CAPITAL FORMATION IN FARM HOUSEHOLDS OF KERALA.
A STUDY IN NEMOM BLOCK PANCHAYAT OF THIRUVANANTHAPURAM DISTRICT

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DECLARATION

I hereby declare that the thesis entitled **"Capital Formation in Farm Households of Kerala. A Study in Nemom Block Panchayat of Thiruvananthapuram District"** is a bonafide record of research work done by me during the course of research and the thesis has not previously formed the basis for the award to me of any degree, diploma, associateship, fellowship or other similar title, of any other university or society.

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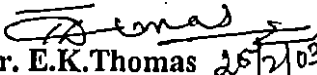College of Horticulture
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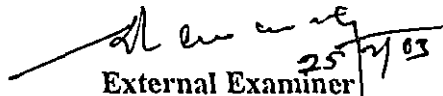
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INTRODUCTION

1. INTRODUCTION

Indian agriculture is known for its multifunctionalities of providing employment, livelihood, food, nutritional and ecological securities. In India agriculture provides livelihood to about 64 per cent of labour force, contributes nearly 26 per cent of Gross Domestic Product (GDP) and accounts for about 18 per cent share of the total value of the country's exports. The success in Indian agriculture enabled the country to change the nightmarish begging bowl situation to that of self-sufficiency. The total food grain production increased four times over half a century. Despite this the 'subsistence' nature has not yet wiped out, which gives the farmers only a bare living and meets only the cost and leaves no profit for the cultivators. Again the low productivity of most of the crops has formed the vicious cycle of poverty in the daily life of Indian farmers. One of the factors, which can lead to increased yield, is the capacity of the farmer to invest in agricultural sector. In the context of economic liberalization, in order to meet the increasing domestic as well as export demands sustained growth of the sector is needed.

Capital formation in agriculture is a prerequisite for the growth of agriculture and is vital for sustained growth of the sector in order to meet the increasing demands. The trend of capital formation in Indian agriculture has shown some interesting features over the last few years. During 1950 to 1960, the Gross Capital Formation in Agriculture was around six per cent of Gross Domestic Product (GDP) generated from agriculture. It increased to eight per cent in the next decade. This further increased to about eleven per cent during 1980-81.Then it declined steadily down to seven per cent in 1990-91. The annual growth rate of private capital formation also fell to 1.90 per cent during 1980-90 from 7.87 per cent during 1960-70.

Recently the government has set the target of GDP growth at eight per cent per annum for the tenth plan period and within this overall growth, the target for agriculture growth has been fixed at four per cent. It is impossible to achieve this target unless capital formation in farm sector increases up to fifteen per cent of its

contribution to GDP. In recent years, capital formation in farm sector has not been even half of this. That is why in spite of the monsoons having been very satisfactory during the nineties; the growth rate of farm sector during this period has been less than half of that in eighties. Thus we can say that in agriculture, the quantum of capital formation over a period is far more decisive than the quantum of rainfall received in that period (Singh, 2001).

Over a twenty-year period from 1978 to 1998, Gross Capital Formation in Agriculture (GCFA) was almost in stagnation. When decomposed by the type of institution viz., public and private it was found that since the beginning of 1980's GCFA in public sector started coming down gradually and continued following this till early 1990's, while that under private sector followed this trend only up to 1986-87, but thereafter started looking up and even got accelerated from 1993-94 onwards. The share of private sector GCFA in total GCFA increased from 49 per cent in 1980-81 to 75 per cent in 1998-99 (Gulathi and Bathla, 2001.). The overwhelming share of private sector investment in agriculture is contributed by household sector. To estimate the contribution of households to capital formation in agriculture Central Statistical Organisation (CSO) along with reserve bank of India (RBI) conduct surveys (All India Debt and Investment Surveys, popularly known as AIDIS) once in ten years. But this give only an aggregate data not reflecting regional picture.

Though the consequences of declining capital formation in agriculture are the main concern, a debate is going on between experts whether private sector can compensate for the decline in public sector capital formation. This aspect assumes greater importance in the context of economic liberalization, which advocates the declining role of the state. The trends in capital formation differ across regions widely. Unless the factors influencing these trends are identified, it would be hasty to reach any conclusion. Though we have many studies about capital formation in Indian Agriculture, only few similar studies have been done in Kerala. The present study is an attempt to estimate capital formation in farm households in Kerala.

The specific objectives of the study are
- to assess the nature and extent of capital formation
- to identify the constraints faced by farmers in capital formation.

1.1 Scope of the study.

The household sector occupies a strategic position among various economic units in the country, as it contributes substantially to domestic savings and investment. An understanding of the investment behaviour of this sector is of crucial importance in deciding upon appropriate policies.

Eighty per cent of households in India live in rural areas and 65 per cent of them depend on agriculture. Rural households account for 80 per cent of physical investment in the household sector. Of this roughly three fourths is for agriculture and livestock. Thus capital formation in agriculture is a major component of investment in the household sector. The study may help farmers in visualizing 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. A clear picture of socio-economic characteristics and investment pattern of rural households will also help financial institutions to plan for effective lending and deposit mobilization. It will also help to build up economic data and information at micro level, which can be used for grass root level planning.

1.2 Limitations of the study

Man's experience with knowledge proves again and again that the more he knows the more he finds he has yet to learn. As one becomes familiar with a subject one becomes conscious of its limitations. The present study is also not an exception.

The selection of respondents for the study was done based on proportional allocation. But since recorded data of ward wise population on the basis of land

holdings was not available, stratification was done after discussion with the technical staff in Krishibhavans. Since the respondent farmers were not in the habit of maintaining data regarding farming, collection of data was done by recalling their memory. Some of the farmers were reluctant to give the correct information regarding income, savings etc. However, efforts were made to make the data as authentic as possible.

1.3 Presentation of the study.

The report of the study has been spread out under six chapters as given below. The first chapter deals with the introduction wherein the statement of the problem, objectives, the scope and limitations of the study are discussed. The second chapter covers review of related studies in the light of the present investigation. The third chapter relates to the details of the study area and methodology used in the process of investigation followed by results presented in the fourth chapter. The findings of the study have been discussed in the fifth chapter and chapter six gives the summary of the study followed by references and abstract.

REVIEW OF LITERATURE

2. REVIEW OF LITERATURE.

An extensive and exhaustive literature review is the base for any systematic scientific enquiry. The main objective of this chapter is to review the theoretical and empirical information available from similar or related studies. The literature collected is presented in two headings as given below.

2.1 Income savings and consumption.

2.2 Capital formation.

2.1 INCOME SAVINGS AND CONSUMPTION

Income and consumption determines savings which in turn determines capital formation. Past studies done on these aspects are reviewed under this heading.

The pattern of asset accumulation of different occupational groups was analyzed by Iyengar and Indrakanth (1980) in the light of increasing income as a result of rural development in Tamil Nadu. The concept of asset elasticity was used for measuring the ratio of percentage change in the value of assets of specified type to the total value of assets held by an individual. They found land to be highly elastic for all development to take place. The study also revealed that large proportion of extra income was likely to be absorbed by consumer durable, when it accrues to cultivators and artisans.

Sarma (1980) computed Lorenz ratio for the year 1975-76 based on the data from NCAER study on 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 1967-68. He obtained a Lorenz ratio of 0.416 in 1975-76 as against 0.463 in 1967-68.

In a study on influence of income on pattern of investment in the state of Kerala, Arputhraj (1981) found that there was a tendency for the smaller income groups of cultivators to invest in financial assets, while the higher income groups

invested mostly in agricultural implements and equipments and on residential building.

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 and 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 requirement in subsequent seasons. (Rao,1982)

In his study on income, savings and investment in rural India in states like Kerala and Tamil Nadu Giriappa (1984) had found very low rates of saving and investment. In already developed areas the rates could be low and hence the rates should not be taken for comparing the overall performance of the regions. However, it was opined that high saving and investment rates were dependent on the competitive crop mix, land area owned and the propensity to save.

Choudhary (1990) in a study on trends and pattern of saving behaviour of households in India has found that there was a clear indication of rate of household saving showing a consistent increase along with a shift towards financial savings in preference to savings in physical assets.

Panikkar (1992) in a study on rural household savings and investment in some selected villages of Kerala and Tamil Nadu has found that land and buildings together accounted for the lion's share of the physical assets. The average value of other productive assets such as agricultural tools and implements was small in all the selected villages in both absolute and relative terms.

A study on the consumption pattern of rural households in Kallur village of Thrissur by Bhagilal (1993) revealed that salaried people spent more in consumption of food articles whereas agriculturists spent more in 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 Bathaih (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 of the farm. 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 house hold 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 inequality in income in rural areas was due to unequal distribution of land and other productive assets.

The analysis of 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 the decreasing size of land holding, development of subsidiary activities seem to be the only way to reduce inequalities in rural income (Birthlal and Singh,1995)

In a study on economic analysis of the consumption behaviour of households in Coimbatore city Thanmathi (1995) found that the household size and level of education increased with the increase in income. She suggested that the increase in expenditure proportion of non-food items was due to price stabilization of food items, consumer education and popularization of newer commodities of consumption through mass media by all those engaged in the production of newer commodities.

In an attempt to assess and identify factors that influence household savings behaviour in Uganda, Obwona and Ddumba-Ssentamu (1998) examined the main forms of monetary and non-monetary savings, the purpose for saving in monetary form, opinions on the performance of banks in mobilizing savings, and factors influencing household saving decisions like income, dependency ratio, age and education of household head. The results revealed that the anti-monetary saving environment that existed in the 1970s and early 1980s continued to influence the savings behaviour of households. Both rural and urban households preferred to hold their savings in non-monetary forms such as crops, livestock and real assets.

Vasanthi (1998) in her study on impact of saving behaviour of households on real transaction demand and velocity of money of the household sector in India during the period 1976-77 to 1986-87 has taken saving in financial asset for the study since they form two thirds of the total saving of the household sector. The study revealed that saving in the form of deposits accounted for about 50 per cent of saving in total financial assets.

The study by Elhiraika (1999) in Sudan showed that modern mechanized farming, the most dynamic of all agricultural sub-sectors, has the potential to raise savings, diversify income and generate increased food surplus. Farm size and capital were the major determinants of household income, which in turn determined households savings. Market-based pricing and foreign trade liberalization are imperative to encourage increased investment and food production in this sub-sector.

Morokolo et al. (1999) in their study used conventional economic approaches to saving behaviour and analysed the savings motivation and behaviour of a group of resource poor farmers in the Moretele district of Northwest province, South Africa. It was observed that income was a major determinant of savings behaviour and the main motivations to save were to provide for liquid funds for emergencies and to ensure the education of grandchildren. It also departs from convention in arguing that the life-cycle hypothesis regarding savings does not

hold true in this specific situation and hence provides insight and opportunity for policy adjustment.

A two-season household model presented by Key (2000) using data collected from 154 farmers in 15 villages of Mexico in 1994-95, illustrated how crop input expenditures and demand for credit are altered by changes in the return to savings under various financial market assumptions. According to the model, households used savings and credit to smooth consumption given anticipated seasonal fluctuations in income and expenditures. The impact of the savings rate on household behaviour was found to depend on how crops are financed - whether the household self-finances or borrows, and on whether or not the household is credit constrained. The model illustrates an important link between savings instruments and agricultural production for poor households and suggests several avenues for policy innovation.

Jain and Sharma (2000) studied the consumption pattern across various income groups in northern and southern regions of India based on data collected from 300, 150 and 100 sample households from urban, semi-urban and rural areas respectively. The intake of nutrients was highest for the high income group, followed by middle and low income groups. The low income group consumers in the urban and semi-urban areas of the northern region, and low and middle income groups in all the three areas of the southern region had less than the minimum recommended energy intake and protein intake which could be due to low income group consumers. The magnitude of nutrient elasticity of protein and energy were relatively higher in high-income group consumers.

In an economic analysis of employment pattern, income distribution and poverty levels in varying irrigation environment of Coimbatore district, Ponnarasi (2000) found that the average annual income from on farm, off-farm and non-farm employment by the respondents in irrigated and dry blocks were Rs.61,954 and Rs.47,877 per annum respectively. The income distribution among sample respondents showed that inequality was moderate in dry block than in irrigated

block. The Gini-coefficient for income distribution in irrigated and dry blocks were 0.57 and 0.38 respectively.

Khan and Sen (2001) in their study on inequality and its sources in Bangladesh during the period 1991-92 to 1995-96 on the basis of household expenditure surveys had estimated Gini ratios of income and expenditure distribution and it was found that the rising inequality was largely due to the rising share in income of certain components that were disequalising as well as a rise in the extent of their disequalising effect.

Annual report (2001) of RBI showed that the household sector saving was mainly driven by the increase in the rate of saving in physical assets in 1999-2000, which is essentially related to relatively low rates of return on financial assets in a phase of deceleration in overall economic activity.

Deshpande *et al.* (2001) in a study in four villages of Bhopal district assessed the nutritional profile of expenditure pattern on food and non-food items in relation to the income of villagers. The average monthly expenditure on food and non-food items appeared to be linearly dependent on the average monthly income for all family classes and a very high correlation was observed between income and expenditure. No tangible variation in the per cent monthly expenditure was observed with the increase in monthly income.

2.2 CAPITAL FORMATION

Capital formation is the main key to economic growth. On one hand it reflects effective demand and on the other hand, it creates productive efficiency for future production. The same is true in the case of agricultural sector also. Literature collected on capital formation are presented under this heading.

Bhat (1972) in a study on income, saving and investment of cultivators in an agriculturally prosperous area (Purnea district in Bihar) had found that the capital formation in agriculture was of the order of Rs.587 per household and formed 54 per cent of total capital expenditure. As much as 59 per cent of the total

capital expenditure on agriculture was made on land alone, where five per cent was spent on land improvement, 49 per cent was spend on acquisition of modern farm tools. He concluded that the component of capital formation in agriculture continued to be of predominantly traditional type, and there was no perceptible change or indication of transformation of agricultural technology.

In a study on capital formation in agriculture conducted by NCEAR (1979) it was found that the value of household agricultural wealth, including livestock represented nearly two thirds of the total household wealth in all the farms. Farmland was the major component of farm assets accounting for over 80 per cent, where other assets formed individually less than 10 per cent. A high positive correlation between household agricultural wealth and income was observed. It was found that over 50 per cent of house holds with less than one hectare had only 16.5 per cent of farm assets and less than half a per cent of households with over 20 hectares of land enjoyed over five per cent of farm assets.

A study on the inter regional variations and distribution of rural wealth in India among cultivator households showed that intra regional disparities between top and bottom groups of cultivators was more in the productive physical assets. Households with small area of land owned chose to spend a higher proportion of expenditure on non productive assets as compared to big farmers. This was the reason why as the size of owned area decreased, the proportion of non productive physical assets in total assets increased (Neelakandan,1979).

Apparao (1981) in his study on irrigated and unirrigated zones of Vishakhapattanam district of Andhra Pradesh, revealed that the investment pattern of farm was confined only to the traditional form of equipment. The farmers who saved one third of their net income, invested one third of the total investment in agricultural land and diverted one fifth for acquiring irrigation sources. In unirrigated zones, 71 per cent of the total investment was on purchase of livestock, mainly milch cattle. In the irrigated region, 25 per cent of the total investment was on livestock.

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 irrigation was less than 15 per cent and hence capital investment in irrigation should be enhanced.

Jagadeeshamurthy (1983) in his study on the pattern of investment in irrigated and non-irrigated farms of Hassan District of Karnataka, observed that farm assets constituted a major portion in all the categories of farms, ranging from 61.00 to 77.82 per cent followed by dwelling house. He also reported that the share of dwelling house was the highest in both the type of farms. He observed that higher educational standard was the reason for such patterns of investment .

Borah (1985) assessed the nature of income distribution, saving and expenditure behaviour along with the extent of capital formation and factors affecting investment decisions in the rural areas of Assam. He established an inverse relationship between household size and per capita monthly expenditure and a positive relationship between per household income and size of family. 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 methods of cultivation.

In her study on Capital formation in rural Uttar Pradesh, Shankar (1986) has shown that at the overall level per household capital formation was Rs.1718, nearly half (49 per cent) of which was accounted for by residential house, 35 per cent by farm business and 16 per cent by non-farm business. It was found that per acre capital formation in farm business was highest among small farmers and lowest among marginal farmers. Regarding non-farm business the highest amount of capital formation occurred among sub marginal farmers which was considerably higher than the other categories.

Parameswarappa (1988) studied income, investment and employment in Hoskote Taluk of Banglore District. He observed that a major portion of investment made was on acquisition of irrigation structures followed by livestock assets. On an average, more than 50 per cent of the total farm investment was on irrigation structure. The large farms of highly irrigated group, invested more on machinery and equipment.

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, focusing on smaller array of programmes, reduction of expenditures, priority fixing, budgeting and stimulating private investment for improving the impact of public expenditure.

Autkar et al.(1996) in their study on the assets of rural households in Vidarbha region during the period 1990-91 found that there were wide inequalities of income in the rural sector which have their genesis in unequal distribution of land and other productive assets. Assets like land and buildings which are mostly inherited constituted about 95 per cent of total capital assets. The overall total capital investment per hectare worked out to Rs.44749 against per farm investment of Rs.68380. The study revealed that development of irrigation facilities and introduction of new technology in agriculture lead to attainment of higher intensity of land use through multiple cropping or redistribution of present land resource equitably would improve assets position in rural sector.

In a study on private investments in irrigations in the Northern Agro climatic zone of Kerala by Bastine and Palanisami (1996) during the year 1992-93 found that the average capital investment per farm for pumping units worked out to Rs. 6291. The capital cost per hectare for irrigation systems including structures

was worked out to Rs.6771 on an average. The average annualized capital cost per hectare ranged from Rs.2024 to Rs.810 for the lowland wells category to highland rumlets category. The study concluded that full utilization of water and pump capacity was constrained by smaller size of holdings.

A sample study was conducted by Bhuvaneswari and Alagumani (1996) in Dindigal-Anna district of Tamil Nadu during the period 1991-92 to study the nature and extent and determinants of capital formation. The study showed that the gross capital formation per farm was Rs. 23,000 and net capital formation was seven per cent which was less than the minimum 10 per cent required for sustainable agricultural development. The linear function fitted to study the factors influencing net capital formation showed that farm size, subsidy, owned fund and net income positively influenced net capital formation.

Dhawan (1996) in his study on the relationship between public and private investments in Indian agriculture with special reference to public canals analysed the data obtained from AIDIS survey 1981-82. He found that only a small fraction of Indian farmers' annual capital outlay resulted in fixed capital formation in agriculture. During 1981-82 hardly one sixth of the cultivator household's capital expenditure was geared towards addition to fixed farm assets (excluding purchase of land). That fraction of capital outlay resulting in fixed capital formation in agriculture could be considered partially as a measure of Indian farmers preference for acquisition of fixed farm assets of non farm business (eg:- transport vehicles). The preference varied greatly across states and was found to be very highly and positively correlated with fixed farm capital per cultivator household but negatively associated with normal rainfall. The magnitude of fixed capital formation in agriculture on private account was rather low at Rs.138 per rural household during 1981-82.

Goankar and Mundinamani (1996) in their study on the private sector capital formation in agriculture through borrowings from the commercial banks in Goa found that out of 180 sample beneficiaries, 56 had borrowed for dairy, 37 for fishery and 31 for crop loans. Of the 22 who had borrowed for pumpsets and

sprinklers, most of them had taken up plantation of coconut, mango, rubber, pineapple etc. About 13 borrowers took it for land development, seven for repaying past loans, six for poultry, two for sinking and repairing wells and 16 had taken loans which resulted in diversion of credit. The study showed that farmers were not given sufficient extension facilities, which are essential for both borrowing and utilizing the loan for augmenting capital formation.

Kakde and Alshi (1996) made an attempt to estimate per farm availability of assets and the temporal changes in the value of assets on the selected farms in Akola district at two points of time 1984-85 and 1993-94 .The study revealed that at the overall level, though the total land possessed by the farmers increased the number of working and milch animals in 1983-84 at overall level was 1.66 and 0.70 respectively as against 1.25 and 0.81 in 1993-94. The results showed that except land and electric pumpset, the quantity and value of assets declined in 1993-94.At the overall level the increase of Rs.3058 in the capital investment in 1993-94 on selected farms showed that there was an increase in capital formation.

Kumar and Pandey (1996) studied the role of institutional finance in capital formation in agriculture based on farm level data from Muzaffarnagar district in Uttar Pradesh during the year 1993-94. The use of institutional term loans for capital formation of different size of farms were found depending on the priority assigned to acquire irrigation facilities. The respondents which have adequate irrigation facilities preferred tractors and other associated machineries with the institutional term loans.

An attempt was made by Patel and Kang (1996) in the cotton growing areas of Haryana state to examine the trends in saving and investment behaviour of farmers on tractor and bullock operated farms in the years 1986-87 and 1996-97. The results showed an increasing trend in capital formation on tractor operated farms and bullock operated farms. It was also revealed that about 30.47 per cent of the total family income was spent on durable capital goods in bullock operated farms whereas it was 41 per cent on tractor operated farms. Among the factors

influencing capital formation, size of holdings, family size and net household income were the main factors identified.

Prema (1996) in her study on "Income ,savings and capital formation in farm house holds of Kodakara block of Thrissur District," analysed various sources and amount of income and estimated cost and other variables influencing income. The items of capital formation included in the study were land improvements purchase of live stock, purchase of implements, machinery and transport equipments, digging and repair of wells, construction of farm buildings, farm residence, purchase of land etc. The study showed that the rate of capital formation increased as the farm size increased. Net capital formation was also found to show a similar pattern like gross capital formation.

In his study of determinants of private capital formation under different sources of irrigation across farm categories in Andhra Pradesh, Reddy (1996) showed that the cost A per acre was highest in well irrigation, followed by canal and tank irrigation. The gross returns and farm business income showed a uniform trend and was the highest in assured source of canal irrigation, followed by well and tank irrigation. Costs and returns were positively associated with farm size under canal irrigation indicating that state intervention in the form of capital investment for providing irrigation under canal has led to more capital formation.

Sain and Sharma (1996) examined the different aspects of capital formation in Punjab agriculture at two points of time 1982-83 and 1992-93 using cross-sectional data. The main findings of the analysis highlighted that disinvestments in fixed capital specifically relating to farm machinery took place on small size categories of farms whereas there was significant growth in livestock investment. The large farms continued to add more in farm machinery at a sustainable growth rate. Non farm income was the major source of improvement in the growth of financial viability on small farms whereas surpluses from agriculture contributed the most of this growth in large farms.

In a sample study on capital formation and sustainability of hill agriculture in Khulgad micro watershed of Almora district, Sharma (1996) found that more than 80 per cent of farm households invested mainly on animals. Next priority was for seed in the short run, land leveling and repair of terraces in the long run. Of the total investment in livestock more than 90 per cent of short term investments was in terms of feed. About 70 per cent of total long term investment was on buffaloes followed by irrigation tanks, bullocks and land leveling with 11 per cent, 10 per cent and eight per cent of total long term investment respectively.

Impact of watershed on capital formation in agriculture was studied by Shiyani and Vakariya in 1996 by conducting a case study on the command area of Madhuvanti watershed situated in Junagadh district of Saurashtra region. This revealed that the beneficiary farmers enjoyed a relatively better position in respect of net income, family labour income, farm business income and input-output ratios. Among various components of cost of cultivation, labour, seed and fertilizers had greater bearing on the total cost of cultivation in both beneficiary and non beneficiary group. For non beneficiary group irrigation cost was more than the other group. Watershed which was found to have a positive impact on the farmers economy was one of the most important determinants of capital formation in agriculture.

A study conducted by Sinha and Kumar (1996) in Nalanda district of Bihar to examine the pattern of capital formation during the agricultural year 1985-86 showed that the average per farm and per hectare fixed investment were high being Rs.19650 and Rs.10767 respectively. The highest investment was made on land which accounted for 40 per cent of total investment. Buildings constituted 33 per cent of total investment. The other items of investment were implements and machineries, irrigation resources, diary and livestock. Per hectare investment on fixed assets was found to be more on small farms than on big farms.

Gautam and Verma (1998) in their study in Northern Madhya Pradesh of Chambal command found that fixed investment in land and its improvement came to Rs.438000 to 173890 per farm varying between small to large category. This

formed 83 per cent of total fixed investment. Buildings and well constituted 10-13 per cent of total fixed investment. The percentage of investment on livestock and agricultural machine was very small and it decreased with increase in farm size. The ratio of 9:1 could be observed between land and other assets of fixed investment. The analysis indicated wide variation among the income and investment pattern in small and large farms. The study concluded that the net cash income generated by small, medium and large farms varied between 40 per cent to 50 per cent of total investment annually.

Karmakar (1998) in his paper discussed the growth trends in capital formation in agriculture in both public and private sectors. As the public investment in agriculture has been declining the private sector also showed a declining trend. Private investment in agriculture is determined by three factors public investment or complementarity between public and private investment technology and terms of trade. The term loans sanctioned by the banks constituted a major portion of the gross capital formation in private sector of agriculture. The share of private sector in gross capital formation in agriculture has steadily increased from 61.3 per cent during 1980-81 to 75.65 per cent during 1993-94. It was concluded that the decline in capital formation in agriculture could partly be off-set through increased flow of institutional credit.

In their study on capital formation in Indian economy since 1950-51, Murti and Paul (1998) assume that capital formation depends on four socio economic variables viz. saving, income, population and net capital inflow. Among the four determinants of capital formation population growth has been found to be negatively affecting capital formation while all other three are positively affecting capital formation.

Wagle (1999) in his paper addressed certain issues relating to the demand for fertilizers and private investment in Indian agriculture covering a period of 27 years, ie., from 1962-63 and 1988-89 and found that, demand for fertilizers (measured by the total plant nutrients N, P and K in thousand tonnes) was considered to be the function of percentage of area under irrigation, high-yielding

variety (HYV) seeds, rainfall, real price of fertilizers, real price of non-fertilizer farm inputs other than water and HYV seeds, and the lagged dependent that includes (i) econometric properties of the past estimates, (ii) basis for the selection of an appropriate model, and (iii) choice of the most relevant variables and their measurement. These three are not mutually exclusive.

In his study on the behaviour of private investment in Indian agriculture Kumar (2000) has found that there was a structural change in the relationship between private and public investment in agriculture in 1988-89. Apart from the public investment, availability of short, medium to long term credit and profitability of agriculture captured by gross value added are the major factors influencing private investment. It was also observed that there was no significant relationship between private investment and terms of trade and fertiliser subsidy had only marginal impact on private investment. It was found that deceleration in the growth rate of private investment in agriculture in the 80's was largely due to the declining public investment and a consequent slowing down of expansion in canal irrigation.

Financial reforms in the rural banking sector, as a strategy for the removal of poverty and stimulation of the rural economy of India, was discussed by Dastidar (2000). It was argued that the desired transition of the agricultural sector was possible by way of vertical expansion, which calls for greater capital formation. The rural banking sector was found to play an important role in providing this as the financial reforms seek to drive the banks in the rural areas, particularly the cooperative banks, to give the agricultural sector its needed support.

The study on capital formation in Indian agriculture by Saha and Mandal (2000) showed that capital formation in agriculture sector can be brought about by increasing the desire and ability to save. Without adequate investment of capital, agriculture cannot make substantial contribution to economic development of the country. During 1950 to 1960, the gross capital formation in agriculture was around six per cent of GDP generated from agriculture. It increased to around eight

per cent in next decade. This further increased to about eleven per cent during 1980-81.Then it steadily declined down to seven per cent in1990-91. The situation improved during 90s and this ratio finally settled to about nine per cent at the end of 1995.

Chand (2001) in a state wise analysis to study the trends and issues in public and private investments in Indian agriculture based on the data obtained from RBI and NSSO surveys observed that about 87 per cent of fixed capital formation in agriculture came from cultivator households. During 1981-82. with private investments of Rs.262 and Rs.210 per hectare of net sown area at 1980-81 prices Punjab ranked number one and Kerala ranked second respectively. All kinds of public investment may not lead to or induce private investment and some of the private investment may be induced by public investment and some may be autonomous. At the micro level, it was found that there are some areas of investments where private investment can be a substitute for public investment. Misplaced priorities and leakage in public investments seemed to be the other reasons for lack of inducement effect on private investments.

Gulati and Bathla (2001) examined the behaviour and structure of capital formation in Indian agriculture over the period 1960-98.The detailed analysis showed that the situation was definitely not good, but not alarming. This was because of the increasing share and role of private sector investments in agriculture over time.

Roy and Pai (2001) in their study on incremental capital – output ratio in Indian agriculture assessed the adequacy of current level of investment for attaining the target rate of growth in agriculture sector. Country level estimates showed that in order to achieve the growth target of 4.5 per cent in agriculture the investment should grow at an annual rate of 12.32 per cent as compared to the present level of 4.95 per cent and any short fall in the investment growth might have major consequences for the overall growth of the economy.

Clay *et al.* (2002) attempted to identify the determinants of farmer investments in agricultural intensification in Rwanda and examined how these determinants, either constrain or enable farmer investment strategies with reference to soil conservation investments, use of organic matter, purchase of chemical inputs, and soil erosion associated with land use patterns. The results confirmed that all five hypothesized determinants of adoption (financial incentives, physical incentives, risk, wealth, and agro socioeconomic context) played a role in shaping farmers' investment and input-use behaviour.

MATERIALS AND METHODS

3. MATERIALS AND METHODS

Capital formation is the core process by which all other aspects of growth are made possible. In agriculture it is highly essential for the sustained growth of the sector. The present study is an attempt to assess the capital formation in farm house holds of Nemom Block Panchayat of Thiruvananthapuram District. A brief description of the area of study and methodology used in the study is explained under this chapter.

3.1 AREA OF STUDY

The profitability and investment of agriculture in an area depends largely on the location, climate, soil type, infrastructure facilities, market access etc. A background information on the agro climatic situation of the study area is essential to draw meaningful inferences from the results of the study. In this context the relevant information regarding Thiruvananthapuram district as well as that of Nemom block Panchayat are presented in this section.

3.1.1 Thiruvananthapuram district

Thiruvanthapuram is the southern most district of Kerala, which is bounded by Kollam district on the North, Thirunelveli and Kanyakumari districts of Tamil Nadu State on the East and the South respectively and the Arabian sea on the West.

There are four Taluks in the district viz. Chirayinkeezhu, Nedumangad, Thiruvananthapuram and Neyyattinkara. Thiruvananthapuram Corporation, Varkala, Attingal, Nedumangad and Neyyattinkara Municipal towns are the urban centres in the district. There are 84 Panchayats in the district. The total population of the district as per 2001 Census is 29,46,650 and it has a high literacy rate of 89.22 per cent.

Thiruvananthapuram, the capital city of Kerala has certain special features compared to the rest of the regions in Kerala. These include rapid urbanization, fast development of the service sector, high level of literacy and education, strong political and trade union movement, high level of unemployment etc. But the

setting of the farm front in the District is more or less similar to the rest of the regions of the state (Nair,2000).

3.1.1.1 Geographical features

The land use pattern of Kerala state and Thiruvananthapuram district is presented in Table 3.1.The district has a total geographical area of 218600 ha. Of these the total cropped area is 197491 ha, and forest area 49861 ha. A clear delineation of the geographical area into three distinct regions viz. coastal, midland and highland is visible in the district. Soil in the middle part of the district is fairly rich brown loam of laterite, sandy loam in western coastal region and rich dark brown loam in Eastern hilly parts of the district.

Table3.1. Land use Pattern of Kerala State and Thiruvananthapuram District (Area in hectares).

Item	Kerala	Thiruvananthapuram
Geographical area	3885497	218600
Forest	1081509	49861
Land put to non agricultural uses	354390	22564
Barren and uncultivable land	28884	502
Permanent pastural and other grazing land	253	8
Land under miscellaneous tree crops	18515	69
Cultivable waste	58279	448
Fallow other than current fallow	32138	432
Current fallow	72166	930
Net area sown	2239363	143786
Total cropped area	3001704	197491

Source: Farm guide 2002.

3.1.1.2 Climate and rainfall

The rainfall pattern of the district shows a disparate picture both in its quantum as well as distribution. Although quantum wise (between 2081 mm and 2367mm) it is lower than the state average (2900 mm) it has the advantage of more or less an equitable distribution throughout the year.

3.1.1.3 Cropping pattern

Keeping in line with the general pattern observed in the state, low lying coastal region is largely devoted for seasonal crops like vegetables, banana etc. The midland region is largely devoted for coconut based farming system. The high lands which are part of Western ghats is largely devoted for perennials, plantation crops and natural forests. These high land regions offer very little scope for adjustments in cropping pattern and for increasing cropping intensity. On the other hand the midland regions offer scope for further adjustments in cropping systems through selection of base crop, selective thinning of the crop mix, induction of new crops, increasing cropping intensity through multi tier cropping etc.

3.1.1.4 Contribution of Agriculture sector to Income and employment in the district.

The proportion of population dependent on agriculture, which includes cultivators and agricultural labourers, works out to 12.4 per cent. With the increasing trend towards urbanization the population directly dependant on agriculture and allied sectors is declining and agriculture has become largely a peripheral activity even in rural areas for supplementing income. As a result, the contribution of primary sector in the Net Domestic Product of the district is considerably lower than the average for the state. It has sharply declined from 46 per cent in 1974-75 to 24 per cent in 1996-97. In spite of the decline in proportion of population dependent on agriculture, the per capita income in the district (Rs.9102 in 2000) compared favourably with the state average (Rs.9039 in 2000).

3.1.1.5 Demographic features

The total population of the district according to 2001 census is 2946650 of which 1447594 are males and 1499056 are females. The sex ratio is 1058 females/1000 males. The effective literacy rate is 89.22 per cent. Out of the total population in the district 101965 are cultivators and 263851 are agricultural labourers.

3.1.2 Nemom Block Panchayat

Nemom Block Panchayat is situated in the southern region of Thiruvananthapuram district. It has a total area of 13459 hectare with seven Panchayats. The block has Thiruvananthapuram Corporation as its Northern border; Vellanad and Perumkadavila blocks in the East and Athiyannur block in the South as borders. Karamana river forms the western border of the block.The Panchayats selected for the study are Balaramapuram, Pallichal and Kalliyoor.The map of Nemom Block Panchayat is given in Fig.1.

3.1.2.1 Geographic features

Based on the elevation from sea level the block is classified into six regions. They are

1. Hilly areas: - These areas, which are 100m above MSL are less broad and interconnected. This area constitutes about 1729 ha which form 12.85 per cent of total area. Mixed farming and rubber plantations are seen in these areas.

2. Less sloppy areas :- High water availability and less soil erosion make these regions highly fertile. Coconut is the main crop in this area. It extents to an area of 2306ha (17.13 per cent).

3. Moderately sloppy areas :- These type of land occupy the maximum area in the block. It forms about 49.81 per cent (6704 ha) of the total area. Soil erosion is comparatively less. Mixed farming is seen in these area with coconut as main crop.

4. Highly sloppy area :- These areas are found only in about 1.7 per cent of the total area (230 ha). Parts of Mookunnimala come under the area. Since slope is more there is chance of high soil erosion. Water scarcity is also there in these areas. It is a less fertile area. Rubber is cultivated in these regions.

5. Valleys :- All sloppy lands end in these valleys. Water and minerals from the sloppy lands will get deposited in these valleys. If form about 16.39 per cent (2206 ha) of the total area. These highly fertile regions with alluvial soil are suitable for paddy cultivation.

6. River bank :- These form the highly fertile banks of Karamana river. Soil from this area is mined for brick making. These areas form 2.11per cent (284 ha) of the total area. Land use pattern of the selected panchayats and Nemom Block Panchayat is given in Table 3. 2.

Table 3.2. Land Use Pattern of the Selected Panchayats, hectares

Panchayat	Wetland	Garden land	Cultiv -able waste	Uncultiv able waste	Unclaim ed land	Total
Balarama puram	200	700	23	-	130	1053.00
Kalliyoor	308	1024.5	-	-	215	1727.00
Pallichal	40	1839	-	15	-	1894.00
Total in Nemom Block	1566.67	10221.70	34.30	45	728.20	12595.87

Source: Vikasanarekha of Nemom Block Panchayat, 1997.
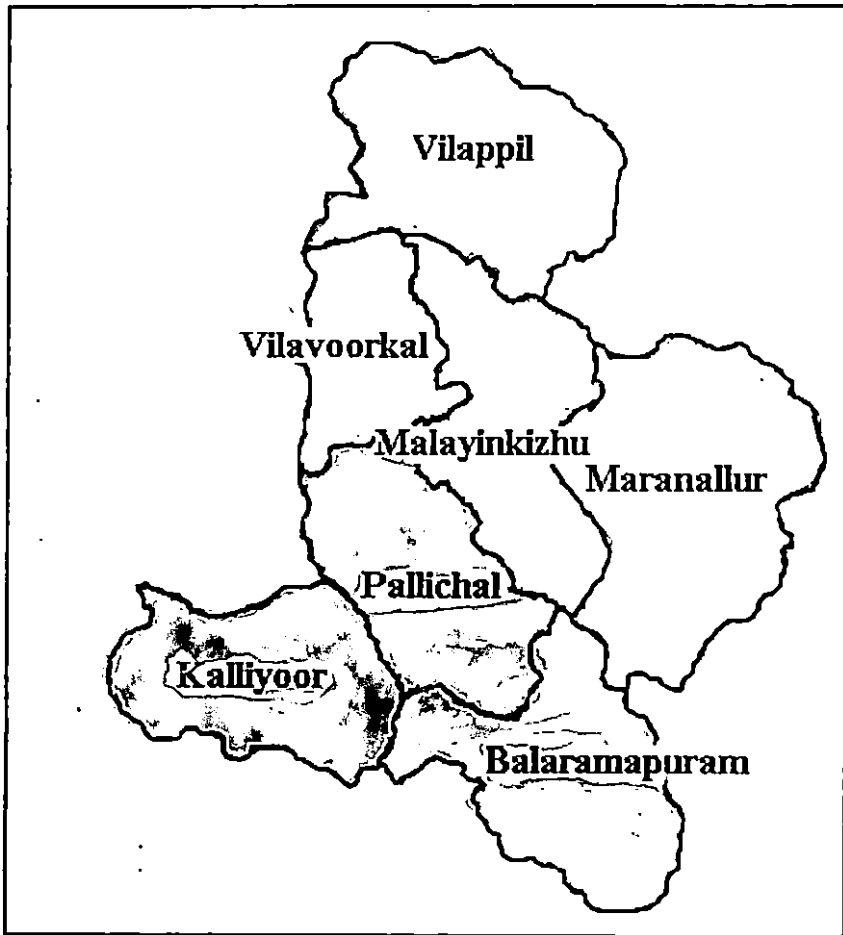
Nemom Block Panchayat
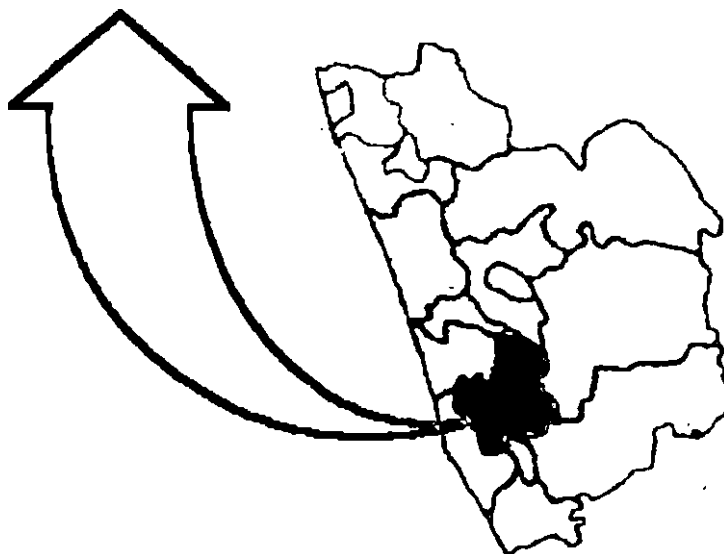
FIG:1 MAP SHOWING THE STUDY AREA

Thiruvananthapuram District

3.1.2.2 Climate

The block has a tropical hilly climate. The monthly rainfall data of the Block is presented in Table 3.3. It was found that the block received an annual rainfall of 846 mm from South-West monsoon and 808 mm from North-East monsoon.

Table 3.3. Monthly Rainfall Data of Nemom Block during the Year 2001.

Months	Rain fall in Nemom Block (mm)
January	3.2
February	16.2
March	0.0
April	209.6
May	195.6
June	182.5
July	297.5
August	189.1
September	558.2
October	256.9
November	238.1
December	20.6

Source: Department of Agricultural Meteorology. College of Agriculture, Vellayani.

3.1.2.3 Agriculture

Nemom was a purely agriculture dependent area in the early days. Paddy was the mainly cultivated crop. But now due to non-availability of labourers, high wage rate and low marketing facilities paddy fields gave way to rubber and coconut

plantations and buildings. Paddy cultivating area was reduced by 26.9 per cent from 1566.67 ha to 423 ha in 1996. Now more profitable crops like banana, vegetables etc. are cultivated in the paddy fields. Even though coconut is cultivated in about 75 per cent of total garden land it is mostly affected by pest and disease.

The Regional Research Laboratory and Coconut Research Centre under Kerala Agricultural University is situated in the block. A KHDP market at Balaramapuram started recently is acting as a boon to the farmers. It is mainly a banana market giving emphasis to eco-friendly methods of cultivation. Some of the farmers are also depending on Aralammoodu market and Chalai market for selling their produce. The increase in profitability through better marketing facilities has made the surrounding farmers in the block to shift their crop to banana. Some farmers are selling their produce on contract basis also.

3.1.2.4 Irrigation

Nemom block is surrounded by Karamana river, Neyyar, Vellayani lake etc. It is the command area of Neyyar irrigation project. Urbanization, unauthorized sand mining and conversion of wetlands had caused disappearance of many streams and ponds which resulted in floods during rainy season and drought during summer. Lack of proper maintenance has reduced the water availability through the canals of Neyyar irrigation project.

3.1.2.5 Cropping pattern.

Cropping pattern of Nemom Block and the selected panchayats as given in Table 3.4. revealed that coconut is the mainly cultivated crop in the block. Next comes rubber and then tapioca, vegetables and paddy. Paddy is usually taken for two seasons and if irrigation is there, a third crop is also cultivated. The area under paddy decreased and that under banana and rubber increased over the years due to profitability of these crops.

Table 3.4. Cropping Pattern of Nemom Block and the Selected Panchayat (Area in hectares).

Crop	Panchayats			Total in Nemom Block	Total in Thiruvananthapuram District
	Balaramapuram	Kalliyoor	Pallichal		
Paddy (1st crop)	100.00	100.00	40.00	423.00	3705.00
Paddy (2nd crop)	100.00	60.00	40.00	383.00	4214.00
Pulses	25.00	20.00	10.00	110.00	1050.00
Vegetables	75.00	100.00	25.00	282.00	31285.00
Coconut	478.00	1058.00	1135.40	7667.40	91362.00
Banana	114.00	189.00	115.00	968.00	1599.00
Tapioca	100.00	213.00	85.00	1003.00	25981.00
Pepper	-	5.00	6.00	76.00	5775.00
Jack	-	2.00	25.00	57.00	6464.00
Mango	-	1.00	28.00	77.00	6957.00
Cashew	5.00	2.00	5.00	26.00	2804.00
Arecanut	-		3.00	20.00	904.00
Rubber	9.00	0.20	140.00	1391.20	27954.00
Betel wine		0.50		0.50	33.00
Total	1006.00	1750.70	1657.40	12484.10	210087.00

Source: Vikasanarekha of Nemom Block Panchayat,1997 and Farm Guide 2002

3.1.2.6 Land holding pattern

Land holding pattern of Nemom block and Thiruvananthapuram district given in Table 3.5 showed that about 95 per cent of the farmers have holdings less than 0.5 ha. Of these 73 per cent of the farmers have holdings between 0.02 ha to 0.5 ha. Only a very low percentage of farmers had holding size more than 4.0 ha.

Table 3.5 Land Holding Pattern of Nemom Block and Thiruvananthapuram District.

Class	Nemom Block			Thiruvananthapuram District		
	Holdings		Area (ha)	Holdings		Area (ha)
	Number	Percentage to total		Number	Percentage to total	
Below 0.02	11795	21.83	142	118349	19.05	1350
0.02-0.5	39897	73.85	3990	458696	73.84	51591
0.5-1.0	1556	2.88	1059	29920	4.82	21199
1.0-2.0	617	1.14	799	11146	1.79	14576
2.0-4.0	137	0.25	316	2522	0.41	6295
4.0-10.0	25	0.05	128	477	0.08	2455
10.0 and above	-	-	-	80	0.01	2563
Total	54027	100.00	6434	621240	100.00	100029

Source: Panchayat Level Statisics,2001

3.1.2.7 Demographic features

According to 2001 census Nemom Block Panchayat has a total population of 255800. Of these 127365 are males and 128435 are females. The sex ratio is 1070 females to 1000 males. Among the Panchayats, Pallichal Panchayat has the maximum population of 38896 with maximum number of Scheduled caste people (5610). The block has a literacy of 90.54 per cent. This is more than the state average of 89.22 per cent. The demographic particulars of the study area and Thiruvananthapuram district are presented in Table 3.6.

Table 3.6. Demographic Particulars of the Study Area.

Panchayat	Male	Female	Total	Scheduled castes		Scheduled tribes		Literacy rate		
				Male	Female	Male	Female	Male	Female	Total
Balaramapuram	15847	15712	31559	1792	1826	3	5	92.34	84.75	88.56
Pallichal	19458	19438	38896	2767	2843	12	10	93.16	86.42	89.77
Kalliyoor	15722	15857	31579	2541	2625	15	15	93.91	88.00	90.93
Nemom block	127365	128435	255800	14971	15617	217	234	93.71	87.41	90.54
Thiruvananthapuram District	1447594	1499056	2946650	167251	176188	7860	8321	92.84	85.76	89.22

Source: Panchayat level statistics 2001.

3.1.2.8 Occupation

The total population of working people in Nemom Block is about 80358. Out of this 65644 are males and 14714 are females. Of the total population depending on agriculture majority are agricultural labourers.

Handloom industry is very prominent in this block especially in Balaramapuram, Pallichal and Kalliyoor panchayats. Products from this sector which were internationally famous is now competing for existence in local market. It has now become less attractive to new generation. A large number of people are working in service sector and the consumer market is mainly dependent on them. The service sector together with the declining agricultural and industrial sector is forming a mixed economy in the block. Occupational pattern of the people in agricultural sector in the study area is presented in Table 3.7.

Table 3.7. Occupational Pattern of People in Agricultural Sector.

Place	Cultivators			Agricultural labourers			Total workers		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Balaramapuram	1195	269	1464	2508	425	2933	8299	2729	11028
Kalliyoor	1139	101	1240	3997	757	4754	10034	2440	12474
Pallichal	518	167	685	3116	357	3473	7814	1780	9594
Nemom block	7405	1032	8435	26708	3849	30557	65644	14714	80358
Thiruvananthpuram District	87944	14021	101965	217436	46415	263851	727138	233588	960726

Source: Panchayat Level Statistics 2001.

3.1.2.9 Other infrastructure facilities

Rapid urbanization and close proximity to Thiruvananthapuram corporation has its impact on development of infrastructure facilities in Nemom Block Panchayat. The block is well connected by a network of roads. The NH47 road passes through Balaramapuram and Pallichal panchayats of these block. Transport facilities are not at all a problem, so that farmers are able to get planting material

and other inputs from Kalliyikkavila which is the border of Tamil Nadu and Kerala state. All the Panchayats are electrified.

There are 12 nationalized commercial banks, two scheduled commercial banks, four district co-operative bank branches and 13 service co-operative banks and credit societies in the block.

To be in tune with the changing situation people are giving much importance to education. But for higher and better education they are depending on schools and colleges in Thiruvananthapuram city. There are seven Government high schools, seven Government upper primary schools and 13 Government lower primary schools in the block. There is no high school in Pallichal and Vilapil Panchayat. The only one vocational higher secondary school in this block is in Malayankizhu Panchayat.

3.2   METHODOLOGY

Appropriate research design is a prerequisite for any scientific study. A brief description of procedure followed in the selection of sample, collection of data, analytical techniques employed and the concepts used in the study are presented in this section under the following headings.

3.2.1   Sampling design.

3.2.2   Concepts used.

3.2.3   Analysis of data.

3.2.1 Sampling design.

The data for the study were generated through sample survey involving two stage random sampling and stratified sampling in the third stage. Nemom Block Panchayat, the study area, consists of seven Panchayats. Of this three Panchayats were selected at random. The selected Panchayats were Pallichal, Balaramapuram and Kalliyoor. From each selected Panchayat two wards were

randomly selected. Based on the information on sizes of holdings collected from 'Krishi Bhavans' stratification was done into three classes viz.

Class I - upto and including 0.5 ha

Class II - 0.5-1.0ha

Class III - above 1.0 ha

A total of 25 farm households belonging to these classes in each ward was selected based on proportional allocation, thus making a total of 150 respondents (25x2x3) for the study. Distribution of sample respondents is presented in Table 3.8.

Table 3.8. Distribution of Sample Respondents.

Name of Panchayat and ward	Number of respondents			
	Class I	Class II	Class III	Total
I.Pallichal Panchayat				
1.Edaycode	16	7	2	25
2.Vedivechankovil	15	8	2	25
Subtotal	31	15	4	50
II.Balaramapuram Panchayat				
1.Anthiyoor	15	7	3	25
2.Thembamuttam	16	6	3	25
Sub total	31	13	6	50
III.Kalliyoor Panchayat				
1.Punnamoodu	12	7	6	25
2.Kalliyoor	11	8	6	25
Sub total	23	15	12	50
Total	85	43	22	150

Source: Krishi Bhavans of Pallichal, Balaramapuram and Kalliyoor Panchayats.

3.2.1.1 Period of study

The agricultural year 2001-2002 was the reference period of the study. Data collection was done during the months of May-July, 2002.

3.2.1.2 Collection of data

The study is based on farm level data generated through sample survey. Data collection was done through personal interview method using a well structured and pre tested interview schedule. Information relating to family composition, educational status, occupation, farm and family income and expenditure, asset position, savings etc. were collected for the reference year. Primary data collection was based on the response of the farmers. Secondary data on land utilization, rainfall, demographic features, infrastructural facilities etc. were collected from various published and unpublished sources.

3.2.2 Concepts used

i. Gross income.

The sum of farm income and non-farm income formed the gross income of a household.

ii. Farm business income.

It is defined as gross value of output (main products + by products) priced at farm harvest rates minus cost A_2 (Borah, 1985).

iii. Family labour income.

It is defined as farm business income minus interest on capital invested in agriculture. Briefly put, this is equal to gross value of output minus cost B (Borah, 1985).

iv. Net income.

It is gross income of agriculture and non-agricultural sources over operating expenses and taxes.

v. Capital formation.

The difference in the value of assets and stocks as between at the end and at the beginning of an accounting year is a measure of capital formation (All India Rural Household Survey, 1965).

vi. Depreciation.

Capital, while in use for the production of goods undergoes wear and tear. This is called capital consumption or depreciation of capital (Agrawal, 1997)

vii. Net capital formation.

Gross capital formation minus depreciation is called net capital formation

3.2.3 Analysis of data

Tabular analysis was used to study the socio economic features, income and expenditure pattern and asset structure of farm households. The tools used for measurement of variables are discussed below.

3.2.3.1 *Income disparity*

The disparities in farm income and non-farm income among different categories of farm households were measured using Lorenz curve and Gini's concentration ratio.

a. Lorenz curve

Lorenz curve was developed by Max O. Lorenz. 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. These curves show the percentage of income received by 'X' per cent of the population of farmers with 'X' varying from 0 to 100. The curve depicts the relative position of different categories of farm households from the line of perfect equality. The diagonal line represents the equal distribution line, the curve close to the diagonal line indicates least disparity and the curve farthest to the diagonal line indicate greatest disparity in income distribution.

b. Gini's concentration ratio

The ratio is approximated from Lorenz curve as $GR=A/(A+B)$

where,   A- Area inside the curve.

B- Area outside the curve.

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.

3.2.3.2 Asset structure of farmers.

Asset structure of the farmers at the beginning of July 2001 was estimated and tabular analysis was used to study it.

1. Land : Evaluation of land was done based on the market value prevailing in the area.

2. Farm buildings: Buildings other than residential house like implement shed, fuel store, cattle shed, grain store etc. were classified as farm buildings and they were evaluated at their reported present values.

3. Residential building.

Based on the type, age etc. the approximate value that the houses fetch at the time of survey was used to value them.

4. Farm equipments and agricultural implements.

They were evaluated at their reported present values.

5. Livestock

Reported present values were used to value live stock

6. Wells and Pumpsets

These have been valued at their reported present values.

3.2.3.3 Capital formation

Capital expenditure on construction of houses, purchase of houses and durables and major repairs of these items during the reference year were included under capital formation. Items of capital formation included namely land improvements, purchase of livestock, implements and machinery, digging and

repair of wells, construction of farm buildings, farm residence and purchase of land during the reference period were studied. The items included under land improvement are fencing, bunding, leveling, reclamation, orchards and plantations etc. 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.

Capital means the stock of physical reproducible factors of production. When the capital stock increases with passage of time, this is called capital formation. (Murti and Paul,1998)

Thus,Gross capital formation

$$I_t = K_t - K_{t-1}$$

Net capital formation

$$NCF_t = I_t - \beta$$

Where K_t - values of productive assets at the end of June 2001.

K_{t-1} - values of productive assets at the beginning of July 2002.

β - Depreciation and other losses.

3.2.3.4 Depreciation.

A pure economic measure of capital consumption would require forecast of capital cost, operating cost and production rates of the machines in every future period up to the time when the utility of the service of the machine falls below replacement cost. It is rather difficult to obtain necessary forecast for all these items. Therefore it is difficult to quantify depreciation in their rigorous framework of theory. All that can be attempted is an operational measure which is a close approximation to a pure theoretical concept (Lal,1980) .

In the present study depreciation was accounted through straight-line method. From the present value of asset reported by farmers and expected life depreciation was calculated using the formula

$$\text{Depreciation} = \frac{\text{Purchase value} - \text{residual value}}{\text{Life period of the asset.}}$$

where purchase value of the asset was taken as that reported by farmers.

For calculating depreciation, the following guidelines were used. As far as possible the guidelines suggested by Prema (1996) was used.

    i. Livestock.

       Economic life period of the animal was assumed to be six year.

   ii. Wells.

       The life period of wells was taken as 40 years and residual value at the end of 20th year was taken as 50 per cent of initial cost.

  iii. Pump sets.

       The life period was taken as 15 years with 66 per cent residual or salvage value.

  iv. Farm buildings

       The life period of permanent farm buildings was taken as 20 years and that of temporary farm buildings as five years.

   v. Farm implements

       The light farm implements are given a total life period of only 5 years without a salvage value.

  vi. Fencing

       Concrete fences were assumed to have a life period of 25 years .

3.2.3.5 Rate of Capital formation.

The rate of capital formation (RCF) in the year 't' was calculated for the aggregate using the formula,

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

NCF_t - Net capital formation in year 't'.

K_{t-1} - Value of productive assets at the end of June, 2001.

3.2.3.6 Constraints in capital formation.

The major constraints in capital formation in farm households were identified and the response of the farmers regarding these problems were gathered in the order of their importance and ranked from 1 to 6. The scores 6,5,4,3,2 and 1 were assigned to these classes in the order of their rank. The cumulative rank for each constraint was then calculated.

RESULTS

4. RESULTS

The present study on capital formation in farm households of Kerala was undertaken with the objective of assessing the nature and extent of capital formation and to identify the constraints faced by farmers in capital formation. The results of the study are presented in six sections as detailed below.

4.1.   General socio economic characteristic of the sample

4.2.   Income and expenditure pattern of farm households

4.3.   Savings of households and factors influencing savings

4.4.   Asset structure of farm households and capital formation

4.5.   Income, expenditure, asset structure and capital formation in farm households of different Panchayats

4.6.   Constraints in capital formation.

4.1.   GENERAL SOCIO- ECONOMIC CONDITIONS OF THE SAMPLE

An analysis of the socioeconomic characteristics of the sample farmers will throw light on the organizational and institutional environments within which the farming systems function and the farming practices are being carried out. The salient features of the social and economic conditions viz. family, size, age and sex, literacy, occupation, cropping pattern etc. of the sample respondents are presented under this section.

4.1.1   Family Size

The respondent farmers were classified based on their family size and their distribution in the different classes are given in Table 4.1. It was found that majority of the respondents had a nuclear family with a size ranging from 1-4 (66.00 per cent). About 33.33 per cent of the respondents had family size between 5-7 and only one (0.67 per cent) with more than seven family members. Class wise analysis also revealed a similar trend with class I having 69.41 per cent, class II having 60.47 per cent and class III having 63.64 per cent of the farmers with family size 1-4.

Table 4.1.   **Classification of Respondents According to their Family Size.**

Size of family	Category of farm and number of persons			
	Class I	Class II	Class III	Aggregate
1-4	59 (69.41)	26 (60.47)	14 (63.64)	98 (66.00)
5-7	25 (29.41)	17 (39.53)	8 (36.36)	51 (33.33)
Above 7	1 (1.18)	-	-	1 (0.67)
Total	85 (100.00)	43 (100.00)	22 (100.00)	150 (100.00)

Figures in parentheses show percentages to total

4.1.2   Age

The classification of respondents on the basis of age is given in Table 4.2. There were 50 respondents (33.33 per cent) having age between 40-50. Next to this, age group 50-60 had a maximum number of 45 (30 per cent) respondents. There were 38 farmers (25.34 per cent) within the age group 60-70 and 17 farmers (11.33 per cent) in the age group 30-40. In class I maximum number of farmers ie. 29 (34.12 per cent) were between the age group 40-50. In Class II, 17 farmers (39.54 per cent) were in the age group 60-70 and in Class III, 8 farmers (36.36 per cent) were in 50-60 age group.

Table 4.2.   **Classification of Respondents According to Age of Head of Family.**

Age group	Category of farm and number of persons			
	Class I	Class II	Class III	Aggregate
60-70	14 (16.47)	17 (39.54)	7 (31.82)	38 (25.34)
50-60	28 (32.94)	9 (20.93)	8 (36.36)	45 (30.00)
40-50	29 (34.12)	15 (34.88)	6 (27.27)	50 (33.33)
30-40	14 (16.47)	2 (4.65)	1 (4.55)	17 (11.33)
Total	85 (100.00)	43 (100.00)	22 (100.00)	150 (100.00)

Figures in parentheses show percentages to total

4.1.3   Education.

The distribution of respondents according to education of the head of the family as presented in Table 4.3 showed that majority of respondents had high educational qualification with 41(27.34 per cent) graduates and 29(19.33 per cent) postgraduates. None of the farmers were illiterate. About 21.33 per cent of the farmers had passed SSLC, 19.33 per cent had passed PDC while six per cent of the farmers had only primary education and 6.67 per cent of the farmers had studied up to secondary level. Class wise analysis also showed same trend with majority of respondents having completed graduation with 22.35 per cent, 34.88 per cent and 36.36 per cent in class I, class II and class III respectively. In class II and class III all the farmers selected have passed SSLC while in class I, 10.60 per cent of the farmers had only primary education and 11.76 per cent had only secondary education.

Table 4.3.   **Classification of Respondents According to Education Level of Head of the Family.**

Category of farm	Education of head and number of persons						
	Primary	Secon dary	SSLC	PDC	Grad uation	Post graduation	Aggregate
Class I	9 (10.60)	10 (11.76)	20 (23.53)	17 (20.00)	19 (22.35)	10 (11.76)	85 (100.00)
Class II	-	-	9 (20.93)	7 (16.28)	15 (34.88)	12 (27.91)	43 (100.00)
Class III	-	-	4 (18.18)	4 (18.18)	8 (36.36)	6 (27.28)	22 (100.00)
Total	9 (6.00)	10 (6.67)	32 (21.33)	29 (19.33)	41 (27.34)	29 (19.33)	150 (100.00)

Figures in parentheses show percentages to total

4.1.4   Occupation of Head of the Family.

The details on occupation of the head of the family as presented in Table 4.4 showed that majority of the respondents were having agriculture and business (31.33 per cent) or were retired from service sector and doing farming (31.33 per cent). About 24.67 per cent of the respondents had undertaken agriculture along with their occupation in service sector. Agriculture was the main occupation of 6.67 per cent of respondents and about 4.6 per cent of the respondents were engaged in agriculture along with other activities including agriculture labourers and politicians. Class wise analysis revealed that taking up agriculture along with work in service sector was predominant among majority of respondents in class I (31.76 per cent) while those retired from service sector and taking up agriculture as their main occupation formed the major share of respondents in class II (48.84 per cent) and class III (45.45 per cent).

Table 4.4.   Classification of Respondents According to Occupation of Head of the Family.

Occupation	Category of farm and number of persons			
	Class I	Class II	Class III	Aggregate
Agriculture Alone	8 (9.42)	-	2 (9.09)	10 (6.67)
Agriculture + Business	26 (30.59)	13 (30.23)	8 (36.36)	47 (31.33)
Agriculture + service sector	27 (31.76)	8 (18.60)	2 (9.09)	37 (24.67)
Agriculture + Retired from service sector.	16 (18.82)	21 (48.84)	10 (45.45)	47 (31.33)
Agriculture +business+ Service sector	2 (2.35)	-	-	2 (1.33)
Agriculture +others	6 (7.06)	1 (2.33)	-	7 (4.67)
Total	85 (100.00)	43 (100.00)	22 (100.00)	150 (100.00)

Figures in parentheses show percentages to total

4.1.5   Age of Respondent Family Members

The respondent family members were classified according to age into five groups as shown in Table 4.5.viz. adult male, adult female, adolescent (12-21 years), children (5-12 years) and children less than 5 years. It was found that adult female group was the predominant one (32.72 per cent) and 31.35 per cent, 16.74 per cent, 16.60 per cent and 2.59 per cent of the family members were adult males, children (5-12 years), adolescents and children (less than 5 years) respectively. Class wise observation also showed that majority of the respondent family members were adult females with 117 (32.05 per cent), 68 (34.5 per cent) and 30 (31.60 per cent) in Class I, II and III respectively.

Table 4.5.   **Distribution of Respondent Family Members According to Age.**

Group	Category of farm and number of persons			
	Class I	Class II	Class III	Aggregate
Adult Male	109 (29.86)	67 (34.00)	30 (31.60)	206 (31.35)
Female	117 (32.05)	68 (34.50)	30 (31.60)	215 (32.72)
Adolescent (12-21 years)	64 (17.53)	23 (11.67)	22 (23.16)	109 (16.60)
Children (5-12 years)	64 (17.53)	33 (16.75)	13 (13.64)	110 (16.74)
Children (Less than 5 years)	11 (3.03)	6 (3.08)		17 (2.59)
Total	365 (100.00)	197 (100.00)	95 (100.00)	657 (100.00)

Figures in parentheses show percentages to total

4.1.6   Occupation of Family Members.

The distribution of respondent family members according to their occupation as revealed by Table 4.6. showed that at the aggregate level 55.63 per cent of the respondent family members were in service sector followed by business sector (30 per cent), NRI (8.12 per cent) and others including workers, painters etc. (6.25 per cent). Class wise analysis also showed a similar trend with maximum people engaged in service sector in all the three classes with 52.33 per cent, 62.75 per cent and 52.17 per cent in class I, class II class III respectively. Out of the total, the percentage share of people in business sector was highest in class III (39.13 per cent) and NRI and people engaged in other occupations was maximum in class I which formed 9.30 per cent and 10.47 per cent of the total respectively.

Table 4.6. **Distribution of Respondent Family Members According to Their Occupation.**

Occupation	Category of farm and number of persons			
	Class I	Class II	Class III	Aggregate
Service	45 (52.33)	32 (62.75)	12 (52.17)	89 (55.63)
Business	24 (27.90)	15 (29.41)	9 (39.13)	48 (30.00)
NRI	8 (9.30)	3 (5.88)	2 (8.70)	13 (8.12)
Others	9 (10.47)	1 (1.96)	-	10 (6.25)
Total	86 (100.00)	51 (100.00)	23 (100.00)	160 (100.00)

Figures in parentheses show percentages to total

4.1.7 Operational Holding of Respondents.

The respondents belonged to three classes with class I having an area up to and including 0.5 ha, class II between 0.5 ha – 1.0 ha and class III more than 1.0 ha. The number of respondents, the total area owned and the average size of holding in each class and at the aggregate level as presented in Table 4.7 revealed that at the aggregate level the average size of holding was highest in class III (1.47 ha) followed by class II (0.66 ha) and class I (0.17 ha). It was found that out of the total area owned by the respondents (75.12 ha), class III farmers had 32.23 hectares (42.90 per cent) followed by class II with 28.36 hectares (37.75 per cent) and class I having 14.53 hectares (19.34 per cent). Particulars of the leased in land, leased out land and cropped areas revealed that out of the total area cultivated, 5.11ha (94.81 per cent) in class I and 0.28ha (5.19 per cent) in class II were leased in land. Area leased out for cultivation was 6.91 ha (48.49 per cent) in class II and 7.34ha (51.51 per cent) in class III.

Table 4.7.   Distribution Pattern of Operational Holdings of Respondents.

Category of Farm	Number of farmers in each class	Area owned (in hectares)		Total Area leased in (ha)	Total Area leased out (ha)
		Total Area	Average size of holding		
Class I	85	14.53 (19.34)	0.17	5.11 (94.81)	-
Class II	43	28.36 (37.75)	0.66	0.28 (5.19)	6.91 (48.49)
Class III	22	32.23 (42.90)	• 1.47	-	7.34 (51.51)
All farms	150	75.12 (100.00)	0.50	5.39 (100.00)	14.25 (100.00)

Figures in parentheses show percentages to total area owned.

4.1.8   Cropping Pattern

Cropping pattern of an area denotes the total area occupied by each crop in the area. To obtain the total area occupied by crops like coconut, banana, arecanut etc. the number of plants/palms obtained was multiplied by the spacing recommended by package of practices of Kerala. Agricultural university. This was done because majority of the farmers had crops under homestead conditions without adopting, proper spacing and following non uniform planting. As revealed by Table 4.8, the major crops grown in the area were coconut, banana, tapioca, vegetables etc. At the aggregate level coconut was grown in 51.22 hectares (56.31 per cent) followed by banana in 21.57 hectares (23.71 per cent) and tapioca in 8.83 hectares (9.71 per cent). Vegetables, rubber, pepper, arecanut and clove occupied 4.64 ha, 2.36 ha, 1.29 ha, 0.66 ha and 0.40 ha area respectively. Class wise analysis also revealed a similar trend with coconut occupying maximum percentage of the total area cultivated in class I (48.26 per cent), class II (64.75 per cent) and class III

(54.90 per cent). In class I banana was cultivated in 9.31 hectares which formed 36.87 per cent of the total area cultivated in the class. It was higher than that in class II and class III with 5.36 hectares (17.98 per cent) and 6.9 hectares (19.21 per cent) under banana cultivation.

Table 4.8. Cropping Pattern in the Sample Farms.

Crops	Category of farm and area in hectares			
	Class I	Class II	Class III	Aggregate
Coconut	12.18 (48.26)	19.30 (64.75)	19.74 (54.90)	51.22 (56.31)
Tapioca	2.46 (9.76)	2.73 (9.15)	3.64 (10.13)	8.83 (9.71)
Vegetables	0.80 (3.17)	0.78 (2.62)	3.06 (8.52)	4.64 (5.10)
Rubber	0.24 (0.95)	-	2.12 (5.96)	2.36 (2.58)
Banana	9.31 (36.87)	5.36 (17.98)	6.9 (19.21)	21.57 (23.71)
Pepper	0.25 (0.99)	0.64 (2.15)	0.40 (1.11)	1.29 (1.42)
Clove	-	0.40 (1.34)	-	0.40 (0.44)
Arecanaut	-	0.60 (2.01)	0.06 (0.17)	0.66 (0.73)
Gross cropped area	25.24 (100.00)	29.80 (100.00)	35.92 (100.00)	90.96 (100.00)
Net area sown	17.32	20.50	26.82	64.64
Cropping intensity per farm	145.73	145.37	133.93	140.72

Figures in parentheses show percentages to total

The net area sown and gross cropped area was highest for class III with 26.82 ha and 35.92 ha respectively. But cropping intensity which referred to the rate of gross cropped area to the net sown area was highest (145.73) for class I farmers.

4.2 INCOME AND EXPENDITURE.

4.2.1 Source of Income of Farm Households.

Income of a household influence savings which in turn determines the level of capital formation. The income details of the sample farm households for the reference year are presented in Table 4.9. The source of income were classified as farm income and non farm income.

At the aggregate level and in all classes non farm income formed major share of the total income. The results revealed that the farm income for all farms was Rs. 40965.36 (39.15 per cent) and non farm income was Rs. 63669.59 (60.85 per cent). The farm income and non farm income was highest for class III with Rs.69081.19 (41.13 per cent) and Rs. 98890.92 (58.87 per cent) respectively.

Table 4.9.   Income of Farm Households, Rs. per farm

Source	Class I	Class II	Class III	Aggregate
Farm income	30116.49 (36.45)	48025.96 (41.50)	69081.19 (41.13)	40965.36 (39.15)
Non farm income	52517.64 (63.55)	67693.92 (58.50)	98890.92 (58.87)	63669.60 (60.85)
Total	82634.13 (100.00)	115719.88 (100.00)	167972.11 (100.00)	·104634.96 (100.00)

Figures in parentheses show percentages to total

The breakup of source wise farm income in the farm as given in Table 4.10 revealed that at the aggregate level, crops occupied a major share forming 71.86 per cent (Rs.29435.78) of total farm income followed by livestock with 17.63 per cent

(Rs.7224.07) of the total farm income. The income obtained from leased out land in the form of rent and other hiring charges formed 10.51 per cent of the total farm income. Among the classes, the contribution of crops was highest in class I (81.53 per cent) followed by class III (72.86 per cent) and class II (59.12 per cent). Livestock contribution was highest in class II (Rs.12212.33) with 25.43 per cent of the total followed by class I (Rs.5563.29) with 18.47 per cent and class III (Rs.3890.91) with 5.63 per cent to the total. The income from leased out land and hiring was highest in class III (21.51 per cent) while it was 15.45 per cent in class II and negligible in class I.

Table 4.10.   Sourcewise Farm Income of Farm Households, Rs. per farm

Source	Class I	Class II	Class III	Aggregate
Crop	24553.20 (81.53)	28394.44 (59.12)	50335.55 (72.86)	29435.78 (71.86)
Livestock	5563.29 (18.47)	12212.33 (25.43)	3890.91 (5.63)	7224.07 (17.63)
Others*	-	7419.19 (15.45)	14854.73 (21.51)	4305.52 (10.51)
Total	30116.49 (100.00)	48025.96 (100.00)	69081.19 (100.00)	40965.37 (100.00)

* Income from leased out land and hiring

Figures in parentheses show percentages to total

4.2.2 Expenditure Pattern of Farm Households.

The expenditure of a farm house hold included expenditure on crop, livestock and consumption purposes. The expenditure pattern of farm households as presented in Table 4.11 showed that consumption formed 74.62 per cent (Rs. 41400.55) of the total expenditure followed by crop and livestock with 18.13 per cent (Rs. 10058.91) and 7.25 per cent (Rs. 4022.11) of the total expenditure respectively. It was found that among the classes, Class III had the highest total expenditure (Rs.82583.91) followed by Class II (Rs.63491.82) and Class I (Rs.44414.69). It may be mentioned that the percentage share of crop expenditure

increased as farm size increased and that of consumption expenditure decreased with increase in farm size. Regarding crop expenses Class III had the highest share (29.18 per cent) while Class I reported highest share of expense in consumption (79.13 per cent). The expenditure for livestock was highest in Class II (Rs.8655.02), which formed 13.63 per cent of the total expenditure.

Table 4.11.   Item wise Expenditure of Farm Households, Rs. per farm

Item	Class I	Class II	Class III	Aggregate
Crop	7244.31 (16.31)	8441.76 (13.30)	24094.27 (29.18)	10058.91 (18.13)
Livestock	2026.65 (4.56)	8655.02 (13.63)	2676.68 (3.24)	4022.11 (7.25)
Consumption	35143.73 (79.13)	46395.04 (73.07)	55812.96 (67.58)	41400.55 (74.62)
Total	44414.69 (100.00)	63491.82 (100.00)	82583.91 (100.00)	55481.57 (100.00)

Figures in parentheses show percentages to total

4.2.2.1 Farm Expenditure.

Farm expenditure comprises of crop and livestock expenses. Break up of crop expenditure as shown in Table 4.12 revealed that at the aggregate level out of the total crop expenses of Rs. 10058.91, materials contributed Rs. 5019.79 (49.90 per cent) followed by labour with Rs. 3224.68 (32.06 per cent) and other expenditure including marketing cost, interest on agricultural loans, hiring charges and rent on leased in land forming 18.04 per cent (Rs. 1814.44). Among the classes Class III had the highest crop expenditure (Rs. 24094.27) followed by Class II (Rs.8441.75) and Class I (Rs. 7244.31) respectively. Material expenditure formed the highest percentage of total expenditure in all the classes with 58 per cent of the total in Class III and 45.36 per cent and 45.61 per cent in Class II and Class I

respectively. The percentage share of expenditure on labour was highest in Class II (39.30 per cent) and other expenses was highest in Class I (27.74 per cent).

Table 4.12.   Item wise Crop Expenses of Farm Households, Rs. per farm

Item	Class I	Class II	Class III	Aggregate
Materials	3304.14 (45.61)	3829.44 (45.36)	13975 (58.00)	5019.79 (49.90)
Labour	1930.59 (26.65)	3317.66 (39.30)	8042.82 (33.38)	3224.68 (32.06)
Others*	2009.58 (27.74)	1294.65 (15.34)	2076.45 (8.62)	1814.44 (18.04)
Total	7244.31 (100.00)	8441.75 (100.00)	24094.27 (100.00)	10058.91 (100.00)

* Marketing cost, interest on agricultural loans, hiring charges and rent on leased in land.

Figures in parentheses show percentages to total

The item wise expenditure for livestock as shown in Table 4.13 revealed that at the aggregate level 79.54 per cent of the total expenditure (Rs.3199.09) was on feed. Labour formed (Rs. 540.66) 13.44 per cent of the total expenditure and other expenditures including expenditure for medicine, artificial insemination and other treatments formed 7.02 per cent (Rs.282.36). Class wise analysis also revealed a similar trend with highest percentage of expenditure on feed. The total expenditure on livestock was more in Class II with Rs. 8665.02 in which 83.60 per cent of the total was spent on feed alone, followed by Class III (Rs. 2676.68) and Class I (Rs. 2026.65) respectively. The percentage expenditure on labour and other expenditure was maximum in Class III which formed 33.11 per cent and 12.15 per cent of the total expenditure respectively.

Table 4.13. Itemwise Expenditure for Livestock.

Items	Category (Rs. per farm house hold)			
	Class I	Class II	Class III	Aggregate
Feed	1606.87 (79.10)	7233.72 (83.60)	1465.00 (54.74)	3199.09 (79.54)
Labour	223.53 (11.22)	990.70 (11.50)	886.36 (33.11)	540.66 (13.44)
Others*	196.25 (9.68)	430.60 (4.90)	325.32 (12.15)	282.36 (7.02)
Total	2026.65 (100.00)	8655.02 (100.00)	2676.68 (100.00)	4022.11 (100.00)

* Expenditure for medicine, artificial insemination and other treatments.

Figures in parentheses show percentages to total

4.2.2.2 Household Consumption Expenditure.

The consumption expenditure of the family in the current year was measured including expenses for food, clothing, fuel, education, travel, medicine, social ceremonies, religious ceremonies, taxes electricity and miscellaneous items which represented expenditure for cosmetics, smoking and beverages and other daily use items.

The break up of consumption expenditure of farm households as presented in Table 4.14 showed that at the aggregate level 41.03 per cent (Rs. 16981.21) of the total expenditure was on food. Education, travel and social ceremonies occupied 16.64 per cent, 10.34 per cent and 9.06 per cent of the total expenditure respectively. Out of the total expenditure 5.53 per cent, 3.97 per cent and 3.44 per cent was occupied by fuel, electricity and medicine respectively. A meagre percentage of 0.63 per cent and 0.47 per cent was occupied by religious ceremonies and taxes respectively. Miscellaneous items formed 0.64 per cent of the total expenditure. Class wise analysis showed that the highest total consumption expenditure was in

Class III with Rs. 55812.96 followed by Class II (Rs. 46395.04) and Class I (Rs. 35143.73) respectively. In all the classes maximum expenditure was on food which showed a declining share from Class I to Class III forming 43.64 per cent, 40.62 per cent and 35.24 per cent in Class I, Class II and Class III respectively. The per cent share of expenditure on fuel, education and medicine was highest in Class III which formed 7.22 per cent, 21.04 per cent and 4.88 per cent respectively. The share of clothing, social ceremonies and religious ceremonies was highest in Class II with 8.72 per cent, 10.88 per cent and 0.68 per cent respectively, while expenditure for travel was highest in Class I (11.13 per cent).

4.2.3. Income Measures in Relation to Different Cost Concepts.

Gross income of a farm consisted of crop income and livestock income. The products and by products from crop and livestock were valued at the price prevailing in the area. To calculate net income after accounting for implicit costs different cost concepts were used. The Table 4.15 showing income measures in relation to different cost concepts in farm households revealed that gross income of all farms was Rs. 40965.37. It was highest in Class III (Rs. 69081.18) and decreased subsequently in Class II and Class I with Rs. 48025.95 and Rs. 30116.49 respectively.

Farm business income also showed a similar trend with Rs. 22568.32, Rs. 33063.51 and Rs. 43406.86 in Class I, Class II and Class III respectively. At the aggregate level it was Rs. 22556.3. Family labour income showed a reverse trend to the above and decreased from Class I to Class III. It was highest in Class I with Rs.13695.03 and Rs. 13424.20 and Rs. 2485.83 in Class II and Class III respectively. The aggregate net income at Cost C_1 was Rs.26187. In class wise analysis it was found to be Rs.20261.62, Rs.30366.69 and Rs.40911.16 for Class I, II and III respectively. Net income at Cost C_2 showed a decreasing trend with Rs.13065.85 in Class I, Rs. 12409.89 in Class II and Rs. 1667.65 in Class III, while it was Rs. 11204.63 at the aggregate level. Benefit cost ratio showed a decreasing trend with 1.77 in Class I, 1.30 and 1.02 in Class II and Class III respectively and it was 1.38 for all farms.

Table 4.14.   Consumption Expenditure of Farm Households, Rs. per farm

Items	Class I	Class II	Class III	Aggregate
Food	15339.53 (43.64)	18850.05 (40.62)	19671.36 (35.24)	16981.21 (41.03)
Clothing	2893.53 (8.23)	4044.19 (8.72)	4209.09 (7.54)	3416.33 (8.25)
Fuel	1457.31 (4.19)	3043.95 (6.56)	4034.55 (7.22)	2290.14 (5.53)
Education	5984.71 (17.02)	6197.67 (13.38)	11736.36 (21.04)	6889.33 (16.64)
Travel	3943.76 (11.13)	4744.42 (10.24)	4689.55 (8.43)	4282.66 (10.34)
Medicine	890.53 (2.53)	1819.05 (3.91)	2727.73 (4.88)	1425.30 (3.44)
Social Ceremonies	2645.71 (7.52)	5051.16 (10.88)	5506.82 (9.86)	3754.90 (9.06)
Religious Ceremonies	193.94 (0.55)	318.37 (0.68)	356.82 (0.64)	253.50 (0.63)
Taxes	146.62 (0.41)	233.72 (0.50)	308.18 (0.55)	195.28 (0.47)
Electricity	1423.65 (4.05)	1779.65 (3.83)	2248.64 (4.02)	1646.70 (3.97)
Miscellaneous	224.44 (0.63)	315.81 (0.68)	323.86 (0.58)	265.21 (0.64)
Total	3543.73 (100.00)	46395.04 (100.00)	55812.96 (100.00)	41400.56 (100.00)

Figures in parentheses show percentages to total

Table 4.15. **Income Measures in Relation to Different Cost Concepts In Farm Households, Rs. per farm**

Particulars	Class I	Class II	Class III	Aggregate
Gross income	30116.49	48025.95	69081.18	40965.37
Farm business income (G1-Cost A1)	22568.32	33063.51	43406.86	22556.30
Family labour income (G1-CostB2)	13695.03	13424.20	2485.83	11973.37
Net income at Cost C1 (G1-Cost C1)	20261.62	30366.69	40911.16	26187.00
Net income at Cost C2 (G1-Cost C2)	13065.85	12409.89	1667.65	11204.63
Benefit cost ratio	1.77	1.30	1.02	1.38

4.2.4 Disparity in Income

To estimate the disparity in farm income and non-farm income Lorenz curves were drawn and Gini ratios were estimated from it. The Lorenz curves for farm income and non-farm income are presented in figure 2 and figure 3. The estimation of Gini ratios for non–farm income and farm income as presented in Table 4.16 showed that for all farms the ratio was 0.18 for farm income and 0.14 for non-farm income. It depicted that the disparity in farm income was more than non farm income in the sample farm house holds and it varied from 0.15 in Class I to 0.32 in Class III farm households whereas the estimation of Gini ratio for non farm income varied from 0.12 in Class II to 0.19 in Class III farms.
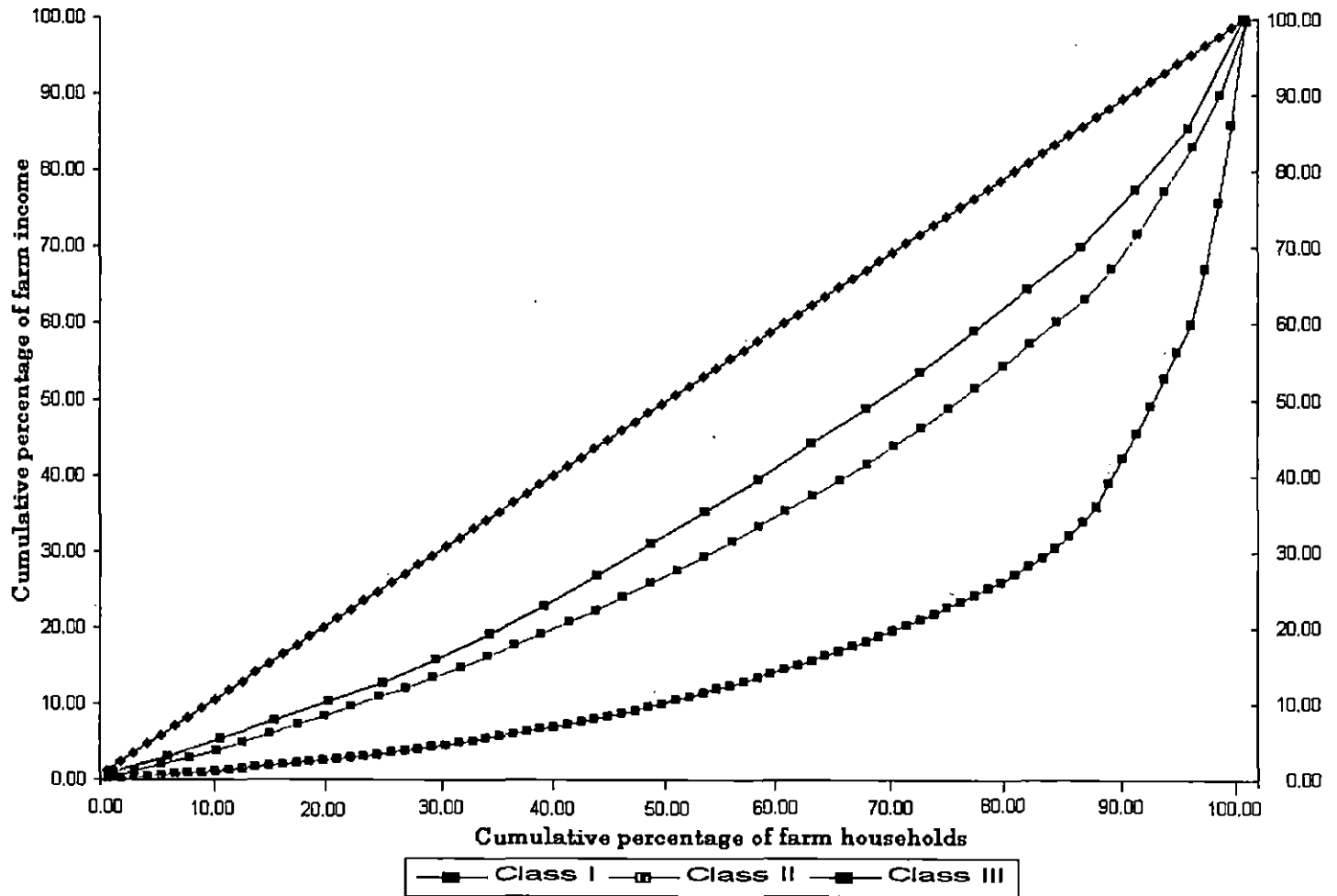
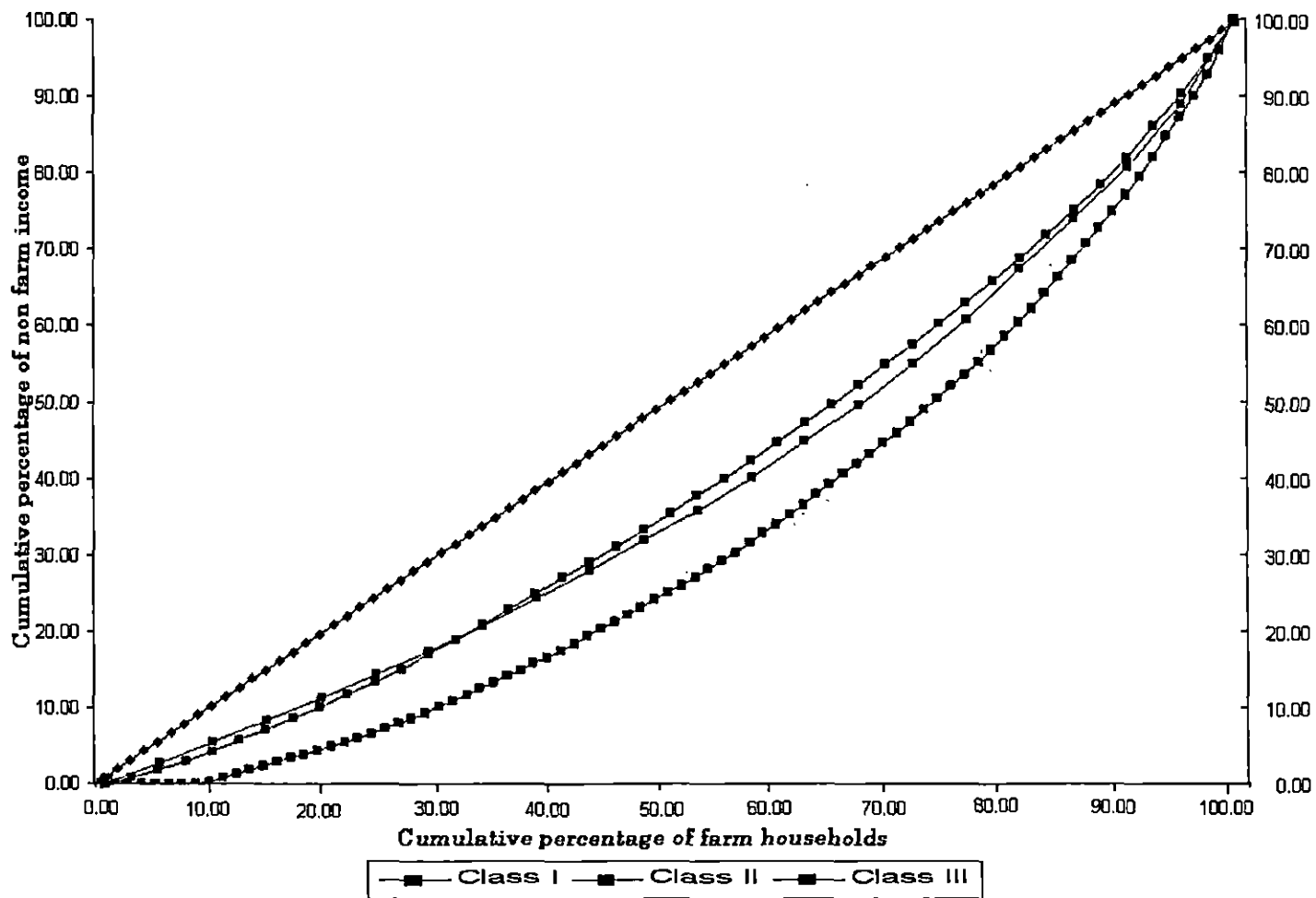**Fig. 2 Lorenz Curves Showing Farm Income Disparity**

Fig. 3   Lorenz Curves Showing Non-Farm Income Disparity

Table 4.16. Gini Ratios of Distribution of Income In Farm House Holds.

Income	Class I	Class II	Class III	Aggregate
Farm income	0.15	0.18	0.32	0.18
Non farm income	0.14	0.12	0.19	0.14

4.3 SAVINGS OF FARM HOUSEHOLDS.

Savings is the excess of income over expenditure. Although savings consisted of both hoarded income and funds that are committed financially or used to purchase capital goods, only current savings are taken into account in this study. The savings of households can be obtained by two methods, by direct method and indirect method. In direct method savings are recorded based on the response of the farmers. But since farmers were reluctant to give the correct information, an indirect method was used in which savings were obtained by deducting total expenditure from gross income .

4.3.1 Savings During the Period under Study.

The average amount of savings in farm households as presented in Table 4.17 revealed that at the aggregate level, savings per farm households was estimated at Rs.38725.22, forming 36.35 per cent of the gross income. It was also found that Class I farmers were able to save Rs. 23915.29 which formed 33.40 per cent of their gross income whereas the savings of Class II was Rs. 34492.51 (34.82 per cent) and of Class III was Rs. 57767.87 which formed 40.82 per cent of their gross income.

Table 4.17.   Savings in Farm Households (Rs. per farm per annum)

Category	Savings	Savings as percentage of gross income
Class I	23915.29	33.40
Class II	34492.51	34.82
Class III	57767.87	40.82
Aggregate	38725.22	36.35

4.3.2 Agency wise Saving Pattern of Farm Households.

The agency wise saving pattern of farm households as revealed by Table 4.18 showed that majority of respondent farmers (54) have deposit in commercial banks, followed by co-operatives with 44 depositors. Out of the total 34,13 and 12 farmers have savings in LIC, Post office and Kury and chitty respectively. Class wise analysis also revealed a similar trend with majority of farmers having savings in commercial bank in Class I (23), Class II (19) and Class III (12).

Table 4.18. Agency wise Saving Pattern of Farm Households.

Category	Saving pattern and number of persons				
	Co-operatives	Commercial Bank	Post office	LIC	Kury and chitty
Class I	22 (25.86)	23 (27.06)	10 (11.76)	22 (25.88)	6 (7.06)
Class II	16 (37.21)	19 (22.35)	3 (6.98)	8 (18.60)	4 (9.30)
Class III	6 (27.27)	12 (54.54)	-	4 (18.18)	2 (9.09)
Aggregate	44	54	13	34	12

Figures in parentheses show percentages to total

4.4 ASSET STRUCTURE OF FARM HOUSEHOLDS AND CAPITAL FORMATION

A thorough knowledge about the durable physical assets of the farm house holds is highly essential for studying the gross and net capital formation of farm households. This section gives information about the asset structure of different classes of farm households.

4.4.1 Asset Structure of Farm Households

The asset structure of farm households as presented in Table 4.19 showed that out of the total assets, land formed the major asset with a value of Rs.873846.68 per farm which formed 60.88 per cent of the total value of assets followed by

residential buildings with a value of Rs. 443410.80 forming 30.89 per cent of the total value of assets. House hold durables, vehicles, wells and tanks, livestock, farm implements and irrigation appliances and farm buildings formed 3.80 per cent, 3.10 per cent, 0.68 per cent, 0.25 per cent, 0.22 per cent and 0.18 per cent of the total assets respectively.

In class wise analysis it was found that the respondent farmers in Class I, Class II and Class III have a total asset value of Rs. 59363.22, Rs. 1985012.70 and Rs. 3602910.28 respectively. Of this largest share was occupied by land forming 57.32 per cent of the total asset value in class I, 58.16 per cent in class II and 66.08 per cent in Class III, which was highest among the classes followed by residential building with a share of 30.35 per cent, 34.48 per cent and 27.37 per cent in class I, II and III respectively.

Land, residential buildings, vehicles, household durables etc. are items which are not directly involved in production in a farm. Hence, to get a clear picture of farm assets, asset structure was analysed excluding these items.

From Table 4.20 it was found that wells and tanks formed major share of assets with 51.05 per cent to the total value of assets followed by livestock (19.19 per cent), farm implements and irrigation appliances (16.36 per cent) and farm buildings (13.40 per cent). The total value of farm assets at the aggregate level was Rs. 19031.83 and Rs. 15256.11, Rs. 23668.80 and Rs. 24572.27 in Class I, II and III respectively. Wells and tanks occupied the major share of assets in all the classes with 62.74 per cent, 41.27 per cent and 41.42 per cent respectively in Class I, II and III followed by farm implements and irrigation appliances in Class I (13.59 per cent) and livestock in Class II (26.51 per cent) and Class III (24.14 per cent). The total value of all assets except livestock showed an increasing trend from class I to Class III.

Table 4.19.   Asset Structure Farm Households (Rs. Per farm)

Items	Class I	Class II	Class III	Aggregate
Land	341835.29 (57.32)	1154511.60 (58.16)	2380772.73 (66.08)	873846.68 (60.88)
Residential Building	181000 (30.35)	684418.60 (34.48)	986210.10 (27.37)	443410.80 (30.89)
Farm building	1875.97 (0.31)	3241.62 (0.16)	3809.95 (0.13)	2550.76 (0.18)
Livestock	1735.29 (0.29)	6272.09 (0.32)	5931.82 (0.16)	3651.33 (0.25)
Wells and tanks	9572.41 (1.61)	9763.95 (0.49)	10177.73 (0.28)	9716.10 (0.68)
Farm implements and Irrigation appliances	2072.54 (0.35)	4383.14 (0.22)	4654.77 (0.14)	3113.39 (0.22)
Vehicles	27549.42 (4.62)	53441.80 (2.69)	92727.27 (2.57)	44531.34 (3.10)
Household Durables	30722.40 (5.15)	68980 (3.48)	118627.91 (3.27)	54582.43 (3.80)
Total	596363.22 (100.00)	1985012.70 (100.00)	3602910.28 (100.00)	1435402.80 (100.00)

Figures in parentheses show percentages to total

Table 4.20. **Asset Structure of Farm Households Excluding Land, Residential Buildings,Vehicles, Household Durables, Rs. per farm**

Items	Class I	Class II	Class III	Aggregate
Farm buildings	1875.87 (12.30)	3241.62 (13.70)	3807.95 (15.50)	2550.76 (13.40)
Live stock	1735.29 (11.37)	6272.09 (26.51)	5931.82 (24.14)	3651.33 (19.19)
Wells and tanks	9572.41 (62.74)	9763.95 (41.27)	10177.73 (41.42)	9716.10 (51.05)
Farm implements and irrigation appliances	2072.54 (13.59)	4383.14 (18.52)	4654.77 (18.94)	3113.64 (16.36)
Total	15256.11 (100.00)	23668.80 (100.00)	24572.27 (100.00)	19031.83 (100.00)

Figures in parentheses show percentages to total

4.4.2 Capital Formation in Farm Households

Capital means the stock of physical reproducible factors of production. When the capital stock increases with passage of time, this is called capital formation. Even though land is not considered as capital, expenditure on land improvement like soil conservation, land reclamation, fencing etc. which improve the value of land are included in capital formation.

The average gross capital formation in farm households as presented in Table 4.21 showed that the total capital formation was Rs.3450.44 with highest percentage of investment on land improvement with Rs.1794.67 (52.01 per cent) followed by digging and repair of wells with Rs. 762.90 (22.11 per cent). Purchase of livestock, irrigation appliances and implements and construction and repair of farm buildings formed 11.66 per cent (Rs.402.34), 7.84 per cent (Rs.270.57) and 6.38 per cent (Rs.219.97) of the total investment respectively.

Among the classes, capital formation was highest in Class III (Rs.4984.09) followed by Class II (Rs.3706.32) and Class I(Rs.2924.05).It was also observed that

in all classes maximum percentage of investment was on land improvement recording 52.79 per cent, 56.47 per cent and 43.78 per cent of the total investment respectively in Class I,II and III. Digging and repair of wells formed the next highest investment in class I (23.52 per cent) and Class III (34.33 per cent) while in Class II purchase of livestock occupied the second position (14.15 per cent) followed by digging and repair of wells (11.50 per cent).

Table 4.21. Gross Capital Formation in Farm Households, Rs. per farm

Items	Class I	Class II	Class III	Aggregate
Land improvement	1543.53 (52.79)	2093.02 (56.47)	2181.82 (43.78)	1794.67 (52.01)
Purchase of livestock	327.06 (11.19)	524.42 (14.15)	454.55 (9.12)	402.34 (11.66)
Digging and repair of wells	687.88 (23.52)	426.05 (11.50)	1711.14 (34.33)	762.90 (22.11)
Purchase of irrigation appliances and farm implements	236.24 (8.08)	293.61 (7.92)	358.18 (7.19)	270.57 (7.84)
Construction and repair of farm buildings	129.34 (4.42)	369.22 (9.96)	278.40 (5.58)	219.97 (6.38)
Total	2924.05 (100.00)	3706.32 (100.00)	4984.09 (100.00)	3450.44 (100.00)

Figures in parentheses show percentages to total

4.4.2.1 Net Capital Formation

The value of all physical assets depreciate over time. So to get a clear picture net capital formation was calculated from gross capital formation after accounting for depreciation.

The net capital formation in farm households as presented in Table 4.22 showed a similar trend as in the case of gross capital formation. At the aggregate level net capital formation was Rs.3290.54 with land improvement occupying 52.54 per cent (Rs. 1730.06) of total investment followed by digging and repair of wells with Rs. 743.83 (22.63 per cent). Purchase of livestock, purchase of irrigation

appliances and implements, construction and repair of farm buildings formed 10.71 per cent (Rs. 352.04), 8.04 per cent (Rs. 264.44) and 6.08 per cent (Rs. 200.17) of the total respectively.

Class wise analysis exhibited similar trend as that of gross capital formation with Class III having maximum (Rs. 4772.77) followed by Class II (Rs.3514.88) and Class I (Rs. 2793.41).It was also observed that maximum investment was on land improvement forming 53.27 per cent, 57.40 per cent and 44.07 per cent in class I, II and III respectively. Digging and repair of wells formed the next major item of investment in Class I (24.01 per cent) and Class III (34.96 per cent) while in class II, purchase of livestock was the second major item of investment forming 13.05 per cent to the total.

Table 4.22. Net Capital Formation in Households, Rs. per farm

Items	Class I	Class II	Class III	Aggregate
Land improvement	1487.96 (53.27)	2017.67 (57.40)	2103.27 (44.07)	1730.06 (52.54)
Purchase of livestock	286.18 (10.24)	458.87 (13.05)	397.73 (8.33)	352.04 (10.71)
Digging and repair of wells	670.68 (24.01)	415.40 (11.82)	1668.36 (34.96)	743.83 (22.63)
Purchase of irrigation appliances and farm implement	230.89 (8.27)	286.95 (8.16)	350.06 (7.33)	264.44 (8.04)
Construction and repair of farm buildings	117.70 (4.21)	335.99 (9.55)	253.34 (5.31)	200.17 (6.08)
Total	2793.41 (100.00)	3514.88 (100.00)	4772.77 (100.00)	3290.54 (100.00)

Figures in parentheses show percentages to total

4.2.2.2 Rate of Capital Formation.

The rate of capital formation in sample farm households as shown in Table 4.23 revealed that, the rate of capital formation at the aggregate level was 0.71 and that in class I, class II and class III was 1.42, 0.50 and 0.48 respectively. The value of capital excluding land, house holds and vehicles was Rs.196256.10, Rs.708079.40 and Rs.1010782 respectively in class I, II and III and at the aggregate level it was Rs.462443.60.

Table 4.23. Rate of Capital Formation in Farm Households

Items	Class I	Class II	Class III	Aggregate
Gross Capital Formation (Rs. per farm household)	2924.05	3706.32	4984.09	3450.44
Net Capital Formation (Rs. per farm household)	2787.23	3506.51	4764.05	3290.54
Value of capital excluding land and household durables (Rs. per farm household)	196256.10	708079.40	1010782.00	462443.60
Rate of Capital formation	1.42	0.50	0.48	0.71

4.4. INCOME, EXPENDITURE, ASSET STRUCTURE AND CAPITAL FORMATION IN FARM HOUSEHOLDS OF DIFFERENT PANCHAYATS.

In the above back ground of low rate of capital formation in the study area it would be worth while to find out whether there is any difference among Panchayats with respect to income, expenditure, asset structure and capital formation. The results on Panchayat wise analysis with respect to above variables are presented in the following section.

4.5.1 Panchayatwise Income of Farm Households.

The average income of farm households as shown in Table 4.24 revealed that non farm income formed major share of total income with 60.85 per cent (Rs.63669.60) of the total while gross farm income formed only 39.15 per cent

(Rs.40965.36) to the total. Panchayat wise analysis showed that gross farm income was maximum in Kalliyoor Panchayat (Rs..58176.44) which formed 52.16 per cent to the total income in the Panchayat whereas it was 29.23 per cent and 34.96 per cent in Balaramapuram and Pallichal Panchayat respectively. Balaramapuram Panchayat had the maximum percentage of non-farm income (70.77 per cent) while it was 65.04 per cent and 47.84 per cent respectively in Pallichal and Kalliyoor panchayat.

Table 4.24. Panchayatwise Income of Farm Households, Rs. per farm

Source	Pallichal	Kalliyoor	Balaramapuram	Aggregate
Gross farm income	33928.96 (34.96)	58176.44 (52.16)	30790.68 (29.23)	40965.36 (39.15)
Non farm income	63120.00 (65.04)	53352.00 (47.84)	74536.80 (70.77)	63669.60 (60.85)
Total	97048.96 (100.00)	111528.44 (100.00)	105327.48 (100.00)	104634.96 (100.00)

Figures in parentheses show percentages to total

4.5.2 Panchayatwise Expenditure of Farm Households.

The average expenditure of farm households in different Panchayats as presented in Table 4.25 showed that in all the three Panchayats maximum expenses was on consumption forming 74.62 per cent to the total as a whole followed by crop expenditure (18.13 per cent) and livestock expenditure (7.25 per cent). The percentage share of crop expenditure was maximum in Kalliyoor Panchayat which formed 22.55 per cent (Rs.13023.82) to the total followed by Balaramapuram with 16.52 per cent (Rs.9114.35) and Pallichal with 15.02 per cent (Rs.8038.56). Livestock expenditure was also maximum with Rs.4587.68 (7.94 per cent) in Kalliyoor Panchayat whereas consumption expenditure was maximum in Balaramapuram Panchayat with 76.80 per cent of the total expenses.

Table 4.25.   Panchayatwise Expenditure of Farm Households, Rs. per farm

Items	Pallichal	Kalliyoor	Balaramapuram	Aggregate
Crop expenditure	8038.56 (15.02)	13023.82 (22.55)	9114.35 (16.52)	10058.91 (18.13)
Livestock Expenditure	3788.60 (7.08)	4587.68 (7.94)	3690.05 (6.69)	4022.11 (7.25)
Consumption Expenditure	41684.21 (77.90)	40137.62 (69.50)	42379.82 (76.80)	41400.55 (74.62)
Total	53511.28 (100.00)	57749.12 (100.00)	55184.22 (100.00)	55481.57 (100.00)

Figures in parentheses show percentages to total

4.5.3 Panchayatwise Asset Structure of Farm Households.

The per farm asset structure of farm households as presented in Table 4.26 showed that as a whole land formed 60.88 per cent of the total investment followed by residential building (30.89 per cent), household durables (3.80 per cent) and vehicles (3.10 per cent) respectively. The percentage share of investment in wells and tanks, livestock, farm buildings, farm implements and irrigation appliances formed only 0.68 per cent, 0.25 per cent, 0.18 per cent and 0.22 per cent of the total investment respectively. Disaggregate analysis revealed that Kalliyoor had the highest percentage share of investment in land with 64.19 per cent (Rs.756280) to the total even though in actual terms it was highest in Balaramapuram (Rs.1075740) where it formed 61.87 per cent of the total investment. The percentage investment on farm buildings (0.27 per cent), livestock (0.42 per cent) wells and tanks (0.79 per cent) farm implements and irrigation appliances (0.27 per cent) were highest in Kalliyoor Panchayat whereas that of vehicles (3.98 per cent) and household durables (4.07 per cent) were highest in Pallichal and Balaramapuram Panchayats respectively.

Table 4.26. **Panchayat wise Asset Structure of Farm Households, Rs. per farm**

Items	Pallichal	Kalliyoor	Balaramapuram	Aggregate
Land	789520.00 (56.83)	756280.00 (64.19)	1075740.00 (61.87)	873846.67 (60.88)
Residential building	472672.40 (34.02)	338540.00 (28.73)	519020.00 (29.85)	443410.80 (30.89)
Farm building	2510.10 (0.18)	3168.78 (0.27)	1973.40 (0.11)	2550.76 (0.18)
Livestock	3824.00 (0.28)	4965.99 (0.42)	2164.00 (0.12)	3651.33 (0.25)
Wells and tanks	9854.00 (0.71)	9269.10 (0.79)	10025.20 (0.58)	9716.10 (0.68)
Farm implements and irrigation appliances	3472.00 (0.25)	3209.07 (0.27)	2659.84 (0.15)	3113.64 (0.22)
Vehicles	55254.00 (3.98)	22110.01 (1.88)	5623.01 (3.23)	44531.34 (3.10)
Household durables	52206.29 (3.76)	40700.00 (3.45)	70841.00 (4.07)	5452.43 (3.80)
Total	1389313.00 (100.00)	1178243.00 (100.00)	1738653.00 (100.00)	435402.80 (100.00)

Figures in parentheses show percentages to total

The asset structure of farm households excluding land, residential building, vehicles and household durables which are not directly involved in capital formation in agriculture as given in Table 4.27 showed that as a whole wells and tanks had maximum percentage share of investment (51.05 per cent) with Rs.9716.10 out of the total of Rs.19031.83. The percentage share of farm buildings (15.37 per cent) and livestock (24.09 per cent) was maximum in Kalliyoor Panchayat while that of wells and tanks was maximum in Balaramapuram with Rs. 10025.20 (59.59 per cent) and that of farm implements and irrigation appliances was maximum in Pallichal with Rs.3472.00 (17.66 per cent).

Table 4.27. Panchayat wise Asset Structure of Farm Households Excluding Land, Residential Building, Vehicles and Household Durables, Rs. per farm

Items	Pallichal	Kalliyoor	Balaramapuram	Aggregate
Farm buildings	2510.10 (12.77)	3168.78 (15.37)	1973.40 (11.73)	2550.76 (13.40)
Livestock	3824.00 (19.45)	4965.99 (24.09)	2164.00 (12.86)	3651.33 (19.19)
Wells, tanks, etc.	9854.00 (50.12)	9269.10 (44.97)	10025.20 (59.59)	9716.10 (51.05)
Farm implements and irrigation appliances	3472.00 (17.66)	3209.07 (15.57)	2659.84 (15.81)	3113.64 (16.36)
Total	19660.10 (100.00)	20612.94 (100.00)	16822.44 (100.00)	19031.83 (100.00)

Figures in parentheses show percentages to total

4.5.4 Panchayatwise Capital formation in farm households.

The gross capital formation in farm households presented in Table 4.28 revealed that at the aggregate level gross capital formation was highest in Kalliyoor (Rs.3960.01) followed by Balaramapuram (Rs. 3803.82) and Pallichal (Rs.2587.51).Land improvement formed 52.01 per cent (Rs.1794.67) of the average total of Rs.3450.44 followed by digging and repair of wells with Rs.762.90 (22.11 per cent) purchase of livestock (11.66 per cent, Rs.402.34), purchase of farm implements and irrigation appliances (7.84 per cent, Rs.270.57) and construction and repair of farm buildings (6.38 per cent, Rs.219.97). It was also observed that Balaramapuram had maximum investment on land improvement with Rs.2584 (67.93 per cent) followed by Pallichal (Rs.1240,47.92 per cent) and Kalliyoor (Rs.1560,39.39 per cent). Purchase of livestock, digging and repair of wells and purchase of farm implements and irrigation appliances was highest in Kalliyoor Panchayat which formed 13.64 per cent (Rs.540.00), 28.86 per cent (Rs.1142.80), 11.98 per cent (Rs.474.30) to the total respectively while construction and repair of farm buildings was highest in Balaramapuram Panchayat which formed 6.71 per cent (Rs.255.40) of the total.

Table 4.28.   Panchayat wise Capital Formation in Farm Households, Rs. per farm

Items	Pallichal	Kalliyoor	Balaramapuram	Aggregate
Land improvement	1240.00 (47.92)	1560.00 (39.39)	2584.00 (67.93)	1794.67 (52.01)
Purchase of livestock	440.00 (17.00)	540.00 (13.64)	227.02 (5.97)	402.34 (11.66)
Digging and repair of wells	552.70 (21.36)	1142.80 (28.86)	593.20 (15.59)	762.90 (22.11)
Purchase of farm implements and irrigation appliances	193.21 (7.47)	474.30 (11.98)	144.20 (3.79)	270.57 (7.84)
Construction and repair of farm buildings	161.60 (6.25)	242.91 (6.13)	255.40 (6.71)	219.97 (6.38)
Total	2587.51 (100.00)	3960.01 (100.00)	3803.82 (100.00)	3450.44 (100.00)

Figures in parentheses show percentages to total

4.5.4.1 Panchayatwise Net Capital Formation in Farm Households.

The net capital formation in farm households was obtained by deducting depreciation from gross capital formation and is shown in Table 4.29. It was found that the total per farm net capital formation was highest in Kalliyoor (Rs.3775.17) followed by Balaramapuram (Rs.3641.33) and Pallichal (Rs.2455.13). The percentage share of land improvement was highest in Balaramapuram Panchayat which formed 68.41 per cent (Rs.2490.98) to the total in the Panchayat. Purchase of livestock was highest in Kalliyoor with Rs.472.50 (12.52 per cent) while Pallichal had the highest percentage share of investment in purchase of livestock which formed 15.68 per cent (Rs.385.00) to the total.   Kalliyoor had the maximum investment in digging and repair of wells (29.51 per cent, Rs.1114.23) and purchase

of farm implements and irrigation appliances (12.28 per cent, Rs.463.55) while construction and repair of farm buildings was highest in Balaramapuram Panchayat (Rs.232.41, 6.38 per cent).

Table 4.29.   Panchayat wise Net Capital Formation in Farm Households, Rs. per farm

Items	Pallichal	Kalliyoor	Balaramapuram	Aggregate
Land improvement	1195.36 (48.69)	1503.84 (39.84)	2490.98 (68.41)	1730.06 (52.54)
Purchase of Livestock	385.00 (15.68)	472.5 (12.52)	198.64 (5.46)	352.04 (10.71)
Digging and repair. of wells	538.88 (21.95)	1114.23 (29.51)	578.37 (15.88)	743.83 (22.63)
Farm implements and irrigation appliances	188.83 (7.69)	463.55 (12.28)	140.93 (3.87)	264.44 (8.04)
Construction and repair of farm buildings	147.06 (5.99)	221.05 (5.86)	232.41 (6.38)	200.17 (6.08)
Total	2455.13 (100.00)	3775.17 (100.00)	3641.33 (100.00)	3290.54 (100.00)

Figures in parentheses show percentages to total

4.5.4.2 Panchayatwise Rate of Capital Formation in Farm Households.

The rate of capital formation in farm households obtained by dividing net capital formation and value of capital excluding land, household durables and vehicles is presented in Table 4.30. At the aggregate level the rate of capital formation was 0.71. Among the Panchayats, Kalliyoor had maximum rate of capital formation with a value of 1.05 followed by Balaramapuram (0.68) and Pallichal (0.50).

Table 4.30.   Panchayat wise Rate of Capital Formation in Farm Households

Items	Pallichal	Kalliyoor	Balaramapuram	Aggregate
Gross capital formation (Rs. per farm house hold)	2587.51	3960.01	3803.82	3450.44
Net capital formation (Rs. per farm house hold)	2455.13	3775.17	3641.33	3290.54
Value of capital excluding household durables and Vehicles(Rs. per farm house hold)	492332.50	359152.90	535842.40	462442.60
Rate of Capital formation	0.50	1.05	0.68	0.71

4.5   CONSTRAINTS IN CAPITAL FORMATION.

The major constraints experienced by the farmers were identified while conducting the pilot survey. The constraints were high wage rate, high cost of living, non availability of labour, low product price, incidence of pest and diseases, lack of interest, low land productivity ,problem in marketing, high loan due and lack of finance. The response of the farmers regarding these problems were gathered and ranked from 1 to 6 .The cumulative rank for each constraint was estimated and the results are presented in table 4.31.

Table 4.31. Constraints Faced by the Farmers in Capital Formation.

Constraints	Ranking of constraints						Cumulative score
	I	II	III	IV	V	VI	
High cost of living	22 (14.67)	38 (25.33)	35 (23.33)	13 (8.67)	11 (7.33)	7 (4.67)	530 (16.83)
Non availability of labour	43 (28.67)	31 (20.67)	0.00 (0.00)	1 (0.67)	5 (3.33)	9 (6.00)	435 (13.81)
High wage rate.	56 (37.33)	33 (22.00)	28 (18.67)	14 (9.33)	9 (6.00)	2 (1.33)	675 (21.43)
Low product price	20 (13.33)	14 (9.33)	30 (20.00)	27 (18.00)	11 (7.33)	4 (2.67)	417 (13.24)
Low land productivity	1 (0.67)	2 (1.33)	17 (11.33)	16 (10.67)	12 (8.00)	23 (15.33)	179 (5.68)
Problem in marketing	0.00 (0.00)	0.00 (0.00)	7 (4.67)	32 (21.33)	11 (7.33)	14 (9.33)	160 (5.08)
Incidence of pest and diseases	3 (2.00)	4 (2.67)	26 (17.33)	36 (24.00)	36 (24.00)	25 (16.66)	347 (11.02)
High loan due	4 (2.66)	8 (5.34)	3 (2.00)	0.00 (0.00)	0.00 (0.00)	1 (0.67)	77 (2.44)
Lack of interest	1 (0.67)	15 (10.00)	4 (2.67)	10 (6.66)	46 (30.67)	34 (22.67)	253 (8.03)
Lack of finance	0.00 (0.00)	5 (3.33)	0.00 (0.00)	1 (0.67)	9 (6.01)	31 20.67	77 (2.44)

Figures in parentheses show percentages to total.

It was found that high wage rate was the most important constraint in the study area with a total score of 675 followed by high cost of living scoring a total of 530. Non availability of labour and low product price were also important problems with scores 435 and 417 respectively. Other obstacles faced by the farmers in capital formation were incidence of pest diseases, lack of interest, low productivity of land and problem in marketing with scores 347, 253, 179 and 160 respectively. High loan due and lack of finance were less important constraints with cumulative ranks of 77 each.

DISCUSSION

5. DISCUSSION.

The results in terms of the various parameters mentioned are discussed in this chapter under the following headings.

5.1 General socio economic characteristics of the sample

5.2 Income and expenditure pattern of farm households

5.3 Savings of households and factors influencing savings

5.4 Asset structure of farm households and capital formation

5.5 Income, expenditure, asset structure and capital formation in farm households of different Panchayats.

5.6 Constraints in capital formation

5.1 GENERAL SOCIO- ECONOMIC CHARACTERISTICS OF THE SAMPLE.

5.1.1 Family Size.

The classification of respondent farmers on the basis of their family size showed that majority of the respondents have a nuclear family with four family members consisting of father, mother and two children. Among the respondents only one had joint family with more than seven members. This is similar to the present scenario in Kerala.

5.1.2 Age.

On classification of respondents based on age it was found that majority of the farmers were coming under the age group 40-60. None of the farmers were below age 30, which shows the negative attitude of the youth in general towards agriculture as an occupation. Or it may be because of the general trend in Kerala with higher percentage of old age people among the total population due to decreasing death rate and birth rate as indicated by Human Development Index (HDI).

5.1.3 Education

Majority of the respondent farmers were graduates. Only a small percentage of the respondents have not passed S.S.L.C. None of the farmers were illiterate as is indicative of the high literacy of the population of study area (90.54 per cent).

5.1.4 Family Composition of Respondents

Composition of respondent family members showed that adults formed a large share of total population in the sample farm households. The number of adult females were more than that of adult males and the ratio was 1000:1043 which was almost near to the male-female ratio of Kerala i.e., 1000:1058 (Farm Guide, 2002).

5.1.5 Occupation of Head of the Family

The majority of respondents were employed in service sector. Among them a large percentage was taking up farming seriously after retirement. Some of the farmers were also having business in handloom industry as it was predominant in the survey area, especially Balaramapuram.

5.1.6 Distribution Pattern of Operational Holdings.

Cultivation on leased land was common in the study area. Leasing in of land was common among Class I farmers as they have less area to cultivate and leasing out was done mostly by Class III farmers since management of vast land area was difficult. Most of the leased out land were wetlands on which paddy was cultivated earlier. Present cultivators have switched on from paddy to more profitable crops like banana and vegetables. These crops were cultivated more intensively with high fertilizer and pesticide application, which may damage soil fertility. Leasing acts as an obstacle to any permanent improvement of land. The average size of holding was 0.50 hectare, which was more than per capita cultivated land of Kerala (0.10 hectare) according to 2001 census.

5.1.7 Cropping Pattern.

Coconut was the major crop cultivated in the sample household as it is less labour and input intensive. Intercropping as well as a total shift to banana plantation was rapidly taking place in the study area after the establishment of a KHDP market with priority to banana marketing, at Thembamuttam in Balaramapuram Panchayat. Intensive cultivation of vegetables on leased in land was also common in the area, especially in Kalliyoor Panchayat, through which farmers were able to earn good profit even after paying the rent for leased in land.

5.2 INCOME AND EXPENDITURE PATTERN OF FARM HOUSEHOLDS

5.2.1 Income of Farm Households.

Nemon Block Panchayat, being near to the Thiruvananthapuram city is also on the verge of urbanization. Out of the total income earned by the respondents, the percentage share of non-farm income was very predominant with more number of people engaged in service sector. This is against our conventional concept of a village where the main source of income is expected to come from farming. But this is in line with the results obtained by Saradamoni (1995) in her study in Kerala where a large number of agricultural households were found to receive most or a substantial share of their income from non agricultural sources. There was a significant increase in farm income with farm size but its percentage share to total income increased only from Class I to Class II. In Class II and Class III the percentage share was almost same. This may be because of the high influence of non-farm income which also showed an increase from Class I to Class III. Similar observation was made by Bhat (1972) where an increasing share of non-farm income with increase in farm size was noticed. But this is contrary to the results obtained by Prema (1996) where in the percentage share of non-farm income decreased with farm size.

Moreover, majority of the sample farmers, especially Class III and Class II farmers had inherited their present land holdings. As their standard of living in the
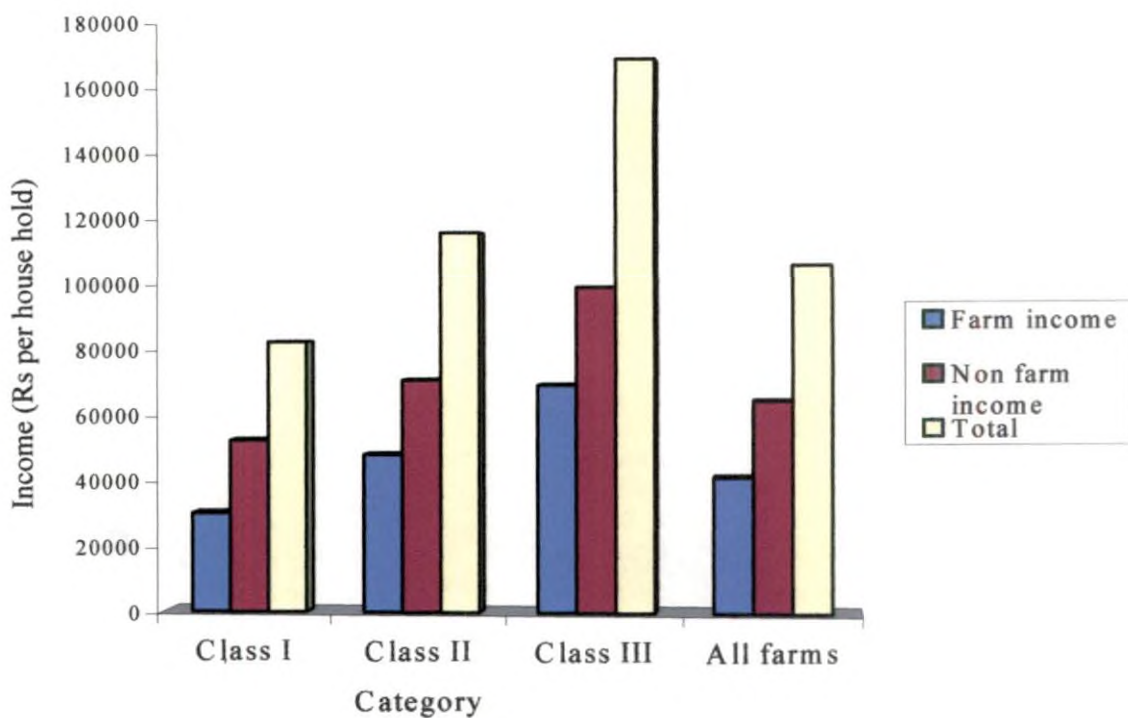
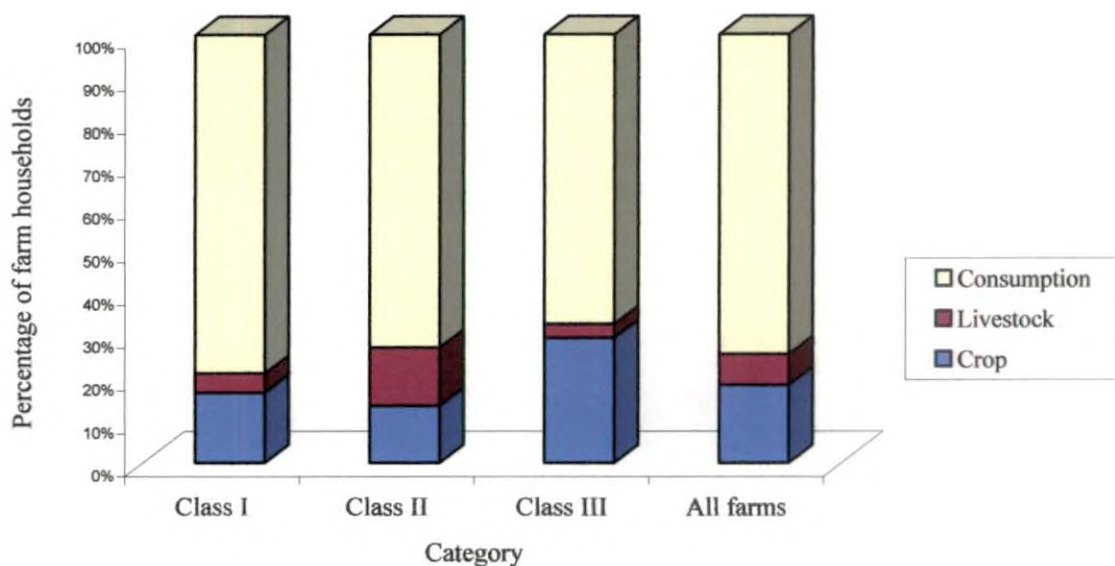**Fig. 4 Average Income of Farm House Holds .**
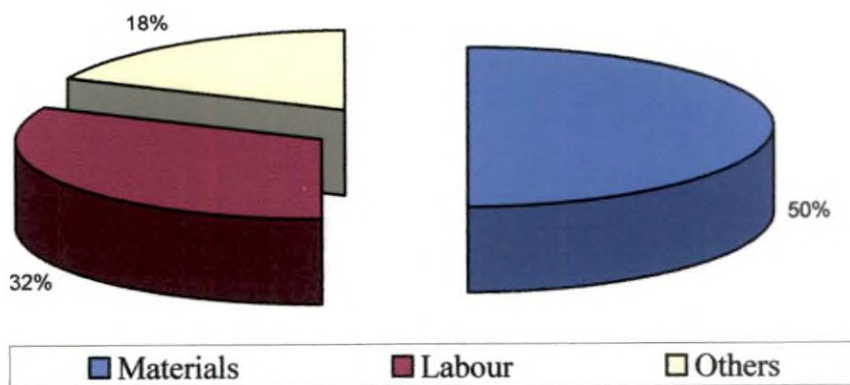

Fig. 5 Expenditure of Farm Households

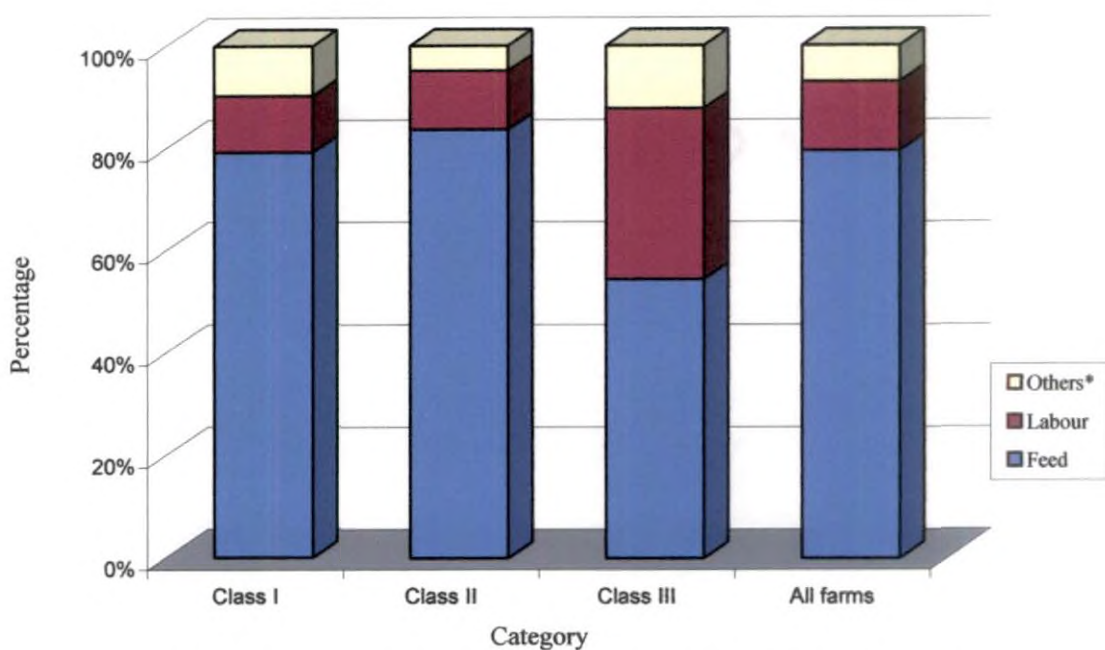**Fig. 6 Item wise Crop Expenditure of Farm Households**

Fig. 7 Itemwise livestock expenditure of farm households

past was higher than that of other farmers, after meeting daily expenses they must have spent more on human capital formation which can be attributed to their present high non farm income.

Out of the total farm income, crop income occupied major share. Income from livestock was maximum in Class II where the livestock population with farmers was more. Even though it is a profitable business its acceptance was less among farmers because of the larger efforts and expenditure required to maintain it.

5.2.2 Expenditure Pattern of Farm Households.

An analysis of the expenditure pattern of farm households showed that consumption formed lion's share of total expenditure of farm households. This could be due to the high price of consumer items. The percentage share of expenses decreased from Class I to Class III whereas the actual consumption expenditure increased from Class I to Class III. This was in conformity with the findings of Rao and Bathaih (1993) in which they found that the average propensity to consume showed a decreasing trend with increase in size of holdings.

Out of the total cropping expenses major share was spent for purchasing material inputs and expenditure on labour came only next to material expenditure But Prema (1996) observed that expenditure on labour formed major share of total crop expenditure. In the present study area, because of the high labour cost farmers were not hiring the actual labour required for farming operations and this could be the reason for the comparatively low share of labour expenditure.

Expenditure on feed material was the main item forming a large share of the livestock expenditure. More than this constraint, the changing life style and nuclear family system is discouraging farmers from maintaining livestock since it requires careful attention and is labour intensive. Livestock was maintained mostly by those families with large family size or in which family labour was available.

The analysis of consumption expenditure of farm households revealed that food was the major item of expenditure in all farms and its percentage share decreased from Class I to III. This was in accordance with Engel's law of consumption expenditure. This was similar to the observation made by Prema (1996) which showed that the amount spent for food items increased with farm size but its percentage share to the total decreased.

The percentage share spent on education and travel was also more since the respondents were aware of the importance of education. Most of the respondents were depending on the institutions at Thiruvananthapuram city for education and other purposes. So travelling expenses also formed a major share of total expenditure. Among the classes the total consumption expenditure showed an increase from Class I to Class III. The above findings were in conformity with the observation made by Panikkar (1992) that the amount spent for education and other ceremonies in villages in Kerala was higher than their counterparts in Tamil Nadu.

Benefit Cost Ratio of sample farms accounting for the explicit and implicit cost items were calculated and it was found that the Benefit Cost Ratio was more than one for Class I, II and III. This means that farming was a viable business for respondents from all the classes with the ratio decreasing from Class I to Class III. The results reported by Prema (1996) was contrary to the above findings where the benefit cost ratio increased with increase in farm size. This could be due to the difference in sample characteristics contributing towards a decrease in productivity with farm size.

5.2.3 Disparity in Income.

The Lorenz curve analysis and estimation of Gini ratio to examine the levels of disparity in farm income and non-farm income revealed that disparity was more in farm income compared to non farm income. This was contrary to the observation made by Prema (1996) and Birthlal and Singh (1995) where the disparity in non-farm income was more than farm income. This may be because of the difference in

productivity of land and efforts made by the respondents in farming. It was observed that the disparity in farm income increased with farm size, which was in conformity with the findings of Chahal (1990) and Prema (1996) where an increase in farm income disparity with farm size was observed.

5.3 SAVINGS OF HOUSEHOLDS AND FACTORS INFLUENCING SAVINGS.

The results on the savings of households revealed that the respondents were able to save 36.35 per cent of the income at the aggregate level. Similar findings were reported by Bhat (1972) where the percentage of savings was 33 per cent which is comparable to the results obtained in the present study. It was also found that the percentage of savings increased with increase in farm size which is in conformity with the observations made by Nandal (1972) and Prema (1996) wherein savings increased with increase in farm size

When agency wise saving pattern of the farm household was analyzed it was found that most of the farmers were relying on commercial banks for depositing which is in line with the observation made by Panikkar (1992). Many of the farmers were having deposit in more than one place. The respondents were found to depend on more reliable and safer places for depositing money like co-operatives, LIC etc. rather than in private sources like Kury and Chitty etc.

5.4 ASSET STRUCTURE OF FARM HOUSEHOLDS AND CAPITAL FORMATION.

5.4.1 Asset Structure of Farm Households.

The asset structure of farm households when analyzed revealed that land, residential buildings, vehicles and household durables formed 98 per cent of the total value of assets. Autkar et al. (1996) and Bhat (1972) also got similar results with land and residential buildings forming 95 per cent and 87 per cent of the total respectively. This shows the typical Kerala situation where more investment was on assets, which

are not directly involved in production (Panikar, 1992). To get a clear picture, when asset structure was analyzed excluding these items it was found that the total value of assets increased with farm size. Of this investment was more on wells. The findings by Prema (1996) where maximum investment was on wells confirms the above observation.

5.4.2 Gross Capital Formation in Farm Households.

The gross capital formation per sample farm households was found to be Rs.3450.44 on an average which was comparable to the findings of Prema (1996)where the gross capital formation was Rs.2993.00 per farm household. . The gross capital formation in sample farm households showed an increasing trend with farm size. Shastri (1965) has also reported an increase in capital formation with farm size, confirming the above findings.

Land improvement was found to be contributing a major share towards capital formation. Of the total investment on land improvement majority was on concrete walls or fence around the plot owing to the spreading of urban characteristics in the area. Investment on bunding, watershed and retaining wall also formed a major share because of the erosion susceptibility of the land. Kurian (1969) in his study in Kerala also made similar observation that land improvement occupied major share of total capital formation.

Only three per cent of the total income was utilized for capital formation while 36 per cent of the total income was available for savings. This is in conformity with the study of Vasanthi (1988) which quotes that two thirds of the total saving of the household sector in India is in financial assets. In a generalized view this may be the reason for low growth rate of economy despite the capital increase in the rate of savings (Ghose, 1998). According to Panikkar (1992) the villages in Kerala are investing one half to four fifths of savings in jewellary as a financial asset.
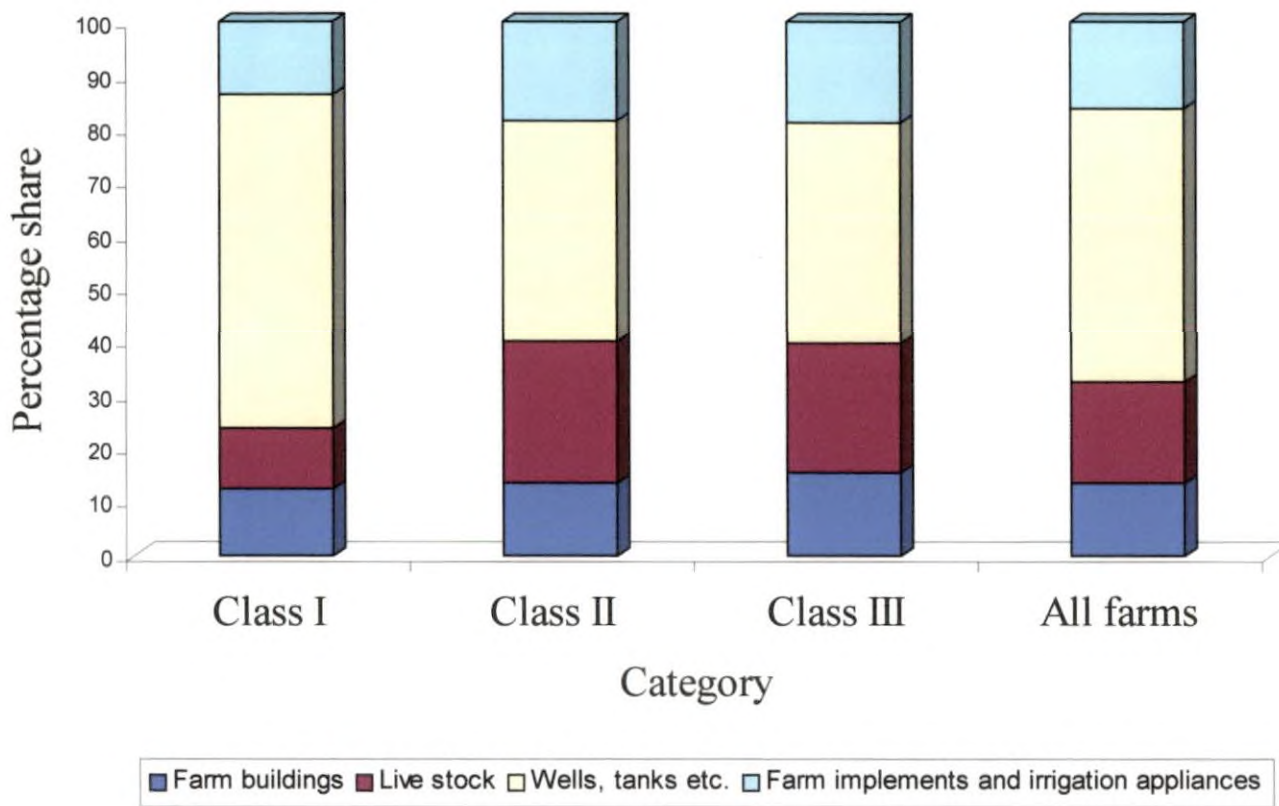
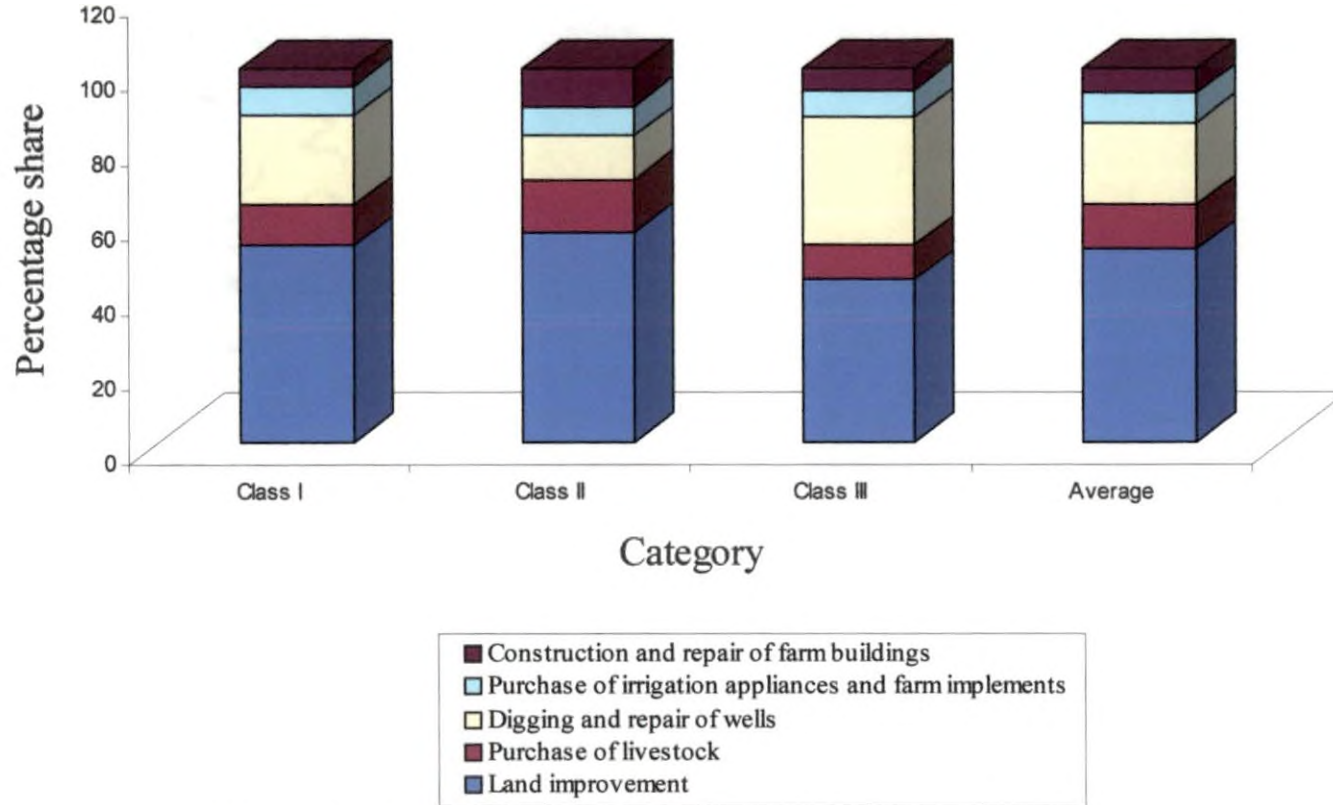**Fig. 9 Asset Structure of Farm Households**

Fig. 10 Capital Formation in Farm Households

Net capital formation in farm households worked out after accounting for depreciation in gross capital formation was found to be increasing with farm size, which is confirmed by Prema (1996) who reported an increase in net capital formation with farm size. Net capital formation also showed a similar trend as that of gross capital formation with land improvement occupying major share of the total.

Rate of capital formation in farm households was found to be very low i.e. 0.71. It was reported that capital formation at the rate of at least 10 per cent per annum was necessary for sustainable agricultural development (Bhuvaneswari, 1993). But since the rate of capital formation is inversely proportional to the existing asset structure it cannot be taken for assessing overall performance. The value of existing assets with the sample farmers was higher and this may be the reason for low rate of capital formation in the study area. This observation is in conformity with the reports of Kahlon and Singh (1981) that farmers with higher initial capital investment base do not go in for more investments. Giriappa (1984) also observed that in already developed areas the rate of capital formation would be low. Prema (1996)in a similar study in Thrissur district of Kerala reported a rate of capital formation of 7.6 per cent which is very high compared to the present study where the low rate of capital formation would have been the result of an initial high capital investment.

5.7 INCOME, EXPENDITURE, ASSET STRUCTURE AND CAPITAL FORMATION IN FARM HOUSEHOLDS OF DIFFERENT PANCHAYATS.

Panchayat wise analysis of income, expenditure, asset structure and capital formation has revealed that farm income was maximum in Kalliyoor because of the predominantly agricultural characteristic of the area. Due to the close proximity to Thiruvananthapuram city urban characteristics was more in Pallichal and Balaramapuram Panchayats. Total farm expenditure, value of productive assets, gross capital formation and net capital formation was maximum in Kalliyoor where the diffusion of urban characteristics was less and many of the people still have agriculture as the only source of income. The rate of capital formation was also maximum in Kalliyoor where majority of the sample respondents were vegetable and

banana growers. In Pallichal and Balaramapuram, where more number of farmers were cultivating plantation crops and the influence of urban characteristics was more, the rate of capital formation was found to be less.

5.4 CONSTRAINTS IN CAPITAL FORMATION.

High wage rate was the major constraint reported by the respondents. The wage rate prevailing in the area was Rs.175 per day. There was not much difference between wage rates of male and female workers in the area. With the disappearance of paddy cultivation the number of female labourers engaged for cultivation in the area drastically reduced. The wage rate prevailing in the area was not on par with labour efficiency. It was also not based on number of working hours, but only on per day basis. The sky rocketing price of consumer goods and consumerism existing in the respondent farm households reflected the Kerala situation. The huge amount spent for household durables, vehicles etc. to keep the standard of living and amount spent for human capital formation i.e., education, increased cost of living. Non-availability of labour indicates a shift in search of white-collar jobs by the younger generation. For paddy cultivation the farmers in the area have to bring labourers from Tamil Nadu bearing their travel expenses. This was also a reason for drastic reduction of paddy cultivation in the area. The recent crisis faced by coconut farmers and rubber cultivators due to the sudden price fall in the market was reported as another constraint. In her study Prema (1996) also observed consumption expenditure, high wage rate and high input price as the main constraints. Incidence of Pest and diseases especially Eriophyid mite attack of coconut, banana root weevil, rodents in tapioca etc. drastically reduced yield and quality of crop. This reduction in income from agriculture is preventing farmers from investing for next year's cultivation. Cultivated land in the study area was less fertile especially in the sloppy areas of Pallichal which are part of Western Ghats. The situation has slightly improved after implementation of watershed in the area. But even now non beneficiaries face problem with the low productivity of land. Marketing was the main problem reported by vegetable cultivators. They have to go to Chalai market for selling and due to the perishability of the product and price fluctuations in the market, the farmers were not receiving

anticipated profit. But for banana cultivators, the establishment of KHDP market has solved their problems in marketing. Lack of interest in agriculture among the youngsters is also acting as a barrier to capital formation in agriculture. The feeling that there is no one to continue the farming is preventing the present farmers from investing more on agriculture. The fast changing life styles and life standards are making agriculture a less attractive business. This is going to become the most serious problem which act as an obstacle to farming itself in the nearby future (Vikasanarekha of Nemon block, 1997). High loan due was reported as a constraint by some of the farmers who have taken loan from banks. Lack of finance was reported as an obstacle by some of the farmers. Many of them were not confident enough to take loan fearing of repayment.

5.3   SUGGESTIONS AND POLICY IMPLICATIONS.

- The attitude of people especially youth should be changed and a positive attitude should be created to undertake farming as a profession rather than remaining as job seekers.
- Rural youth should be given training to scientific farming and make agriculture a profitable business.
- The strategy adopted by KHDP in promoting agriculture which was successful can be followed by Krishibhavans.
- Group farming and group management practices should be promoted and labour saving farm mechanization suitable to the locality should be adopted as far as possible.
- People should be encouraged to invest in productive assets rather than investing in financial assets like gold etc. which are non productive.
- The concerned institution should undertake systematic surveys in all 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.
- Effective control measures should be adopted and popularized to control pest and disease attack.

- Existing Gramasabhas should be made active and suggestions and modifications by the people should be accepted and implemented to ensure grass root level planning.

- Converting paddy fields for non-agricultural purpose which have a socio-economical and environmental impact should be strictly prohibited and farmers should be given more incentives to continue paddy cultivation.

- In the context of globalization farmers should be encouraged to take up more remunerative crops like spices and medicinal plants and an efficient market linkage should be established which will help the farmers to fetch maximum profit.

SUMMARY

6.SUMMARY

The present study on 'Capital formation in farm households of Kerala. A study in Nemon Block Panchayat of Thiruvananthapuram District 'was undertaken with the objective to assess the extent and nature of capital formation and to identify the constraints faced by farmers in capital formation.

Two stage random sampling and stratified sampling in the third stage was adopted for the selection of sample farmers. Out of the eight panchayats in Nemon block, three Panchayats viz, Pallichal, Balaramapuram and Kalliyoor were randomly selected. The respondent farmers were classified into different classes based on their size of holdings as.

Class I	–	upto and including 0.5 ha
Class II	–	0.5 ha – 1.0 ha
Class III	–	more than 1.0 ha

From each Panchayat two wards were randomly selected and 25 farmers from each ward was selected by proportional allocation based on the size of holding thus making a total of 150 respondents. Tabular analysis was used to study the socio-economic features, capital formation and constraints faced by farmers on the basis of income, expenditure, savings and asset structure of the farmers.

The results of the study indicated that non-farm income formed the major source of income in farm households and out of the total farm income, income from crop formed the major share. Regarding expenditure of farm households consumption expenditure occupied largest share in all the classes. Out of the total crop expenditure and livestock expenditure, material expenditure and expenditure on feed formed the major share respectively.

The asset structure of farm households revealed that investment on land and residential building formed predominant share of the total investment in farm

households. When land, residential buildings vehicles and household durables were excluded the asset structure showed that largest share of investment was in wells, tanks. etc. The average gross capital formation in farm households was Rs. 3450.44 of which major share was formed by land improvement (52.01 per cent). This could be attributed to the increase in amount spend for fencing and soil conservation practices owing to erosion susceptibility of the area. Net capital formation on an average was Rs. 3290.54. It also showed similar trend like gross capital formation. The income, expenditure, savings, value of assets, gross capital formation and net capital formation showed and increase with size of the farm. But rate of capital formation showed a reverse trend ie, decreasing with increase in farm size. It was low (0.71) in the sample because of the high value of existing asset structure. On Panchayat wise analysis the rate of capital formation was found to be more in Kalliyoor where farming was the major source of income of the sample respondents.

Analysis of major constraints revealed that high wage rate was the most important constraint followed by high cost of living. The wage rate prevailing in the area was not on par with efficiency of labour. This along with non availability of labour has caused almost disappearance of paddy cultivation in the area. Low product price and incidence of pest and diseases were other constraints identified. Lack of interest and negative attitude towards agriculture especially by the younger generation is also acting as one of the major obstacle in capital formation.

The following suggestions were put forward regarding capital formation in agriculture on the basis of above study.

- A positive attitude should be created among youth and they should be encouraged to accept farming as a profession.
- Training should be given to rural youth to adopt scientific farming.
- The functioning of Krishibhavans should be modified
- Farm mechanization suitable to the locality and which save labour should be adopted.

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CAPITAL FORMATION IN FARM HOUSEHOLDS OF KERALA.

A STUDY IN NEMOM BLOCK PANCHAYAT OF

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ABSTRACT

The present investigation on capital formation in farm households of Nemom Block Panchayat of Thiruvananthapuram district was aimed to assess the extent and nature of capital formation and to identify the constraints faced by farmers in capital formation. Two stage random sampling and stratified sampling in the third stage was adopted for the selection of 150 respondent farmers based on their size of holdings.

The socio economic features, capital formation and constraints faced by farmers on the basis of income, expenditure, savings and asset structure of the farmers were studied using tabular analysis.

Income from crop formed the major share of total farm income. Material expenditure and expenditure on feed formed the major share of total crop expenditure and livestock expenditure respectively. Out of the total investment in farm households, major share was occupied by land residential buildings. When land, residential buildings, vehicles and household durables were excluded, the asset structure showed that largest share of investment was on wells and tanks.

The average gross capital formation in farm households was Rs.34450.44 and average net capital formation was Rs.3290.54. Major share of gross and net capital formation was on land improvement. The income, expenditure, savings, value of assets, gross capital formation and net capital formation increased with farm size. It was low (0.71) in the sample farm households because of the high value of existing asset structure. Among the Panchayats, the rate of capital formation was maximum in Kalliyoor, where farming was the major source of income of majority of sample respondents.

High wage rate was the most important constraint faced by farmers followed by high cost of living. Non – availability of labour, low product price, incidence of pest and diseases, lack of interest and negative attitude of younger generation towards farming were also identified as major obstacles in capital formation in sample farm households.