	14624	77508
b) Female	10072	11245	15736	7094	8389	9231	14233	70000
c) Total	20431	22316	31954	14517	16752	18681	28857	153508

Source Census of India 1996 Series 12 Kerala

All the panchayats are electrified and a good net work or roads (National Highway P W D roads and Panchayat roads) link the various parts of the block together



# *Materials and Methods*

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## MATERIALS AND METHODS

The present chapter deals with the materials methods and tools of analysis adopted in estimating the sources and amounts of income expenditure and saving pattern and the extent of capital formation in the farm households The study was conducted in the Kodakara Block area of Thrissur district and data for the study were generated through a sample survey involving three stage random sampling procedure

### 4.1 Sampling Procedure

The study area Kodakara Block consisted of seven panchayats from which three panchayats were selected at random The selected panchayats were Kodakara Nenmenikkara and Thrikkur From each selected panchayat two wards were selected randomly Information on sizes of all holdings were collected for each of the selected wards from the Krishi Bhavan and were stratified by holding size into four classes viz

- Class I upto and including 0.25 ha
- Class II 0.25 ha - 0.5 ha
- Class III 0.5 ha - 1 ha
- Class IV above 1 ha

From each stratum thus formed 30 farm households were selected at random Thus 120 farm households constituted the final sample

#### 4.2 Period of study

Reference period of the study was the agricultural year 1994-95. Data collection was done during the months of May-July 1995.

#### 4.3 Collection of data

Farm level data were collected from the sample households through personal interview method using a well structured and pretested schedule. Information relating to family composition, educational status of the family, occupation, income from different sources, farm and family expenditure, asset position, savings, investment etc. were collected for the reference year. The respondent farmers were generally not in the habit of maintaining records relating to farm family activities. Hence there was no alternative other than recall of memory for obtaining data. However, every effort was made to ensure that the response were as authentic as possible under these circumstances. Secondary data on land utilization, rainfall, demographic features, infrastructural facilities etc. were collected from various published and unpublished sources.

#### 4.4 Tools of analysis

Socio-economic features, income and consumption pattern of sample households was studied using tabular analysis. The following income measures associated with different cost concepts were also used:

##### 1. Gross income

Gross income of a household consisted of (a) farm income and (b) non-farm income.

## 2 Farm business income

Farm business income was calculated by taking the difference between gross income and cost  $A_1$

## 3 Family labour income

It was calculated by adding the imputed wages for family labour to the net income or the difference between gross income and cost  $B_2$

## 4 Net income

Net income of a farm household is computed as gross income from agriculture and non agricultural sources over operating expenses and taxes (Pandey *et al* 1972)

## 5 Capital output ratio

Capital output ratio reveals the physical production efficiency. It is simply the relation between capital required for the production of certain units of output (Bansal 1969)

### 4.4.2 Income disparity

Disparities in farm income and non farm income among different categories of farm households were studied using (a) Lorenz curve and (b) Gini's concentration ratio

## (a) Lorenz curve

Lorenz curve shows the percentage of income received by X per cent of the population of farmers with X varying from 0 to 100 (Chahal 1990) These curves were plotted taking cumulative percentage of income receiving units on X axis against cumulative percentage of total income received by these units on Y axis

## (b) Gini's concentration ratio

The ratio was invented by Corrado Gini in 1913. The ratio could be approximated from Lorenz curve as  $GR = A/A+B$  if the area inside the curve is designated as A and outside the curve as B

## 4.4.3 Factors influencing savings

Multivariate path analysis was done to identify the major factors influencing the savings of farm households

Variables considered for path analysis were

- S            – Saving
- X<sub>1</sub>           No. of earning members
- X<sub>2</sub>           – Education of head of family
- X<sub>3</sub>           – Net farm income
- X<sub>4</sub>           Non farm income
- X<sub>5</sub>           – Family expenditure
- X<sub>6</sub>           = Education level of family

The quantum of savmgs in each category and the aggregate was estimated and analysed usmg tabular and percentage analysis

#### 4 4 4 Asset structure of farmer

Asset structure of the farmer was estimated as at the beginning of July 1994 and tabular analysis was used to study the asset structure The items were

##### 1) Land

Land has been valued on the basis of market value prevailing in the area This procedure was adopted owing to absence of records showing the actual cost of land

##### 2) Farm buildings

All structures belonging to farmers other than residential houses were evaluated as farm building Reported present values were used to evaluate farm buildings

##### 3) Residential building

Houses were valued on the basis of the value that they fetch at the time of survey based on their age type etc

##### 4) Farm equipments

Farm equipments were evaluated at their reported present values

## 5) Livestock

The values of the livestock were their reported present values

## 6) Wells tanks etc

These have been valued at their approximate cost of construction net of depreciation

## 4.4.5 Capital formation

Items of capital formation included viz land improvements purchase of livestock implements and machinery digging and repair of wells construction of farm buildings farm residence and ~~was~~ purchase of land during the reference period were studied Capital stocks at the beginning and end of the period (one year) were listed out and addition (or difference) constituted capital formation in the reference year (Bhuvanewari 1993) The total value of all investments valued at the market rates reported by farmers was used as a summary measure of gross capital formation in farms

Thus  $K_t - K_{t-1} = I_t$  Gross capital formation

$I_t - \beta = NCF_t$  Net capital formation

where

$K_t$  Values of productive assets at the end of  
June 1995

$K_{t-1}$  Values of productive assets at the beginning  
of July 1994

$I_t$  = Gross capital formation

$\beta$  = Depreciation and other losses

#### 4 4 6 Net capital formation

Net capital formation was arrived at after allowing for depreciation and other losses. For calculating depreciation the guide lines suggested by ARDC/NABARD\* were followed wherever possible.

##### 1 Live stock

i Purchase price was determined as reported by the respondents during the year

ii Economic life period of animal was assumed to be six year

##### 2 Wells and pumpset

i The life period of well was 40 years

ii The life period of pumpset was 15 years

iii The residual value of wells at the end of 20th year will be equal to 50 per cent of initial cost

iv Residual value of the pumpset would be 66 per cent of cost of investment

\* National Bank for Agriculture and Rural Development 1992 List of Unit costs for Approved Investments in Kerala and U T of Lakshadweep NABARD Thiruvananthapuram 25

National Bank for Agriculture and Rural Development 1988 *Calf Rearing in North Arcot Salem and Coimbatore Districts of Tamil Nadu* An ex post evaluation study p 37

Centre for Agriculture and Rural Development studies 1987 ARDC Financed Investment in Dug wells An Ex post Evaluation in Salem District Tamil Nadu p 57



### 3 Tractors

- i Economic life of tractor was 12 years
- ii Salvage value of tractor at the end of 12th year was 10 per cent of the capital cost

For pucca building 5 per cent of the value of the building was taken as depreciation and for kutcha was taken as 10 per cent (Varadarajan 1994) The economic life of a biogas plant was assumed to be 10 years and depreciation of 10 per cent has been given

The rate of capital formation (RCF) in the year  $t$  was calculated for the aggregate

$$RCF_t = \frac{NCF_t \text{ in rupees per farm}}{K_{t-1} \text{ in rupees per farm}} \times 100$$

$NCF_t$  Net capital formation in year  $t$

$K_{t-1}$  Value of productive assets at the end of June 1994

## *Results and Discussion*

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## RESULTS AND DISCUSSION

This chapter is divided into five sections which deals with the results of the study and discussion thereon. The general socio economic characteristics of the sample farm households is described in the first section. Section two deals with the income and expenditure pattern of the farm households and the income measures in relation to different cost concepts. Savings of the sample households and the factors influencing savings are included in the third section. Asset structure of the farmer and capital formation are included in the fourth section and section five deals with the constraints in capital formation in the study area.

### 5.1 General economic and social conditions of the sample

A knowledge of the socio economic characteristics of the sample farm households would be useful for understanding the implications of the analysis and its generalisation. In this section an attempt is made to present the salient features of the social and economic conditions viz family size, age and sex, literacy, occupation, cropping pattern etc. of the sample respondents.

#### 5.1.1 Family size

The respondent farmers were classified based on their family size and their distribution is given in Table 5.1. As much of 44.20 per cent of the sample farm households came under the size group of 5 to 6 members and 33.30 per cent came in the size group of 1 to 4 members. The result was in agreement with the general picture of existence of nuclear families comprising of father, mother and two children which constituted a four member family. In the study area 44.2 per

Table 5 1 Classification of respondents according to their family size

Category of farm	Family size and number of families				Total
	1 4	5 6	7 8	9 and above	
Class I	15 (50 00)	13 (43 33)	2 (6 67)		30 (100 00)
Class II	11 (36 67)	15 (50 00)	4 (13 33)		30 (100 00)
Class III	9 (30 00)	14 (46 67)	3 (10 00)	4 (13 33)	30 (100 00)
Class IV	5 (16 67)	11 (36 67)	9 (30 00)	5 (16 67)	30 (100 00)
All farms	40 (33 30)	53 (44 20)	18 (15 00)	9 (7 50)	120 (100 00)

Figures in parantheses show percentage to total

cent of households had 5 to 6 members which comprised of a nuclear family along with the parents of either the head or his wife. Remaining 22.5 per cent families had more than seven members in their family. Out of the 30 farm households in Class I 50 per cent families had only 1 to 4 members in them and 43.33 per cent had 5 to 6 members. In Class II 50 per cent farm households had 5 to 6 members and 37 per cent had 1 to 4 members in their family. Out of the 30 families in Class III 7 per cent had less than 6 members in them and only 13 per cent had more than 7 members. In Class IV, 53 per cent farm households had less than 6 members and 47 per cent had more members in their family.

#### 5.1.2 Age

Classification of the members of the respondent families on the basis of age is given in Table 5.2. As much as 39.39 per cent of the total members were adult male and 35.49 per cent were adult female. This was in contrast to the general scenario of Kodakara block where the sex ratio is 1055. This may be only an incidental phenomenon and no other particular reason could be attributed. It could be observed that in all the classes also the number of males were more than that of females. Adolescents were more in Class I followed by Class III. Similarly population of children was more in Class I followed by Class II and Class III. About 7.67 per cent was in the age group of 12 to 21 years and children constituted about 17 per cent of the population.

#### 5.1.3 Education

Classification of heads of households according to their educational status is given in Table 5.3. Analysis showed that none of the farmer was illiterate which

Table 5 2 Distribution of respondent family members according to age

Group	Number of persons				All farms
	Class I	Class II	Class III	Class IV	
<b>Adult</b>					
<b>Male</b>	51 (36 69)	59 (38 81)	68 (37 99)	84 (43 09)	262 (39 39)
<b>Female</b>	47 (33 81)	54 (35 53)	67 (37 43)	68 (34 87)	236 (35 49)
<b>Adolescent (12 21 years)</b>	15 (9 27)	13 (8 55)	14 (7 82)	9 (4 62)	51 (7 67)
<b>Children (5 12 years)</b>	19 (13 67)	21 (13 82)	22 (12 29)	23 (11 79)	85 (12 78)
<b>Children (Less than 5 years)</b>	7 (5 04)	5 (3 29)	8 (4 47)	11 (5 64)	31 (4 66)
<b>Total</b>	139 (100 00)	152 (100 00)	179 (100 00)	195 (100 00)	665 (100 00)

Figures in parantheses show percentages to total

Table 5.3 Classification according to education of head of family

Sl No	Category of farm	Education of head and number of households				Total
		Primary	Secondary	SSLC	Above SSLC	
1	Class I	14 (46.67)	4 (13.33)	10 (33.33)	2 (6.67)	30 (100.00)
2	Class II	20 (66.67)	5 (16.67)	4 (13.33)	1 (3.33)	30 (100.00)
3	Class III	15 (50.00)	4 (13.33)	9 (30.00)	2 (6.67)	30 (100.00)
4	Class IV	17 (56.67)	3 (10.00)	2 (6.67)	8 (26.67)	30 (100.00)
Total		66 (55.06)	16 (13.33)	25 (20.80)	13 (10.83)	120 (100.00)

Figures in parantheses show percentages to total

Table 5.4 Classification according to education level of all members of family

Category	Primary	Secondary	SSLC	Above SSLC	Education level of family (T <sub>1</sub> ved score scale)
	--	--		--	
Class I	52	23	21	28	16.63
Class II	65	35	21	20	16.87
Class III	53	25	33	41	22.77
Class IV	52	23	29	59	25.37
All farms	222	106	104	148	20.91

-- --



could be attributed to the Adult Education Programme and high literacy rate prevalent in Kerala. Out of the total respondents 55 per cent (66 numbers) had only primary education. 13.33 per cent had secondary education. 20.83 per cent upto SSLC level and only 10.83 per cent had acquired higher education (above SSLC i.e. degree and others). Primary educated heads were more in the second category of farm size followed by Class IV and Class III. Persons having education above SSLC was highest among the Class IV category of farm household (26.67 %).

Classification according to education level of the family is represented in Table 5.4. The education level of the family was estimated using the socio economic status scale of Trivedi (1963). Analysis showed that the score was highest for Class IV farmers (25.37) followed by Class III (22.77), Class II (16.87) and Class I (16.63). The average score of the whole sample was estimated as 20.91.

#### 5.1.4 Occupation

Distribution of heads of households according to their occupation is shown in Table 5.5. Only 11.6 per cent of the total respondents had agriculture as their sole occupation. Agriculture and services (both Government job and private jobs) accounted for 63.33 per cent of the occupation. Agriculture along with business was the occupation of 17.5 per cent of total sample households and it was more in Class IV followed by Class II. Agriculture along with business and services accounted for 7.5 per cent. In the first category (Class I) of farm households none had agriculture as the sole occupation but 90 per cent had service along with agriculture as the occupation. This table clearly reveals the fact that small and marginal farmers cannot survive depending upon agriculture alone.

Table 5.5 Distribution of farm households according to occupation

Sl No	Occupation	No of households				
		Class I	Class II	Class III	Class IV	Class V
1	Agriculture alone		2 (6.67)	8 (26.67)	4 (13.33)	14 (44.33)
2	Agriculture + Business	2 (6.67)	6 (20.00)	4 (13.33)	9 (30.00)	21 (70.00)
3	Agriculture + Service	27 (90.00)	19 (63.33)	16 (53.33)	14 (46.67)	76 (253.33)
4	Agriculture + Business + Service	1 (3.33)	3 (10.00)	2 (6.67)	3 (10.00)	9 (30.00)
	Total	30 (100.00)	30 (100.00)	30 (100.00)	30 (100.00)	120 (400.00)

(Figures in parantheses show percentage to total)

Table 5.6 Distribution of farm households according to their main occupation

Sl No	Category of farm	No of households			
		Agriculture	Service	Business	Total
1	Class I	8 (26.67)	19 (63.33)	3 (10.00)	30 (100.00)
2	Class II	9 (30.00)	17 (56.67)	4 (13.33)	30 (100.00)
3	Class III	18 (60.00)	9 (30.00)	3 (10.00)	30 (100.00)
4	Class IV	20 (66.67)	5 (16.67)	5 (16.67)	30 (100.00)
5	All farms	55 (45.80)	40 (41.60)	15 (13.60)	120 (100.00)

(Figures in parentheses show percentages to total)

Table 5.6 presents the distribution of farm households according to their main occupation. Some of the household members were involved in more than one occupation. For identifying the main occupation, the highest income from a single source has been taken as the criterion. Of all the sample households, 45.8 per cent had agriculture as the single highest source of income, followed by service and business as the main occupation to an extent of 41.6 and 13.6 per cent respectively. Class-wise analysis showed that as much as 66.67 per cent of the sample farm households in Class IV depended on agriculture and the trend shows that as the farm size increases, agriculture happened to be the main occupation. In Class I, 63.33 per cent of the households had service as the main occupation, the share of which declined in the other classes as holding size increased. Farm households with business as the main occupation was highest in Class IV, followed by Class II.

#### 5.1.5 Ownership holding

The total land held by the sample farmers was apportioned on the basis of size of holding and is presented in Table 5.7. The smallest size Class I held only 5.54 per cent of land area, followed by 13.23 per cent in the next higher Class II, 23.33 per cent in the third higher Class III and 57.90 per cent in the Class IV. Average size of holdings was 0.78 hectares for the sample, which was more than double than that for Kerala (0.34 ha as per 1990-91 census). Average size of holding were 0.17 ha in Class I, 0.41 ha in Class II, 0.73 ha in Class III and 1.80 in Class IV.

Table 5 7 Distribution of respondents according to ownership holding

Category of farm	No of farmers in each class	Area (in hectares)	
		Area	Average size of holding
Class I	30 (25 00)	5 18 (5 54)	0 17
Class II	30 (25 00)	12 37 (13 23)	0 41
Class III	30 (25 00)	21 82 (23 33)	0 73
Class IV	30 (25 00)	54 16 (57 90)	1 80
All farms	120 (100 00)	93 53 (100 00)	0 78

(Figures in parentheses show percentages to total)

## 5 1 6 Cropping pattern

The cropping pattern indicated the economic significance of different crops in the region. The area under paddy was directly obtained by asking the farmer. To get the gross cropped area of paddy the cultivated area in all the seasons were added together. For coconut, arecanut, rubber etc. the number of plants/palms were obtained which when multiplied by the spacing recommended in Package of Practices of Kerala Agricultural University gave the area. Table 5.8 shows the cropping pattern in the sample farms. Major crops grown in the area were rice, coconut, banana, arecanut, rubber, betel, tapioca, cashew etc. Rice was grown in 38.61 hectares followed by coconut (35.16 ha) for the aggregate. Rubber is now being grown in more and more area and it occupied 9.26 ha, mostly small and marginal. Classwise analysis showed that plantation crops like coconut, arecanut and rubber occupied more area in Class IV farms. Out of the total 9.26 ha of rubber grown, 6.50 ha was grown by large (Class IV) farmers. Similarly, more than half of the area under banana was accounted for by them.

Cropping intensity, which reveals the degree of land utilization in crop production worked out to be 114.21 for all farms. Cropping intensity referred to the rate of gross cropped area to the net sown area, expressed as percentage. Cropping intensity was highest (132.90) for Class III farmers, followed by Class II. The low value of cropping intensity for Class IV implied the need for more effective utilization of land and other available resources. The low value (104.48) of cropping intensity for Class IV farms was due to the comparatively less area under paddy. It may be noted that whereas for estimating cropping intensity seasonal crops are ranked once, twice or thrice as the number of crops taken, annual and perennial

Table 5 8 Cropping pattern in the sample farms

Crops	Area (hectares)				All farms
	Class I	Class II	Class III	Class IV	
Paddy	1 24	6 89	14 95	15 53	38 61
Coconut	2 65	4 88	6 84	20 79	35 16
Banana	0 61	0 94	1 50	3 96	7 01
Arecanut	0 53	0 78	1 21	2 98	5 50
Rubber		0 82	1 94	6 50	9 26
Tapioca	0 01	0 18	0 60	0 40	1 19
Other crops	0 74	0 92	1 92	5 50	9 14
Total (Gross cropped)	5 78	15 41	28 96	55 72	105 87
Net sown area	5 18	12 37	21 82	53 33	92 70
Cropping intensity	111 58	119 40	132 90	104 48	114 21

crops are counted only once Hence more appropriate procedure seem to be to count annuals and perennials thrice

## 5 2 Income and Expenditure

### 5 2 1 Source of income of farm households

Here the income of the sample farmers from all the sources has been discussed as it influences the level of savings which in turn influences the level of capital formation The income details of the sample farm households for the reference year are presented in Table 5 9 Income of farm households consisted of both farm income and non farm income It could be observed from the table that the total income as well as its constituents of farm income and non farm income were the highest in Class IV and both the constituents as well as the total income tended to vary with size of holding The relative share of non farm income to total income tended to be inversely related to size In the case of Class I farms non farm income was the major source of total income accounting to about 89 20 per cent where as farm income contributed only 10 80 per cent The small sized holding could not provide for all the requirements of the farm household and hence such households had to depend more on non farm activities Farm income contributed 16 75 per cent 27 90 per cent and <sup>39</sup>75 per cent respectively of the total income of Class II Class III and Class IV farms At the aggregate the total income was Rs 39019 30 of which 27 60 per cent was from farm and 72 40 per cent was from non farm activities

It is significant to note that the absolute levels of both farm and non farm income tended to increase with size of holding while in the case of farm income it is the ownership of assets which determine the level of income there is no such direct relation as far as non farm income is concerned The correlation between

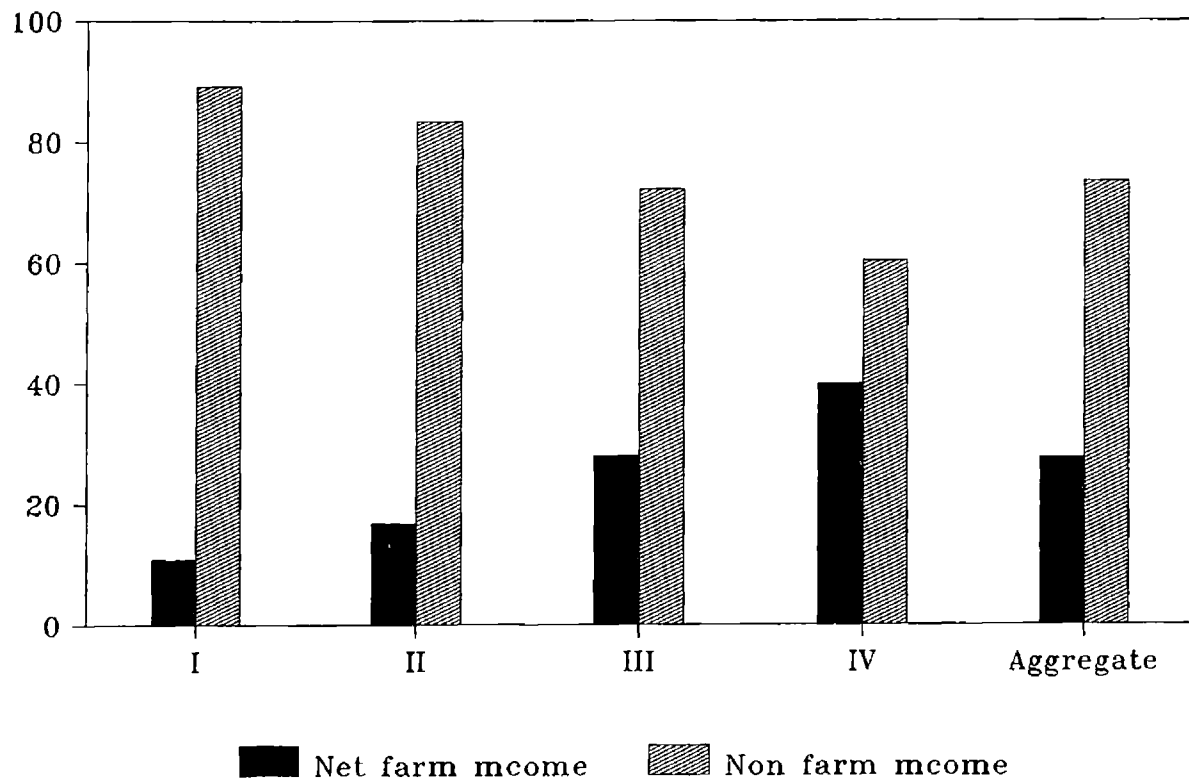


Table 5.9 Average income of farm households (Rs.)

Source	Category				All farms
	Class I	Class II	Class III	Class IV	
Net farm income	2465.20 (10.80)	5566.15 (16.75)	11028.60 (27.90)	24029.40 (39.75)	10772.30 (27.60)
Non farm	20367.65 (89.20)	27668.65 (83.25)	28530.00 (72.10)	36421.65 (60.25)	28247.00 (73.40)
Total	22832.85 (100.00)	33234.80 (100.00)	39558.60 (100.00)	60451.05 (100.00)	39019.30 (100.00)

Figures in parentheses show percentages to total

**Fig.3 Average income of farm households (%)**



non farm income and size of holding appears to be expressed indirectly through the effect of the latter on human capital development

The break up of component wise income in the farm is given in Table 5.10. The main source of farm income in all categories was crops which contributed to 78.05 per cent of the total farm income. The contribution from crops was highest in Class IV (85.85 %) followed by Class III, Class II and Class I. Thus contribution of crop income to total farm income was directly related to size of holding. The next major item of farm income was livestock with an overall contribution of 20.00 per cent of total farm income. The contribution from livestock was inversely related to size of holding. As can be seen, livestock accounted for 38.05 per cent of farm income in Class I and 28.60 per cent of farm income in Class II. The small farmers relied upon livestock as a subsidiary enterprise in farming which fetched them some benefit.

Other items of farm income like sale and hiring of farm assets and equipments was relatively more for the Class I farmers (3.55 %) followed by Class III. Large farmers seldom had to sell their land and livestock to raise funds for various activities. At the aggregate level they contributed to 1.95 per cent to the farm income.

A detailed analysis of the various sources of non farm income is just worth. Table 5.11 showed that services both government job and private jobs were the major sources of non farm income followed by business. When all the farms were considered 88.55 per cent of the total non farm income was contributed by services followed by 10.07 per cent contribution from business and 1.48 per cent from others. Services accounted for 92.55 per cent of the income of Class I farm

Table 5 10 Average farm income of farm households

Source	Rupees per farm household				All farms
	Class I	Class II	Class II	Class IV	
Crop	4967 25 (58 40)	9397 40 (68 85)	16801 30 (77 75)	33078 80 (85 85)	16061 20 (78 05)
Livestock	3235 70 (38 05)	3901 90 (28 60)	4360 75 (20 20)	4932 25 (12 80)	4107 65 (20 00)
Others	301 30 (3 55)	346 00 (2 55)	449 35 (2 05)	502 90 (1 35)	399 90 (1 95)
Total	8504 25 (100 00)	13645 30 (100 00)	21611 40 (100 00)	38513 95 (100 00)	20568 75 (100 00)

Figures in parentheses show percentages to total

Table 5 11 Average non farm income of farm households (Rs )

Source	Category of farm households				All farms
	Class I	Class II	Class III	Class IV	
Services	18848 70 (92 55)	24520 75 (88 60)	24980 20 (87 55)	31704 40 (87 05)	25113 50 (88 55)
Business	1366 60 (6 70)	2791 20 (10 10)	3068 35 (10 75)	4150 55 (11 40)	2844 20 (10 07)
Others	152 35 (0 75)	356 70 (1 30)	481 45 (1 70)	566 70 (1 55)	389 30 (1 48)
Total	20367 65 (100 00)	27668 65 (100 00)	28530 00 (100 00)	36421 65 (100 00)	28247 00 (100 00)

Figures in parentheses show percentages to total

households followed by business (6.70 %) and sale of household durables ornaments accounted for 0.75 per cent of their non farm income. Business had a considerable contribution to the non farm income of Class II and Class IV farms (10.10 % and 11.40 % of their respective non farm income). The ability of the members of the farm households of Class II and Class IV to get Government job or their entrepreneurship might be the reason for this phenomenon. In Class III 87.05 per cent being contributed by services and 10.75 per cent from business. Sale of ornaments etc. was highest for the Class III farm households.

The above analysis proved that small sized farm households were switching over from farm to non farm activities. Unremunerative nature of agriculture, non availability of land, labour and the unbelievably high wage rates may be some of the reasons for this attitude.

#### 5.2.2 Expenditure pattern of farm households

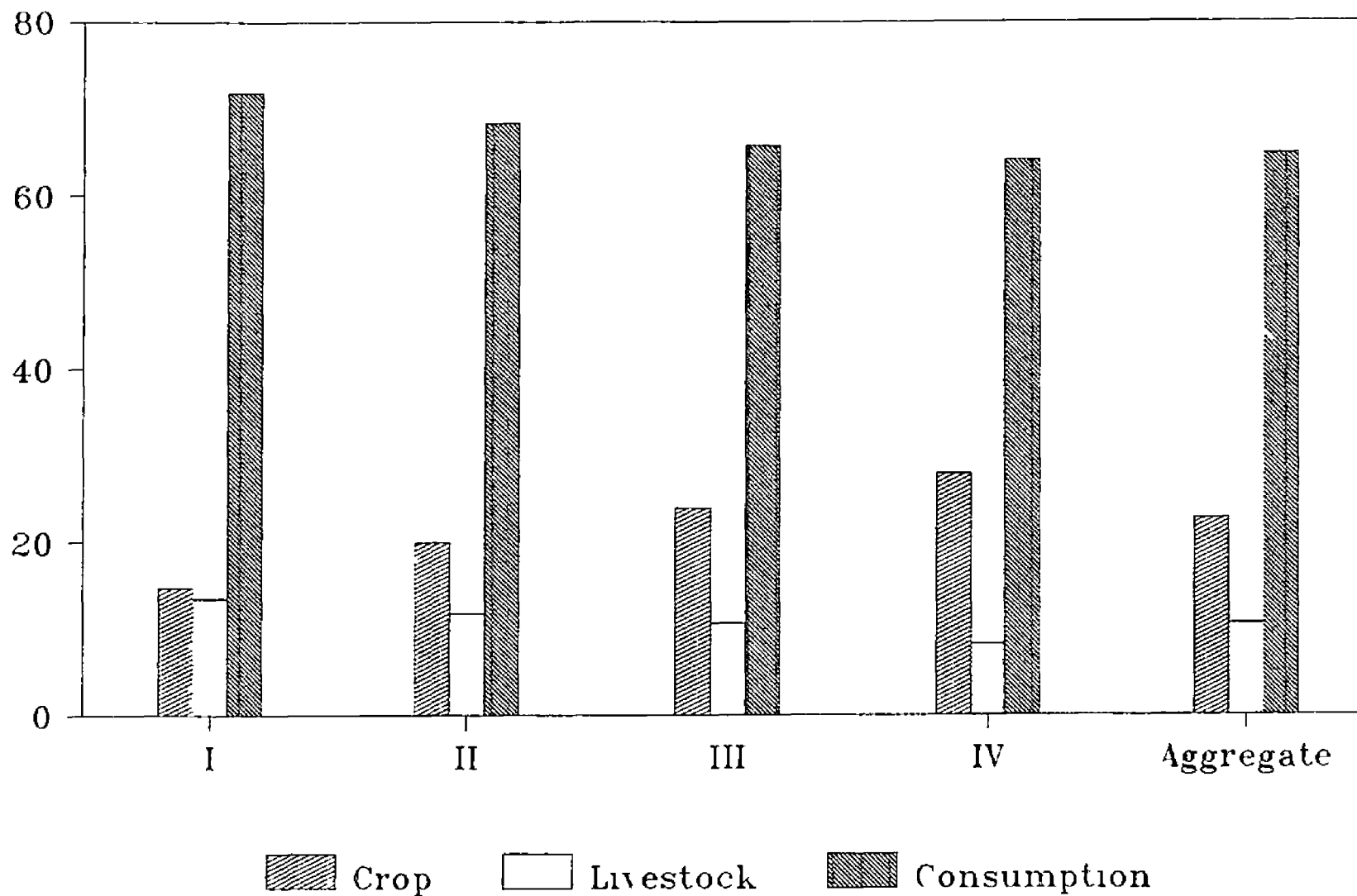
Expenditure of a farm household included expenditure on crop, livestock and consumption purposes. Expenditure pattern of farm households is given in Table 5.12. At the aggregate level, consumption expenditure accounted for 64.80 per cent followed by crop (22.70 %) and livestock. Classwise analysis also showed that consumption expenditure was the major item of expenditure followed by crop and livestock. Consumption expenditure was the highest for Class I farmers (71.85 %) followed by Class II, Class III and Class IV. In the case of crops, Class IV farmers spent 27.80 per cent followed by Class III, Class II and Class I. Livestock expenditure was highest for Class I (13.45 %) and lowest for Class IV (8.15 %).

Table 5 12 Average expenditure of farm households

Item	Category of farm household				All farms
	Class I	Class II	Class III	Class IV	
Crop	3154 80 (14 70)	5081 75 (19 90)	7331 70 (23 80)	11201 50 (27 80)	6692 35 (22 70)
Livestock	2884 25 (13 45)	2997 35 (11 75)	3251 10 (10 55)	3283 40 (8 15)	3104 00 (10 50)
Consumption	15400 40 (71 85)	17441 50 (68 35)	20203 50 (65 65)	25800 00 (64 05)	19711 35 (64 80)
Total	21439 45 (100 00)	25520 60 (100 00)	30786 30 (100 00)	40284 90 (100 00)	29507 70 (100 00)

Figures in parentheses show percentage to total

**Fig.4 Average expenditure of farm households (%)**





### 5 2 2 1 Farm Expenditure

Break up of farm expenditure as crop and livestock with their items are given in Table 5 13 and 5 14 respectively Among the various items of crop expenditure labour accounted for 59 32 per cent followed by material cost (36 50 %) and others (4 18 %) Classwise analysis showed that material cost accounted for maximum in Class I (42 39 %) followed by Class II (37 89 %) Labour accounted for 61 26 per cent in Class IV followed by Class III and Class II (59 16 and 58 70%) Other costs was highest in Class IV (4 74 %) followed by Class III (4 04%) Other costs included hiring charges of implements irrigation cess electricity bills and other costs and interest on working capital

Livestock expenditure details were given in Table 5 14 Feed accounted for the maximum expenditure about 62 70 per cent followed by labour (34 07 %) Classwise analysis showed that in all the classes feed was the major item of expenditure Labour accounted for 38 11 per cent of the expenditure in Class IV followed by Class III and Class II Other items like veterinary and medical charges accounted for 3 23 per cent of the expenses

### 5 2 2 2 Household consumption expenditure

Current consumption expenditure of the family included expenses for food clothing fuel and lighting education travel medicine social ceremonies etc Table 5 14 gives the break up of consumption expenditure

Food was the major item of consumption expenditure accounting to 69 05 per cent followed by clothing (11 25 %) fuel and lighting (4 45 %)

Table 5 13 Crop expenditure per farm

Item	Rupees per farm				
	Class I	Class II	Class III	Class IV	All farms
1 Materials	1337 40 (42 39)	1925 70 (37 89)	2698 00 (36 80)	3808 35 (34 00)	2442 35 (36 50)
2 Labour	1694 00 (53 69)	2982 75 (58 70)	4337 20 (59 16)	6864 65 (61 26)	3969 65 (59 32)
3 Others	124 40 (3 92)	173 30 (3 41)	296 50 (4 04)	528 15 (4 74)	280 35 (4 18)
Total	3154 80 (100 00)	5081 75 (100 00)	7331 70 (100 00)	11201 15 (100 00)	6692 35 (100 00)

Figures in parenthesis show percentages to total

Table 5 14 Average expenditure for livestock

Items	Rupees per farm household				
	Class I	Class II	Class III	Class IV	All farm
1 Feed	1979 30 (68 62)	1953 75 (65 18)	1939 25 (59 65)	1911 65 (58 22)	1945 95 (62 70)
2 Labour	823 65 (28 56)	959 20 (32 00)	1195 65 (36 78)	1251 35 (38 11)	1057 50 (34 07)
3 Others	81 30 (2 82)	84 40 (2 82)	116 20 (3 57)	120 40 (3 67)	100 55 (3 23)
Total	2884 25 (100 00)	2997 35 (100 00)	3251 10 (100 00)	3283 40 (100 00)	3104 02 (100 00)

Figures in parentheses show percentages to total

education (3.60 %) and travelling expenses (2.68 %). In the various classes also food was the major item of consumption expenses. In Class I food accounted for 71.50 per cent of the total consumption expenditure followed by clothing (11.35 %), fuel and lighting (4.01 %) and education (2.60 %). A similar pattern was shown by Class II, Class III and Class IV farm households.

Other items of consumption expenditure of the households were travel, medicine, social ceremonies and taxes. At the aggregate level, medicine, social ceremonies, taxes and miscellaneous accounted for 2.60, 1.95, 2.40, 0.55 and 4.15 per cent respectively of the total consumption expenses. Taxes like land revenue and agricultural income tax formed a very meagre part of consumption expenditure. In Class I, travel (2.02 per cent) followed by social ceremonies (2.34 %), miscellaneous (3.60 %) was the expenditure pattern. In all classes miscellaneous items were more. Class III farmers spent more on social ceremonies (2.60 %) followed by Class II (2.50 %), Class I (2.34 %). Miscellaneous items included expenditure for cosmetics, lottery, etc.

The analysis showed that the consumption expenditure of the farm households increased as the farm size and family size increased (Parthasarathy 1972) while the percentage expenditure on food decreased. About 50.50 per cent of the total income was spent on consumption at the aggregate level. The percentage was highest for Class I followed by Class II, Class III and Class IV, accounting to 64.45, 52.50, 51.07 and 42.68 respectively. This is in confirmation with Engle's law which states that the proportion of income spent on food tends to decline as income grows with given tastes or preferences.

Table 5 15 Average consumption expenditure of farm households (Rs )

Items	Category of farm household				
	Class I	Class II	Class III	Class IV	All farms
Food	11008 60 (71 50)	12454 00 (71 40)	13798 65 (68 30)	17179 50 (66 60)	13610 20 (69 05)
Clothing	1749 20 (11 35)	1925 00 (11 05)	2200 00 (10 90)	3014 40 (11 70)	2222 15 (11 25)
Fuel and lighting	618 30 (4 01)	792 60 (4 50)	851 70 (4 20)	1264 70 (4 90)	881 70 (4 45)
Education	402 30 (2 60)	509 65 (2 90)	795 00 (3 90)	1134 30 (4 40)	710 30 (3 60)
Travel	311 65 (2 02)	415 00 (2 35)	651 65 (3 25)	651 60 (2 50)	567 50 (2 60)
Medicine	328 30 (2 13)	398 80 (2 30)	393 35 (1 95)	426 70 (1 65)	386 80 (1 95)
Social ceremonies	360 00 (2 34)	388 90 (2 20)	525 50 (2 60)	648 90 (2 50)	480 80 (2 40)
Taxes	62 50 (0 40)	74 55 (0 40)	133 50 (0 65)	166 40 (0 64)	109 25 (0 55)
Miscellaneous	559 55 (3 60)	483 00 (2 90)	854 15 (4 25)	1314 10 (5 10)	802 70 (4 15)
Total	15400 40 (100 00)	17441 50 (100 00)	20203 50 (100 00)	25800 00 (100 00)	19711 35 (100 00)

Figures in parentheses show percentages to total

Class wise analysis also showed that Class IV households spent highest amount on education (4.40 %) followed by Class III farm households (3.90 %). This was in agreement with the education level attained by the farm households. The scores for education level of the family were estimated on the basis of Trivedi scale (see Annexure II). The scores were 16.63, 18.87, 22.77, 25.37 respectively for Class I, Class II, Class III and Class IV farm households.

### 5.2.3 Income measures in relation to different cost concepts

Gross income of a farm consisted of crop income and livestock income. Crop income consisted of value of the main product and by product valued at their farm gate price and livestock income consisting of income from milk, dung and eggs valued at the prices prevailing in the area or as reported by the respondents and sale of animals. Table 5.16 gives the various income measures of the sample farm households. Gross income of all farms was estimated to be Rs 16061.20. It was highest in Class IV which came to Rs 31704.40 followed by Class III with Rs 16801.30 and Class II with Rs 9397.40.

Farm business income of farm households was estimated as the difference between gross income and cost  $A_1$  both at the aggregate level and for different classes of farm households. Farm business income at the aggregate level was Rs 9368.55. Classwise analysis revealed that Class IV farms amounted the highest farm business income of Rs 20502.90 followed by Class III and Class II farms.

Family labour income was worked out as the difference between gross income and cost  $B_2$ . At the aggregate level family labour income amounted to

**Table 5 16 Income measures in relation to different cost concepts in the farm households (Rs per farm)**

Particulars	Category				
	Class I	Class II	Class III	Class IV	Aggregate
Gross income	4967 25	9397 40	16801 30	31704 40	16061 20
Farm business income (GI - Cost A <sub>1</sub> )	1812 45	4315 65	9469 60	20502 90	9368 85
Family labour income (GI - Cost B <sub>2</sub> )	1241 75	3308 70	7704 90	17017 50	7890 70
Net income at cost C <sub>1</sub> (GI - Cost C <sub>1</sub> )	1456 95	3704 20	8407 2	19065 90	8743 55
Net income at cost C <sub>2</sub> (GI - Cost C <sub>2</sub> )	960 25	2765 20	6726 90	15895 50	7136 95
Benefit cost ratio	1 2	1 41	1 67	2 01	1 79

Table 5 17 Capital output ratio in sample farms

Category of farm	Ratio
Class I	5 90
Class II	3 95
Class III	1 36
Class IV	1 13
Aggregate	3 08
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Rs 7890 70 Among the different categories Class IV farm households had the highest family labour income amounting to Rs 17017 50 followed by Class III (Rs 7704 90) and Class II farm households (Rs 3308 70) Gross income farm business income and family labour income were the lowest for Class I farm households and it increased as holding size increased

Net income at the aggregate level worked out a cost  $C_2$  came to be Rs 7136 95 It was the highest for Class IV farmers with Rs 15895 50 followed by Class III farms with Rs 6726 90 Net income registered the lowest value for Class I farm households amounting to Rs 960 25 It may be attributed to the combined effect of rental value of own land and imputed family labour which were much higher for Class I farms

Benefit-cost ratio estimated at Cost  $C_2$  basis worked out to 1 29 at the aggregate level Classwise analysis showed that B C ratio was the maximum for Class IV farm (2 01) followed by Class III (1 67) and Class II (1 41) respectively It was the lowest for Class I farm households (1 2)

From the foregoing analysis it was clear that net income and Benefit Cost ratio were much higher for class IV farm households and they showed an increasing trend as the farm size increased Chahal (1990) also obtained similar results

The per hectare farm income was estimated as Rs 14501 18 Rs 13575 98 Rs 15107 68 and Rs 13349 67 for Class I Class II Class III and Class IV farms respectively It showed a decreasing trend except in Class III Bansal (1969) got decreasing per hectare income as the cultivating farm size increased The

cropping pattern and the under utilization of resources may be attributed to be the reason for this

#### 5.2.4 Capital output ratio

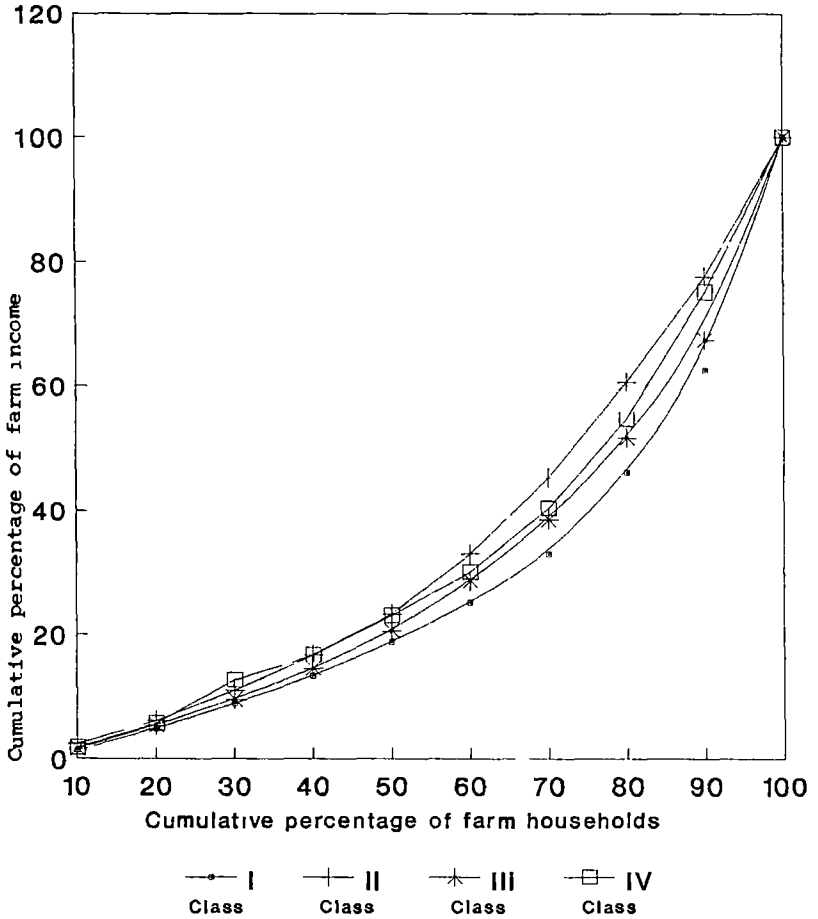
Capital output ratio gives the amount of agricultural capital that has been used over the years to supply a unit of agricultural output by the farm. Capital output ratio of the sample is presented in Table 5.17. Capital output ratio showed a decreasing trend with increase in farm size. It was highest for Class I farms with (5.90) followed by Class II (3.95), Class III (1.30) and Class IV (1.13). At the aggregate level capital output ratio worked out to 3.08 which shows that for every unit of output 3.08 units of capital has to be expended. Bansal (1969) also observed that as the farm size increased the capital output ratio declined.

#### 5.2.5 Disparity in income

The Lorenz curve analysis and estimation of Gini's ratios were taken up for examining the levels of disparity in farm income and non farm income. The curve depicted the relative position of different categories of farm households from the line of perfect equality. The diagonal line represented the equal distribution line. The curve close to the diagonal line indicated least disparity and the curve farthest to the diagonal line indicated greatest disparity in income distribution.

A value of zero for the Gini's ratio denoted a perfect equal distribution and a value of one indicated the worst possible distribution. Hence the higher the estimates of Gini's ratio the more the disparity and vice versa.

**Fig.5 Lorenz curves depicting farm income disparity**



**Fig.6 Lorenz curves depicting non-farm income disparity**

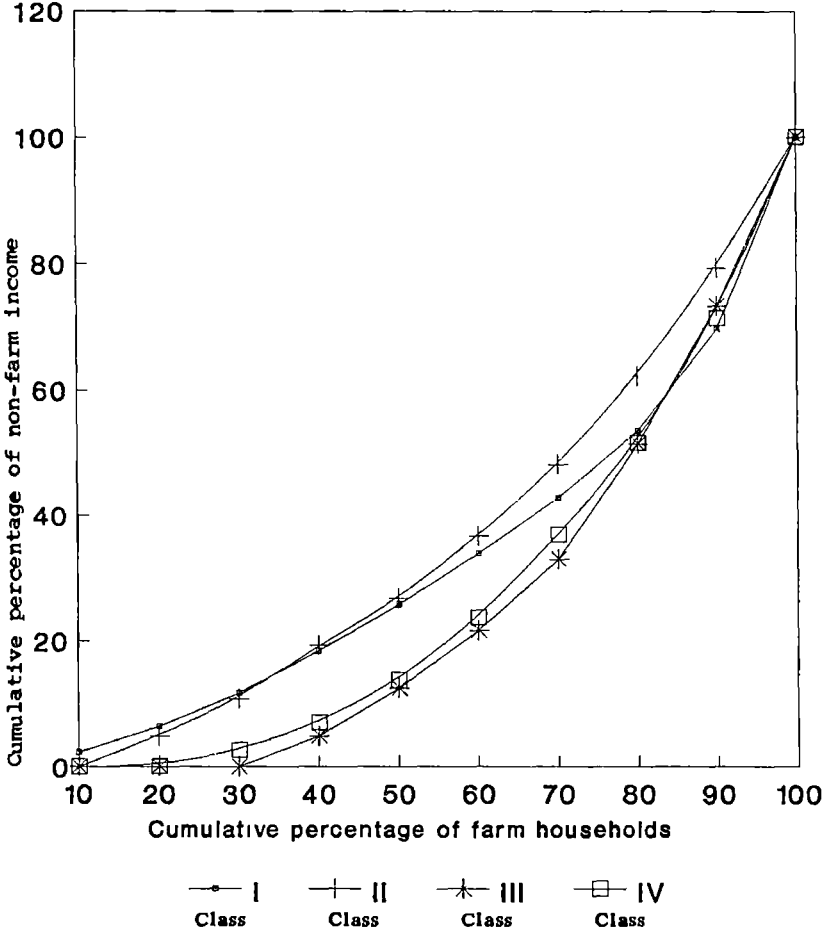


Table 5 18 Gini ratios of distribution of income in farm households

Type of income	Category			
	Class I	Class II	Class III	Class IV
Farm income	0 34	0 33	0 31	0 32
Non farm income	0 41	0 36	0 42	0 43

The estimates of Gini's ratios for non farm income and farm income are presented in Table 5.18. It depicted that the disparity in non farm income varied from 0.36 for Class II farms to 0.43 for Class IV farm households. Whereas the estimation of Gini ratio for farm income varied from 0.31 in Class III to 0.34 in Class I farms.

The disparity in non farm income per farm was observed to be higher than the disparity in farm income. Birthlal and Singh (1995) has identified agriculture salaries, transfers, business and art/crafts as inequality increasing sources of income and livestock and farm wages to reduce the income inequality.

From the discussion, it was clear that disparity in farm income decreased with increase in the farm size except in Class IV, whereas disparity in non farm income increased with increase in farm size except in Class II. Chahal (1990) also observed that disparity in income increased as the farm size increased.

### 5.3 Savings of farm households

Savings is the excess of income over consumption or it is that part of the income which is left unused after consumption. Although saving consists of both hoarded income and funds that are committed financially or used to purchase capital goods, in this study only current savings are taken into consideration.

Savings can be measured by two methods, namely, direct and indirect. In the direct method, savings is straight away estimated at the end of a particular period. While in the indirect method, income and expenditure of the households are

measured for estimating the savings. In this study, the indirect method has been followed to measure the savings of the farmers because the adoption of direct method presents a number of difficulties pertaining to accuracy.

### 5.3.1 Savings during the period under study

Per farm savings estimate of the sample farms of different categories for the period under study is presented in Table 5.19.

A perusal of the above table indicated that there has been a continuous increment in per farm household savings as the farm size increased. Similar observations were made by Nandal (1972). Average savings of all the farm households amounted to Rs 9511.60. Classwise analysis showed that per farm savings was higher for the Class IV farm households (Rs 20166.15) followed by Class III farms (Rs 8772.30). The figures of savings as percentage of income also clearly showed that it increased with increase in farm size.

In Class I farm households savings accounted for 6.10 per cent of the total income which is the lowest. The percentage of savings to total income increased for the subsequent classes with 22.20 per cent in Class II, 23.20 per cent in Class III and 33.35 per cent in Class IV. At the aggregate level 24.40 per cent of the total income was kept apart for savings by the farm household. In other words, large size farmers were able to save higher percentage of their total income when compared to small farmers. Their income and expenditure pattern also justify the above observation. This may be because the marginal propensity to consume goes on decreasing with an increase in the income of the cultivating families (Nath 1972). The analysis thus indicated that the percentage of total income consumed

Table 5 19 Average amount of savings in farm households (Rs )

Category	Savings	Savings as percentage of gross income
Class I	1393 03	6 10
Class II	7714 20	22 20
Class III	8772 30	23 20
Class IV	20166 15	33 35
Aggregate	9511 60	24 40



decreased as the farm size increased resulting the both comparatively and absolutely higher saving in large sized farms

### 5.3.2 Saving pattern of sample farm households

Table 5.20 gives the saving pattern of the sample households. It is obvious from the table that majority of the respondents in all the classes preferred co-operatives and chit funds. Co-operatives played a useful role in mobilising rural savings in the form of shares and <sup>deposits</sup> ~~bonds~~ which were essential for enabling the farmers to avail loans from them. About 81.67 per cent of the respondent farmers (120) had membership in co-operatives. As much as 76.67 per cent of the total respondents in the study area had financial investments in the form of Chit funds and Kurries. The many attractive features of the chit fund schemes has made them more popular with the people. Low income people found it very comfortable to invest in the daily chit funds run by one of their fellow household. These type of inter household transaction enabled one of the participating household to get the bid amount in rotation which they usually spent either on day to day consumption activity or consumer durables or in physical assets.

State Planning Board Survey (1981) had reported a similar pattern of savings in the Kerala State. Among the various saving instruments 81.67 per cent of the total farm households had shares in co-operatives followed by Kurries and Chitties accounting to about 76.67 per cent. Out of the total 120 respondents 67.50 per cent had saving accounts in the commercial banks and 35.83 per cent possessed Life Insurance Policies.

Table 5 20 Saving pattern of farm households

Category of	Saving pattern					
	Co operatives	Commercial bank	Post office	LIC	Kury and chitty	Share market
Class I	22 (73 33)	16 (53 33)	20 (66 67)	10 (33 33)	21 (70 00)	
Class II	23 (76 67)	20 (66 67)	17 (56 67)	9 (30 00)	24 (80 00)	
Class III	28 (93 33)	23 (76 67)	17 (56 67)	12 (40 00)	21 70 00)	
Class IV	25 (83 33)	22 (73 33)	14 (46 67)	12 (40 00)	26 (86 67)	2 (6 67)
All farms	98 (81 67)	81 (67 50)	68 (56 87)	43 (35 83)	92 (76 67)	2 (1 67)

Figures in parentheses show percentages to sample households

In respect of the Government operated saving instruments like the National Small Savings Scheme and recurring deposits with the post office 56.67 per cent of the total 120 sample farm households possessed such savings. The sincere promotional efforts of the M P K B Y Agents (Mahila Pradhan Kshetriya Bachat Yojana) resulted in mobilisation of rural savings through Post Office R D accounts. In the sample only two out of the 120 invested in share market.

Classwise analysis showed that 93.33 per cent of the farm households in Class III category had shares in co-operatives followed by 83.33 per cent in Class IV, 76.67 per cent of Class II and 73.33 per cent in Class I. Commercial bank accounts were predominantly operated by Class III farm households (76.67 %) followed by Class IV (73.33 %). Small savings accounts and post office recurring deposits were mostly operated by Class I farm households (66.67 %) followed by Class II, Class III and Class IV farm households respectively. Kurries and Chit fund investments were maximum in Class IV farm households (86.67 %) followed by Class II (80 %) and Class I and Class III (70 % each).

### 5.3.3 Effect of factors influencing savings

Path analysis developed by Wright (1921) followed by Li (1955) and Singh and Chowdhary (1979) was used to get the direct and indirect influence of the explanatory variables: number of earning members, education of head, net farm income, non farm income, family expenditure and education level of family on the dependent variable: savings.

Table 5.21 gives the ranks of the various factors having direct influence on savings. Non farm income, net farm income and family expenditure were the

three important variables with substantial direct effect on savings both at the aggregate level and in the different classes. Of these variables, non farm income which ranked first in all class and net farm income which ranked second exerted positive direct influence on savings whereas the influence of family expenditure was negative.

Of the other less influential variables, education level of the family had a positive influence on savings and education of head of the family registered negative direct effect at the aggregate level and in all categories of farm except Class I.

Number of earning members positively influenced the savings of Class I, Class IV and the aggregate farm households, but the other two classes, Class II and Class III registered negative effect.

The influence of the variables, number of earning members and education of head of the family presented a distorting picture which could not be attributed to any particular reason.

When all farm analysis was made, education of head and family expenditure showed negative direct effect on savings, whereas all other factors had positive effects on savings. In Class I farms, education of head of the family had a positive influence on savings and it ranked fourth. Family expenditure was the only factor in that class which showed negative effect.

In Class II farm households, net farm income, non farm income and education level of the family exhibited positive influence on savings and other factors viz. number of earning members, education of head and family expenditure showed negative effect. Class III farm households exhibited a similar pattern of

Table 5 21 Ranking of factors influencing savings using Path analysis

Variables	Category				Aggregate
	Class I	Class II	Class III	Class IV	
X <sub>2</sub> No of earnings members	5	6	6	5	6
X <sub>3</sub> Education of head	4	5	5	6	5
X <sub>4</sub> Net farm income	2	2	2	2	2
X <sub>5</sub> Non farm income	1	1	1	1	1
X <sub>6</sub> Family expenditure	3	3	3	3	3
X <sub>7</sub> Education level family	6	4	4	4	4

influence as in Class II. The Class IV farms only family expenditure and education of head of the family showed negative effect on savings and all other factors had positive influence on savings.

#### 5.4 Asset structure

This section deals with a study of the durable physical assets of the farmers and it is meant to provide a background to subsequent study of gross and net capital formation in cultivators holding under different size group of farms.

##### 5.4.1 Asset structure of sample farm households

The average value of fixed capital per farm household along with their percentages on land, buildings, wells and tanks, livestock, farm machinery and implements and household durables for each size group is given in Table 5.22 which presents the asset structure of the farmers including land. At the aggregate level, asset per farm was Rs 1387587.50 of which 92.59 per cent was accounted for by land. It was followed by residential building (3.24 %) and household durables (2.98 %). Farm assets together contributed to only 1.2 per cent of the total asset of the farmer. Class wise analysis also revealed a similar picture with high asset for Class IV followed by the other land holding classes in their order. In other words, asset position of the sample farm households increased as the farm size increased. This was to be expected since the bulk of the asset was in the form of land. While residential buildings accounted for 9.39 per cent of the asset of Class I farms, its share decreased in succession in the other classes. In the case of household durables like television, radio, utensils, furniture etc. the Class I farms had the highest

Table 5 22 Asset structure of farm households (including land) (in rupees)

Items	Category				
	Class I	Class II	Class III	Class IV	All farms
Land	345333 33 (83 42)	643625 00 (86 35)	1147208 30 (93 41)	3003166 70 (95 13)	1284833 33 (92 72)
Residential building	38892 85 (9 39)	52426 09 (7 05)	35324 06 (2 87)	53218 11 (1 68)	44965 19 (3 24)
Farm building	1467 06 (0 35)	3581 52 (0 48)	3423 15 (0 27)	6513 28 (0 21)	3746 25 (02 7)
Livestock	2141 51 (0 56)	3326 39 (0 45)	5003 87 (0 41)	5808 79 (0 18)	4070 14 (0 29)
Wells tanks etc	2329 37 (0 54)	3501 07 (0 47)	3384 26 (0 27)	9715 00 (0 31)	4732 43 (0 34)
Irrigation appliances and other implements	1696 63 (0 41)	2956 94 (0 40)	2987 59 (0 24)	6901 92 (0 22)	3635 77 (0 26)
Transport equipments				12000 00 (0 38)	3000 00 (0 02)
Biogas plant			400 00 (0 03)	593 33 (0 02)	248 33 (0 02)
Household durables	22110 21 (5 34)	34253 00 (4 60)	30360 01 (2 46)	59100 70 (1 87)	36455 98 (2 63)
Total	413970 96 (100 00)	743670 01 (100 00)	1228091 20 (100 00)	3157017 80 (100 00)	1385687 40 (100 00)

Figures in parentheses show percentages to total

percentage share (5.34) in total assets. Here also a declining trend was observed as the holding size increased.

The percentage distribution of total fixed capital showed that land alone accounted more than eighty per cent of the total capital stock in each size group. Land, which is the major item of the fixed capital, conceals the true picture of the asset structure. Table 5.23 showed the distribution of total assets excluding land. The percentage allocation of farm assets on residential buildings decreased with increase in the farm size. In the case of farm buildings (cattle sheds, pump houses etc.) it increased successively from 2.14 per cent (Class I) to 4.02 per cent (Class IV). The percentage of fixed capital on well and pumpset implements etc. also increased with increase in farm size. The fixed capital on livestock had the highest percentage allocation in Class III farm (6.22) followed by Class IV farms (3.59%). All farm analysis showed that residential buildings formed the major share of 43.76 per cent of the total value of assets followed by household durables (40.34%). Wells formed the next important asset and its share was 4.61 per cent. This was followed by livestock, machinery and implements and farm buildings in that order.

Even now the true picture of farm assets alone is not clear since more than 80 per cent of the total value of assets (excluding land) was accounted by residential buildings and household durables which do not have direct influence on farming. Hence the asset structure of the farms excluding the above two items is given in Table 5.24. At the aggregate level the fixed capital on wells had the highest percentage (28.97) of the total value of assets followed by livestock (24.92), machinery and implements (23.17) and farm buildings (22.94). In Class I farms



Table 5 23 Asset structure of farm households (excluding land) (in rupees)

Item	Category				
	Class I	Class II	Class III	Class IV	Aggregate
Residential building	38892 85 (56 67)	52426 09 (52 40)	35324 06 (43 67)	53218 11 (34 59)	44965 19 (44 58)
Farm building	1467 06 (2 14)	3581 52 (3 58)	3423 15 (4 23)	6513 28 (4 23)	3746 25 (3 71)
Livestock	2142 51 (3 12)	3326 39 (3 32)	5003 87 (6 18)	5808 79 (3 77)	4070 14 (4 03)
Wells	2329 27 (3 39)	2501 07 (3 49)	3384 26 (4 18)	9715 00 (6 31)	4732 43 (4 69)
Irrigation appliances and implements	1696 63 (2 47)	2956 94 (2 96)	2987 59 (3 69)	6901 92 (4 48)	3635 77 (3 60)
Transport equipment				12000 00 (7 79)	3000 00 (2 97)
Biogas plant			400 00	593 33	248 33
Household durables	22110 21 (32 21)	34253 00 (34 24)	30360 01 (37 53)	59100 70 (38 41)	36455 98 (36 00)
Total	(100 00)	(100 00)	(100 00)	(100 00)	(100 00)

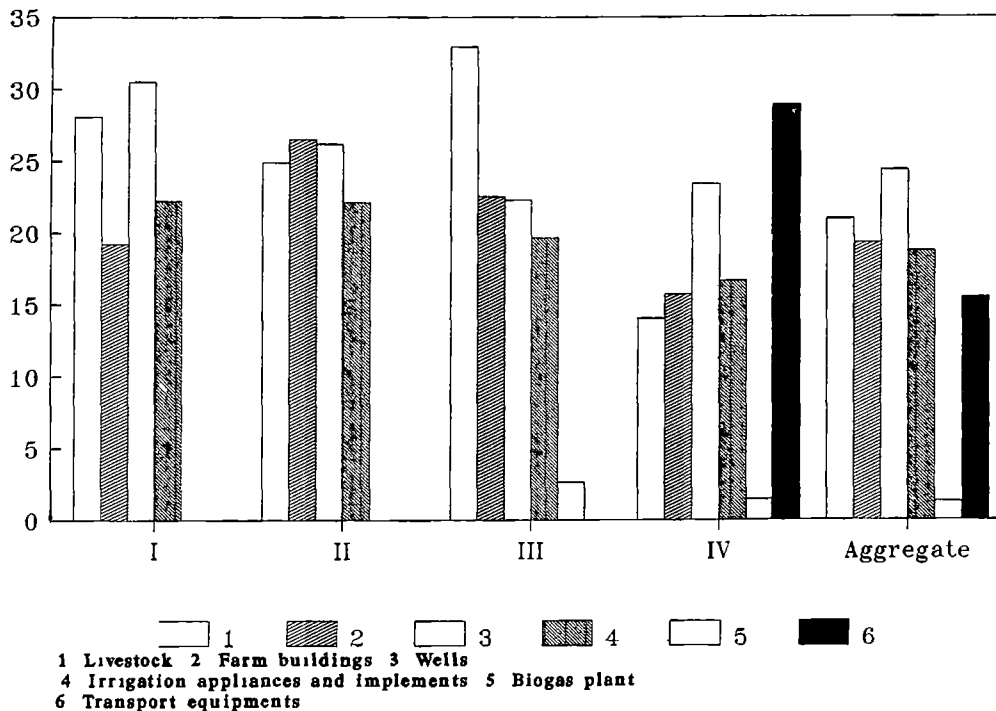
Figures in parentheses show percentages to total

Table 5 24 Asset structure of farm households (excluding land residential building household durables) (in rupees)

Items	Category				Aggregate
	Class I	Class II	Class III	Class IV	
Livestock	2141 51 (28 05)	3326 39 (24 89)	5003 87 (32 92)	5808 79 (13 98)	4070 14 (20 94)
Farm building	1467 06 (19 22)	3581 52 (26 80)	3423 15 (22 52)	6513 28 (15 68)	3746 25 (19 27)
Wells	2329 37 (30 51)	3501 07 (26 19)	3384 26 (22 26)	9715 00 (23 39)	4732 43 (24 35)
Irrigation appliances and implements	1696 63 (22 22)	2956 94 (22 12)	2987 59 (19 65)	6901 92 (16 62)	3635 17 (18 71)
Transport equipments				12000 00 (28 89)	3000 00 (15 44)
Biogas plant			400 00 (2 63)	593 33 (1 43)	248 33 (1 27)
Total	7634 57 (100 00)	13365 92 (100 00)	15198 87 (100 00)	41532 32 (100 00)	19432 92 (100 00)

Figures in parentheses show percentage to total

**Fig.7. Asset structure of farm households (%)  
(excluding land, residential building, household durables)**



wells accounted for the highest percentage of assets (30.51 %) followed by livestock (28.05 %). In Class II farms farm building (26.80 %) followed by wells (26.19 %) and livestock (24.89 %) was the pattern of allocation of assets. Livestock accounted for the highest percentage of total assets (33.81 %) in Class III farms followed by farm buildings (23.13 %) and wells (22.87 %). In Class IV farms wells and tanks was the major item of physical asset (32.89 %) followed by machinery and implements (25.38 %). The higher investment of Class IV farmers on wells and machinery like pumpsets are self explanatory. Since they had more land area they needed to invest more on wells and tanks and in pumpsets to irrigate their crops. Also one of the Class IV farmer had a tractor and another farmer owned a pick up van which had contributed to the higher percentage allocation of total assets in implements and machinery.

#### 5.4.2 Capital formation

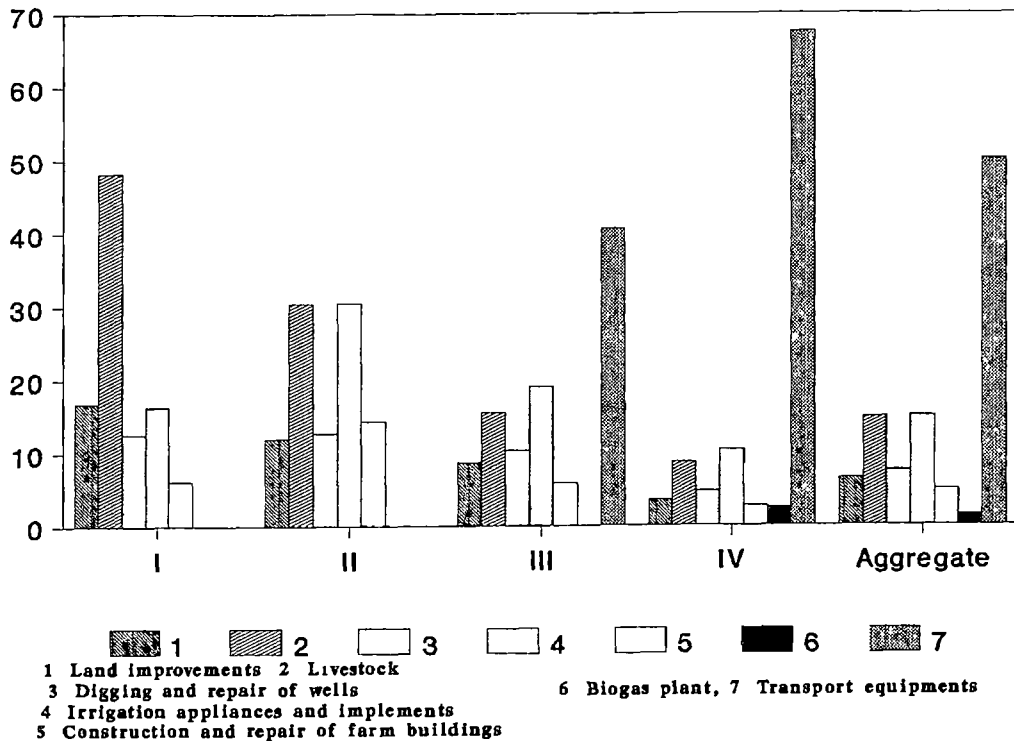
Capital formation is referred to investment in productive assets other than purchase of land. However expenditure on land for reclamation and soil conservation were treated as investment because they increased productivity of the soil. Details of investments made by the sample farm households during the year 1993-94 are presented in Table 5.25. The table reveals that the per farm investment increased as the farm size increased. When all farms were considered purchase of transport equipment evolved to be the most important item of capital formation but only one farmer in the Class IV category had purchased the tractor. Since it was a high investment compared to other items it would be better to consider it as a special case. Among the other items purchase of irrigation appliances was the important item of capital formation accounting for about 14.98 per cent of the total

Table 5 25 Capital formation in farm households (in rupees)

Items	Category				All farms
	Class I	Class II	Class III	Class IV	
Land improvement	223 33 (16 81)	289 67 (11 93)	533 33 (8 67)	492 17 (3 50)	384 63 (6 42)
Purchase of livestock	640 00 (48 18)	738 00 (30 40)	950 00 (15 45)	1228 00 (8 73)	889 00 (14 83)
Digging and repair of wells	166 67 (12 55)	309 33 (12 74)	633 33 (10 30)	669 67 (4 76)	444 74 (7 42)
Purchase of irrigation appliances and implements	216 67 (16 31)	742 66 (30 69)	1173 67 (19 08)	1460 00 (10 38)	898 25 (14 98)
Construction and repair of farm buildings	81 67 (6 15)	348 25 (14 34)	359 67 (5 85)	375 00 (2 67)	291 15 (4 86)
Transport equipments			2500 00 (40 65)	9500 00 (67 54)	3000 00 (50 06)
Biogas plants				340 00 (2 41)	85 00 (1 41)
Total	1328 34 (100 00)	2427 91 (100 00)	6150 00 (100 00)	14064 84 (100 00)	5992 77 (100 00)

Figures in parentheses show percentages to total

**Fig 8. Capital formation in farm households (%)**



capital formation. The other important item of capital formation was purchase of livestock which was also the important item of capital formation in two classes of farms except Class III and IV.

Most of the farmers maintained one or two milch cattle which would act as a subsidiary source of income and cater to their domestic milk requirement. Land improvements like reclamation, drainage, soil conservation, fencing etc. accounted to 6.42 per cent of capital formation at the aggregate level and construction and repair of farm building contributed to 4.86 per cent of gross capital formation.

Class wise analysis showed that livestock was the major item of capital formation in Class I and Class II farms. The Class I livestock was followed by land improvement (16.81 %) irrigation appliances (16.31 %) and digging and repair of wells (12.55 %). Apart from livestock, irrigation appliances followed by construction and repair of buildings were the most important items of capital formation in Class II farms.

Transport equipments was the most important item of capital formation in Class III and Class IV farms (40.65 and 67.54 % respectively) even though only one or two farmers in those groups had them. Other major items of capital formation in Class III and Class IV farm purchase of irrigation appliances and implements (19.08 and 10.38 % respectively) followed by livestock (15.45 and 8.73 % respectively). In Class IV farms one farmer had invested in biogas plant which accounted for 2.41 per cent of capital formation in that class. Land improvements and digging and repair of wells were usually neglected by these farmers.

Most of the soil conservation methods and other land improvements were

done by small farms. Livestock was maintained mostly by small farmers as a subsidiary source of income. In the case of construction and repair of buildings no definite trend with the size of the farm is observed. Investment made in the digging of wells and tanks showed an increasing trend as the farm size increased. Bansal (1969) and Bhuvaneshwari (1992) had reported similar observations.

Table 5.26 gives the items of gross capital formation excluding transport equipments since they were owned by only two farmers in the Class III and Class IV category and tended to conceal the actual contribution of other items.

At the aggregate level irrigation appliances followed by livestock were the most important items of capital formation contributing to 30.01 and 29.70 per cent respectively. They were followed by digging and repair of wells (14.86%), land improvements (12.85%) and construction and repair of farm building (9.73%).

Capital formation in Class I and Class II farm households did not show any change. But in Class III and Class IV the percentage share of other items increased. In both classes irrigation appliances was the major item (31.15% and 31.98%) followed by livestock (26.02% and 26.90%). Digging and repair of wells, land improvements and construction and repair of farm buildings were the other items which contributed to capital formation.

#### 5.4.2.1 Net Capital Formation

Since all the physical assets are liable to wear and tear and this value depreciates over the year, it would be more reasonable to estimate the net capital formation.



Table 5.26 Capital formation in farm households  
(excluding transport equipments) (in rupees)

Items	Category				All farms
	Class I	Class II	Class III	Class IV	
Land improvements	223 33 (16 81)	289 67 (11 93)	533 33 (14 61)	492 17 (10 78)	384 63 (12 85)
Purchase of livestock	640 00 (48 18)	738 00 (30 40)	950 00 (26 02)	1228 00 (26 90)	889 00 (29 70)
Digging and repair of wells	166 67 (12 55)	309 33 (12 74)	633 33 (17 35)	669 67 (14 67)	444 74 (14 86)
Purchase of irrigation appliances and other implements	216 67 (16 31)	742 66 (30 9)	1173 67 (32 15)	1460 00 (31 98)	898 25 (30 01)
Construction and repair of farm building	81 67 (6 15)	348 25 (14 34)	359 67 (9 85)	375 00 (8 21)	291 15 (9 73)
Biogas plant				340 00 (7 45)	85 00 (2 84)
Total	1328 34 (100 00)	2427 91 (100 00)	3650 00 (100 00)	4564 84 (100 00)	2992 77 (100 00)

Figures in parentheses show percentages to total

Net capital formation showed a similar pattern to that of gross capital formation Table 5 27 gives the break up of net capital formation in the sample households Transport equipments was the main item of net capital formation (54 60 %) followed by irrigation appliances and implements (15 91 %) and livestock (13 25 %) Construction and repair of farm buildings contributed to 1 36 per cent of net capital formation

Class wise analysis showed that in Class I negative value was obtained for construction and repair of farm buildings which indicated that they did not invest on wells etc during the reference year In Class I farms livestock (51 16 %) was followed by irrigation appliances (18 81 %) land improvement (18 27 %) and digging and repair of wells (14 75 %) Whereas in Class II the pattern was irrigation appliances and implements (36 86 %) followed by livestock (31 05 %) and digging and repair of wells (14 21 %) One of the Class III farmer bought a pick up van during 1993 94 which accounted for 43 84 per cent of net capital formation Irrigation appliances contributed to 20 92 per cent followed by livestock (14 21 %) In Class IV also one of the farmer owned a tractor which amounted to Rs 2 5 lakhs with its accessories Irrigation appliances was the next item (10 48 %) followed by livestock (7 55 %)

Here also analysis was carried out excluding high investment items like tractor etc Table 5 24 gives the break up of net capital formation excluding transport equipments Irrigation appliances followed by livestock were the major items contributing to 35 05 per cent and 29 17 per cent of net capital formation at the aggregate level It was followed by digging and repair of wells (16 61 %) land improvements (12 92 %) and construction and repair of farm buildings (2 77 %)

Table 5 27 Net capital formation in farm households (in rupees)

Items	Category				
	Class I	Class II	Class III	Class IV	All farms
Land improvement	173 08 (18 27)	224 42 (12 47)	413 33 (7 84)	381 43 (3 09)	298 06 (5 87)
Purchase of livestock	484 57 (51 16)	558 77 (31 05)	719 29 (13 63)	929 77 (7 55)	673 10 (13 25)
Digging and repair of wells	139 68 (14 75)	255 73 (14 21)	589 22 (11 17)	548 23 (4 45)	383 22 (7 54)
Purchase of irrigation appliances and implements	178 14 (18 81)	663 33 (36 86)	1103 25 (20 92)	1290 10 (10 48)	808 71 (15 91)
Construction and repair of farm buildings	28 35 (2 99)	97 54 (5 14)	137 17 (2 60)	49 34 (0 40)	63 92 (1 36)
Purchase of transport			2312 50 (43 84)	8787 50 (71 41)	2775 00 (54 60)
Biogas plants				319 60 (2 59)	79 90 (1 51)
Total	947 12 (100 00)	1799 79 (100 00)	5274 76 (100 00)	12305 97 (100 00)	5081 91 (100 00)

Figures in parentheses show percentage to total

Class wise analysis presented similar pattern for Class I and Class II farm households as in earlier case. But in Class III and Class IV the contribution of other items became more significant. Irrigation appliances and implements accounted for 37.25 per cent and 36.67 per cent of net capital formation in Class III and Class IV farms respectively. Other items included purchase of livestock (24.49 % and 26.43 %) digging and repair of wells (19.89 % and 15.58 % respectively) and land improvements (13.96 % and 10.84 % respectively).

Net capital formation per hectare would give a more realistic picture. Table 5.29 gives the net capital formation per hectare in the sample farm households. At the aggregate level the net capital formation per hectare was Rs 6515.26. 54.60 per cent of which was on transport equipments followed by irrigation appliances (15.98 %) and livestock (13.25 %).

Net capital formation per hectare for Class I farm households amounted to Rs 5904.80 of which 48.27 per cent was on livestock followed by irrigation appliances (17.75 %) land improvements (17.24 %) and digging and repair of wells (13.90 %). In Class II irrigation appliances was the major item of capital formation (36.05 % of the total net capital formation) amounting to Rs 4389.78 followed by livestock (31.05 %). In Class III and Class IV the major item of capital formation per hectare was 43.84 per cent and 71.40 per cent respectively their total net capital formation. The net capital formation per hectare for these classes were Rs 7225.68 and Rs 6836.61 respectively.

The per hectare figures of net capital formation presented a different picture than that of net capital formation per farm. No particular trend could be



Table 5 28 Net capital formation in farm households (excluding transport equipments)  
(in rupees)

Items	Category				
	Class I	Class II	Class III	Class IV	All farms
Land improvement	173 08 (18 27)	224 42 (12 47)	413 33 (13 96)	381 43 (10 84)	298 06 (12 92)
Purchase of livestock	484 57 (51 16)	558 77 (31 05)	719 29 (24 29)	929 77 (26 43)	673 10 (29 17)
Digging and repair of wells	139 68 (14 75)	255 73 (14 21)	589 22 (19 89)	548 23 (15 58)	383 22 (16 61)
Purchase of irrigation appliances and implements	178 14 (18 81)	663 33 (36 86)	1103 25 (37 25)	1290 10 (36 67)	808 71 (35 05)
Construction and repair of farm buildings	28 35 (2 99)	97 54 (5 40)	137 17 (4 63)	49 34 (1 40)	63 92 (2 77)
Biogas plants				319 60 (9 08)	79 90 (0 43)
Total	947 12 (100 00)	1799 79 (100 00)	2961 50 (100 00)	3518 47 (100 00)	2306 91 (100 00)

Figures in parentheses show percentages to total

Table 5 29 Net capital formation in farm households (Rs per ha)

Items	Category				All farms
	Class I	Class II	Class III	Class IV	
Land improvements	1018 12 (17 24)	547 40 (12 47)	566 20 (7 84)	211 90 (3 10)	382 13 (5 86)
Purchase of livestock	2850 40 (48 27)	1362 85 (31 05)	985 33 (13 64)	516 54 (7 55)	862 95 (13 25)
Digging and repair of wells	821 65 (13 90)	623 73 (14 21)	807 15 (11 17)	304 57 (4 45)	491 30 (7 64)
Purchase of irrigation appliances and other implements	1047 88 (17 75)	1617 90 (36 85)	1511 30 (20 92)	716 70 (10 48)	1036 80 (15 98)
Construction and repair of farm buildings	166 74 (2 89)	237 90 (5 42)	187 90 (2 60)	27 41 (0 40)	81 95 (1 26)
Purchase of transport equipments			3167 80 (43 84)	4881 94 (71 40)	3557 70 (54 60)
Biogas plant				177 55 (2 60)	102 43 (1 51)
Total	5904 80 (100 00)	4389 78 (100 00)	7225 68 (100 00)	6836 61 (100 00)	6515 26 (100 00)

Figures in parentheses show percentages to total

ascribed to the per hectare net capital formation of the different categories of farm households

#### 5 4 3 Rate of capital formation

Rate of capital formation (Table 5 30) showed an increase in value as the farm size increased It was 2 04 for Class I farm households and 2 74 for Class II farm households Class III farm households registered 10 52 rate of capital formation and Class IV farms had a rate of capital formation of 11 75 per cent When all farms were considered The overall rate of capital formation per farm worked out to 7 60 It was reported that capital formation at the rate of at least 10 per cent per annum was necessary for sustainable agricultural development (Bhuvaneshwari 1992) The remarkably low rate of capital formation in Class I and Class II farms may be that investments in farm assets might not be economically viable or they might not have the ability to invest because of poor savings

A perusal of the table showed that while the net capital formation in Class I and Class II farm households were only Rs 947 12 and Rs 1799 79 respectively the corresponding values for Class III and Class IV farms were Rs 5274 76 and Rs 12305 97 respectively

If the net capital formation is estimated excluding new investments in tractor etc then the rate of capital formation would be 2 04 2 74 5 9 and 3 35 for Class I Class II Class III and Class IV farm households respectively The overall rate of capital formation per farm would be 3 45 per cent

Table 5 30 Rate of capital formation in farm households

Details	Category				
	Class I	Class II	Class III	Class IV	Aggregate
Gross capital formation (GCF) (Rs )	1328 34	2429 91	6150 00	140 64 84	5992 77
Net capital formation (NCF) (Rs )	947 12	1799 79	5274 76	12305 97	5081 91
Value of capital in t 1 ( $K_{t-1}$ ) (excluding land and household durables) (Rs )	46527 42	65792 01	50122 89	104750 40	66798 20
Rate of capital formation (per cent)	2 04	2 74	10 52	11 75	7 60
Rate of capital formation excluded transport items (per cent)	2 04	2 74	5 90	3 35	3 45



#### 5.4.4 Major constraints to capital formation

The last objective of the present study is to identify the constraints in capital formation. The analysis was carried out for the sample as a whole. The major constraints identified while conducting pilot survey were high consumption expenditure, non availability of labour, high wage rate, high input price, low product price, unemployment of educated youth and lack of irrigation facilities. These constraints were included in the interview schedule and the response of the farmers regarding these were collected. Each constraint was ranked and the percentages have been worked out and are given in Table 5.31.

High consumption expenditure evolved as the major constraint in capital formation accounting to 50 per cent. In the present study also consumption expenditure accounted for 57.40 per cent of the total expenditure of a farm household. Sky rocketing prices of the consumer goods and food items due to inflation may be attributed to be the reason for this.

High wage rate (45.83 %) non availability of labour (41.67 %) were the other two important constraints to investment. These two problems are complementary and high wage rate is the resultant of non availability of labour.

High price of various inputs was recognised as the next important problem. This was explained as the fourth important constraint by 37.50 per cent of the farmers and also as the fifth major constraint by another 41.67 per cent. Adoption of the recommended doses of fertilizers, manures etc depends primarily on the price of the inputs.

Table 5 31 Constraints to capital formation

Constraints	Ranking of constraints						
	I	II	III	IV	V	VI	VII
High consumption expenditure	60 (50 00)	45 (37 50)	15 (12 50)				
Non availability of labour	20 (16 67)	20 (16 67)	50 (41 67)	30 (25 00)			
High wage rate	40 (33 33)	55 (45 83)	25 (20 83)				
High input price			20 (16 67)	45 (37 50)	50 (41 67)	5 (4 17)	
Low product price			10 (8 33)	30 (25 00)	42 (35 00)	20 (16 67)	18 (15 00)
Unemployment of educated youth				12 (10 00)	28 (23 33)	54 (45 00)	26 (21 67)
Lack of irrigation facilities				3 (2 50)		41 (34 17)	76 (63 33)

Figures in parentheses show percentages to total

*Summary*

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## SUMMARY

The present study on income savings and capital formation in farm households of Kodakara Development Block was undertaken on the basis of data pertaining to the agricultural year 1994-95. The data were collected from May 1995 to July 1995. The study was aimed to analyse the quantum and various sources of income, estimate the costs and associated variables influencing the income and savings pattern, assess the capital output ratio on farms, formation of assets on farms and identify the constraints in capital formation.

The study was based on a sample of 120 farmers selected from the Kodakara Block. A three-stage random sampling was employed with Panchayats as primary units. From the seven panchayats in the block, three panchayats were selected at random and from each selected panchayat, two wards were selected. Information on sizes of all holdings were collected for each of the selected wards with the help of Krishi Bhavan officials. Pre-stratification of the sample was done based on holding size as

Class I	< 0.25 ha
Class II	0.25 - 0.5 ha
Class III	0.5 - 1 ha
Class IV	> 1 ha

From each class 30 respondents were selected at random. Thus 120 farm households constituted the final sample.

Tabular analysis were done to study the socio economic features income and consumption pattern of sample households. The various cost concepts in farm management studies were used to estimate the income measures. Disparity in income among the various classes was studied using Lorenz curve and Gini concentration ratio. The influence of various factors on savings was studied using path analysis. The asset structure of the farmers and the capital formation in farm households were studied using tabular analysis and percentage analysis.

The average income for the sample worked out to Rs 39019.30. Class wise analysis showed that the total income was the highest for Class IV farms followed by Class III. Total income consisted of farm income and non farm income both of which were highest for Class IV farm households. The average net farm income was Rs 10772.30 and non farm income was Rs 28247.00. Among the various items of farm income crops constituted 78.05 per cent (Rs 16061.20) followed by livestock (17.80 %). Class wise analysis showed that crops contributed to 85.85 per cent of the income of Class IV farms whereas the share of livestock was highest in Class I farm households (38.05 %).

Services contributed to 85.66 per cent (Rs 25013.50) and business contributed to 10.07 per cent (Rs 2844.20) of the average non farm income which was estimated as Rs 28247.00. Class wise analysis showed that non farm income was also highest for Class IV farm households. While services contributed to 92.55 per cent of the non farm income in Class I farms it was only 87.05 per cent for Class IV farms.

The income measures in relation to different cost concepts among the farm households such as gross farm income farm business income family labour income net income at cost  $C_1$  Cost  $C_2$  and benefit cost ratio were Rs 16061 20 Rs 9368 85 Rs 7890 70 Rs 8743 55 Rs 7136 95 and 1 79 respectively for the whole sample Class wise analysis showed that net income and benefit cost ratio were much higher for Class IV farm households and they showed an increasing trend as the farm size increased

The per hectare farm income registered a decreasing trend except in Class III the estimates were Rs 14501 18 Rs 13575 98 Rs 15107 68 and Rs 13349 67 for Class I Class II Class III and Class IV respectively Capital out put ratio (excluding land) was highest for Class I farms (5 9) followed by Class II (3 95) It exhibited a decreasing trend with increase in farm size At the aggregate level capital output ratio worked out to 3 08

The average expenditure of the sample farms was Rs 29507 70 which comprised of crop livestock and consumption expenditures accounting to 22 70 10 50 and 64 80 percentage respectively of total expenditure Class wise analysis showed that crop expenditure livestock expenditure and consumption expenditure increasing with farm size

Input wise analysis of farm expenses revealed that the major input was labour input followed by materials which accounted for 59 32 per cent (Rs 3969 65) and 36 50 per cent (Rs 2442 35) respectively of the total cost Major item of expenditure for livestock was feed accounting to 62 70 per cent (Rs 1945 95) followed by labour 34 07 per cent (Rs 1057 50) of the total cost

Food was the major item of consumption expenditure accounting to 69.05 per cent (Rs 13610.20) followed by clothing 11.25 per cent (Rs 2222.15). The analysis showed that although the consumption expenditure of the farm households increased as the farm size increased, the percentage expenditure on food decreased holding good Engel's law.

The disparity in income was represented by the Gini ratio which in the case of farm income was lowest for Class III farm households (0.31) and the ratio for non farm income was lowest for Class IV farms (0.36). In the case of farm income Gini ratio ranged from 0.31 to 0.34 whereas ratio for non farm income ranged from 0.36 to 0.43 i.e. the disparity was more for non farm income.

Average savings of the sample households was Rs 9511.60 which was 24.40 per cent of total income. Class wise analysis showed that average savings was highest for Class IV farms followed by Class III which accounted to Rs 20166.15 and Rs 8772.30 respectively. About 81.67 per cent of the respondents had membership in co-operatives followed by Kury and Chitty (76.67%) and commercial banks (67.5%) class wise analysis also presented a similar pattern of savings.

Path analysis showed that non farm income, net farm income and family expenditure had substantial direct effect on savings. While non farm income and net farm income exerted positive direct influence in savings, the influence of family expenditure was negative. Other variables like education level of the family, education of head of the family and number of earning members had only slight influence on savings.

The asset structure of the sampler farm households worked out to Rs 13 85 687 40 at the aggregate level of which 92 72 per cent was accounted by land Asset structure of the farms excluding land residential building and household durables showed that fixed capital on wells and tanks accounted to 24 35 per cent (Rs 4732 43) followed by livestock 20 94 per cent (Rs 4070 14 and farm building 19 27 per cent (Rs 3746 25) of the total asset (Rs 19432 92)

Capital formation on the sample farm households was also studied which revealed that the per farm investment increased as the farm size increased If transport equipments were treated as special case irrigation appliances was the important item of capital formation (30 01 %) followed by purchase of livestock (29 70 %) and digging and repair of wells (14 86 %)

Net capital formation showed a similar pattern to that of gross capital formation If tractors were not considered irrigation appliances followed by livestock were the major items contributing to 35 05 per cent and 29 17 per cent of net capital formation

Net capital formation per hectare amounted to Rs 6515 26 of which 54 60 per cent was accounted by transport equipments followed by livestock (13 25 %) Land improvements formed 5 86 per cent of net capital formation per hectare The net capital formation per hectare for the four classes were Rs 5904 80 Rs 4389 78 Rs 7225 68 and Rs 6836 61 respectively

The rate of capital formation in the farm households was estimated as 7 60 per cent at the aggregate level and it was noted that the rate increased as the farm size increased



High consumption expenditure was reported as the most important constraint in capital formation by about 50 per cent of the respondents in the study area. High wage rate was the second important constraint as explained by 45.83 per cent of the respondents followed by non availability of labour 41.67 per cent. High prices of the various inputs was recognised as fourth important constraint by 37.50 per cent of the farmers and fifth important constraint by 41.67 per cent. Low product price was ranked as fifth constraint by 25 per cent and as sixth constraint by 35 per cent of the farmers. Unemployment of educated youth and lack of irrigation facilities were also remarked as constraints to capital investment.

### **Suggestions and policy implications**

The results of the study bring to surface some major issues for consideration

- 1) The concerned institution should undertake systematic surveys in all the districts and develop the profile of households both rural and urban in terms of their socio economic condition. This profile could facilitate planners to develop appropriate region specific development plans.
- 2) The concerned departmental authorities should guide and channelise the investments in a the proper manner and ensure the maximum utilization of the existing potential. Agricultural officials should encourage diversification in farming so that more income is generated.
- 3) Group farming and group management practices could help to reduce cost of cultivation and people should be encouraged to avail the good services of the Krishi Bhavan.

- 4) People should be encouraged to practice thrift and increase their savings  
Banking institutions should make efforts to formulate more remunerative and attractive deposit schemes
- 5) Efforts should be made to identify the constraints and obstacles to capital formation and try to rectify them

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\* Originals not seen

**APPENDIX 1**  
**Socio economic status scale of Trivedi (1963)**

SI No	Different levels of education	Score
1	Illiterate	0
2	Can read only	1
3	Can read and write	2
4	Primary school	3
5	Middle school	4
6	High school (S S L C )	5
7	College	6
8	Above College	7

**APPENDIX 2**  
**ICMR Scale of Adult Male Units**

Group	Equivalent Adult Male Units			
	Male		Female	
	Sedentary worker	Moderate worker	Sedentary worker	Moderate worker
Adult (over 21 years)	1.01	1.2		0.9
Adolescents (12-21 years)			1	
Children (9-12 years)			0.8	
Children (7-9 years)			0.7	
Children (5-7 years)			0.6	
Children (3-5 years)			0.5	
Children (1-3 years)			0.4	

Source: Nutritive Value of Indian Foods, ICMR

**APPENDIX 3**  
**Cost of cultivation in the farms under different cost concepts**

Cost	Category				Aggregate
	Class I	Class II	Class III	Class IV	
Cost A <sub>1</sub> (All actual expenses incurred in production)	3154 80	5081 75	7331 70	11201 50	6692 35
Cost A <sub>2</sub> (Cost A <sub>1</sub> + rent for leased in land)	3154 80	5081 75	7331 70	11201 50	6692 35
Cost B <sub>1</sub> (Cost B <sub>1</sub> + interest on fixed capital)	3228 80	5149 70	7416 10	11426 50	6564 40
Cost B <sub>2</sub> (Cost B <sub>1</sub> + rental value of own land and rent paid for leased in land)	3725 50	6088 70	9096 40	14596 90	8170 50
Cost C <sub>1</sub> (Cost B <sub>2</sub> + imputed value of family labour)	3510 30	5693 20	8394 10	12638 50	7317 65
Cost C <sub>2</sub> (Cost B <sub>2</sub> + imputed value of family labour)	4007 00	6632 20	10074 40	15808 90	8924 25

## APPENDIX 4

### ABC Costs

The following ABC cost concepts were used to estimate various crop income measures

Cost A <sub>1</sub>	All actual expenses in cash and kind incurred in production
Cost A <sub>2</sub>	Cost A <sub>1</sub> + rent paid for leased in land
Cost B <sub>1</sub>	Cost A <sub>1</sub> + interest on value of own fixed capital assets
Cost B <sub>2</sub>	Cost B <sub>1</sub> + rental value of own land and rent paid for leased in land
Cost C <sub>1</sub>	Cost B <sub>1</sub> + imputed value of family labour
Cost C <sub>2</sub>	Cost B <sub>2</sub> + imputed value of family labour

In the present study Cost A<sub>1</sub> includes

#### 1 Value of hired human labour

Human labour employed for various farm activities like land preparation intercultural operations harvesting looking after livestock etc were included in determining the value of hired labour The actual wages paid for labour was considered as value of hired labour

#### 2 Value of animal labour

Animal labour is used for initial land preparation and mostly obtained on hire in paddy cultivation The hire charges paid or prevailing hire charges for this labour was taken as cost of animal labour

### 3 Value of machine use

Machines are used by some farmers for land preparation. Hiring charge paid/payable were reckoned as cost of machinery.

### 4 Value of seeds and planting materials

Purchased seeds and planting materials were evaluated on the basis of their purchase price. The same price was used for evaluating farm produced seeds.

### 5 Value of other inputs

Manures, fertilizers and plant protection chemicals were valued at their purchase price and market prices. Farm produced items were valued at prices prevailing in the area.

### 6 Interest on working capital

The rate of interest charged by the commercial banks for short term agricultural loans which was 12.5 per cent per annum was reckoned as interest on working capital.

### 7 Miscellaneous expenses

Expenses incurred for electricity, irrigation, land revenue etc. were included. The actual rate of land tax paid to the revenue department at Rs. 20 per acre was taken.

In the study area, leasing in of land by the respondents was not found. Hence Cost A<sub>2</sub> is the same as Cost A<sub>1</sub>. Rental value of land was calculated as equal



to one fifth of the value of total produce as this rate was considered as fair rent by the Planning Commission when tenancy reforms were initiated. Cost of family labour was imputed based on the prevailing wages for hired labour was imputed based on the prevailing wages for hired labour in man equivalent days. The wage rates were Rs 70 per day for male and Rs 40 per day for female. For converting to man equivalent days the usual norms of 3 females equivalent to 2 males has been used.

**INCOME, SAVINGS AND CAPITAL FORMATION  
IN FARM HOUSEHOLDS OF KODAKARA  
DEVELOPMENT BLOCK**

By

**PREMA. A.**

**ABSTRACT OF THE THESIS**

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## ABSTRACT

The present investigation on income savings and capital formation in farm households of Kodakara development block was undertaken during the agricultural year 1994 95 The study aimed at analysing the various sources and amounts of income estimating the costs and associated variables influencing the income and savings pattern to assess the capital output ratio on farms and to identify the constraints influencing capital formation

Data for the study was generated through a sample survey of 120 farm households Three stage random sampling was adopted for the study Suitable statistical techniques were employed in the analysis of data

The average income of the sample households worked out to Rs 39019 30 of which 27 60 per cent was from farm income and 72 40 was contributed by non farm income

Farm income comprised of income from crop (78 05 %) livestock (20 00 %) and others like sale of farm assets etc (1 95 %) Services (88 55 %) and business (10 07 %) contributed to the non farm income of the households

Gross farm income farm business income family labour income and net income were Rs 16061 20 Rs 9368 85 Rs 7890 70 and Rs 8743 55 respectively The benefit cost ratio of the farms worked out to 1 79 and the capital output ratio was 3 08

Average expenditure of farm households was Rs 29507 70 of which crops accounted for 22 70 per cent livestock 10 50 per cent and consumption 64 80 per cent Food items accounted for 69 05 per cent of the consumption expenditure of farm

households and it was observed that as the farm size and family size increased the percentage expenditure on food decreased

The disparity in non farm income was observed to be higher than the disparity in farm income and it decreased with increase in farm size

The saving pattern showed that 81.67 per cent, 67.5 per cent, 56.87 per cent, 35.83 per cent and 76.07 per cent of the farm households had accounts (transaction with) in co-operatives, commercial banks, post offices, LIC, kurries and chitties. Savings of sample household amounted to Rs 9511.60 which was 24.40 per cent of the total income.

Path analysis identified non farm income, net farm income and family expenditure as the three important variables with substantial direct effect on savings.

The asset structure of the sample farm households showed that land was the major item of asset. If land, residential building and household durables were excluded, wells and tanks followed by livestock occupied the major portion of the asset. Purchase of irrigation appliances and livestock were the major item of capital formation in the farms. The rate of capital formation increased as the farm size increased.

High consumption expenditure followed by non availability of labour and high wage rate were perceived by the respondents as the important constraints to capital formation in the study area. High price of inputs followed by low product price formed the fourth and fifth important constraints. Unemployment of educated youth and lack of irrigation facilities were also remarked as constraints to capital formation.