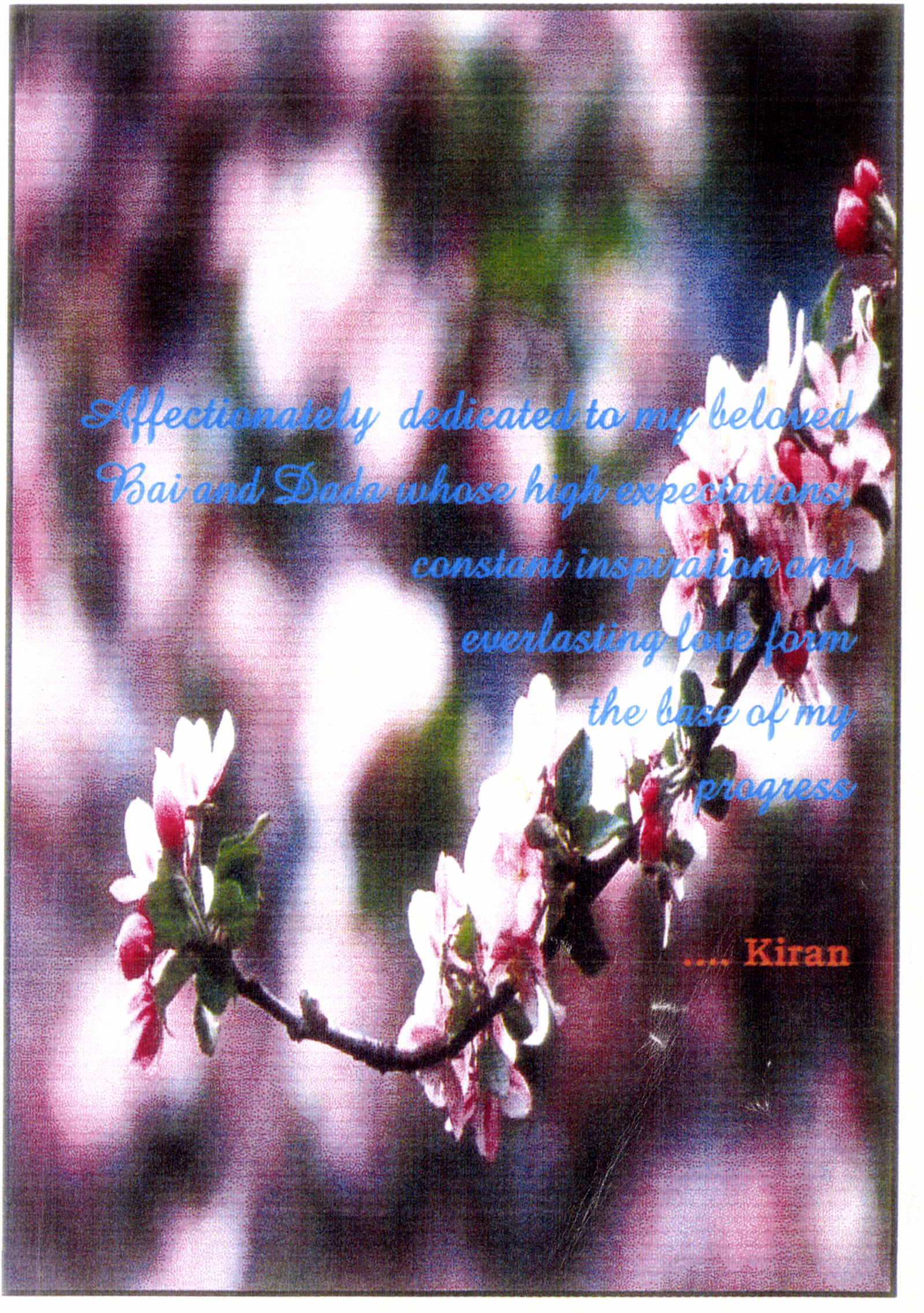
Affectionately dedicated to my beloved
Bai and Dada whose high expectations,
constant inspiration and
everlasting love form
the base of my
progress
.... Kiran

STUDY ON MANAGEMENT OF HOUSEHOLD ECONOMY IN DRYLAND AREAS OF AHMEDNAGAR DISTRICT

By

Kirankumar Bhimrao Khedkar

(Reg. No. 01152)

A thesis submitted to the
MAHATMA PHULE KRISHI VIDYAPEETH,
RAHURI - 413 722, DIST.AHMEDNAGAR,
MAHARASHTRA, INDIA

in partial fulfilment of the requirements for the degree

of

MASTER OF SCIENCE (AGRICULTURE)

in

AGRI-BUSINESS MANAGEMENT

DEPARTMENT OF AGRICULTURAL ECONOMICS

POST GRADUATE INSTITUTE,
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2003

CANDIDATE'S DECLARATION

I hereby declare that this thesis or part thereof has not been submitted by me or other person to any other University or Institute for a Degree or Diploma

Place : MPKV, Rahuri

(K.B. Khedkar)

Dated : 30/12/2003.

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CERTIFICATE

This is to certify that the thesis entitled, **"STUDY ON MANAGEMENT OF HOUSEHOLD ECONOMY IN DRYLAND AREAS OF AHMEDNAGAR DISTRICT"**, submitted to the Faculty of Agriculture, Mahatma Phule Krishi Vidyapeeth, Rahuri, Dist. Ahmednagar (Maharashtra State) in partial fulfillment of the requirements for the degree of **MASTER OF SCIENCE** (AGRICULTURE) in **AGRI-BUSINESS MANAGEMENT**, embodies the results of a piece of *bona fide* research work carried out by **Mr. Kirankumar Bhimrao Khedkar,** under my guidance and supervision and that no part of this thesis has been submitted for any other degree, diploma or publication in other form.

Place : M.P.K.V.,Rahuri

Dated 26/12/2003.

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Research Guide

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Maharashtra State (INDIA)

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Place : M.P.K.V., Rahuri

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Dated 30/12/2003.

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Place : M.P.K.V., Rahuri

Dated :30/12/2003

(K.B. Khedkar)

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ABSTRACT

STUDY ON MANAGEMENT OF HOUSEHOLD ECONOMY IN DRYLAND AREAS OF AHMEDNAGAR DISTRICT

By

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A candidate for the degree
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The present study deals with the management of household economy in dryland areas of Ahmednagar district. It therefore, examines socio-economic structure, employment pattern, expenditure pattern and sources of income of sample household in dryland areas of Pathardi tahsil in Ahmednagar district.

The sample for the study comprised of 120 farmers spread over five villages in dryland area of Pathardi tahsil in Ahmednagar district. Six farmers for each of the four predetermined size classes viz., marginal (0.01 to 1.0 ha), small (1.01 to 2.0 ha), medium (2.01 to 4.0 ha) and large (4.01 and above) making a total of 24 farmers were selected from each of the five selected villages. Two stage stratified random sampling design was adopted. The primary data concerning to socio-economic conditions, employment pattern, sources of income and

household expenditure management for the year 2001-02 were obtained from the sample farms by survey method. The data so obtained were analysed both by simple tabular method and multiple regression analysis to accomplish the objectives under study.

The study revealed that, in dry land areas, farm families have been characterized by low standard of living, family size ranged between 4.53 to 5.69, high percentage of illiteracy with education upto primary level in some cases. Capital assets, net area sown, and livestock heads showed a decline with decrease in average size of holdings.

The total annual employment of the average family worker was 171.02, 177.74, 178.96 and 200.82 days for marginal, small, medium and large size groups respectively. At the overall level, it was 182.14 days. The owned farm employment was the major source of employment in large (94.39 per cent) and medium (71.85 per cent) size group of farms. The off farm employment was the major source of employment to marginal (61.99 per cent) and small (51.14 per cent) size group of farms. The above type of trend was also noted in employment pattern of male and female worker in dryland area. In off-farm employment, wage earnings, contributed a maximum share in marginal (44.50 per cent) size group of farms. The selected six independent variables for employment jointly explained 64 per cent variation. In employment function, the livestock unit (X_1), family size (X_2), net cropped

area in kharif (X_3), and net irrigated area (X_6) have turned out to be positive and highly significant showing positive association for boosting employment of sample households.

In case of a male worker of marginal, small, medium and large size groups, total employment period was 196.09, 205.54, 207.72 and 232.76 days respectively. At the overall level, total annual employment for male worker was 210.52 days. The total annual employment of a female worker, at the overall level, worked out to 153.73 days. It was 145.93, 149.92, 150.19 and 168.86 days for marginal, small, medium and large size classes, respectively.

At the overall level, average annual income of farm families was Rs. 37921.65. It however, increased with an increase in size of holdings viz., Rs. 24803.2, Rs. 29410.6, Rs. 41024 and Rs. 55448.8 for marginal, small, medium and large size groups, respectively. Crop production and livestock activities were the major (74.03) sources of income in dryland areas. The selected four independent variables viz., gross cropped area (X_1), per family total annual employment (X_2), annual expenditure on crop and livestock (X_3) unit jointly explained 88 per cent variation in the total incidence. The regression coefficients of two independent variables viz., gross cropped area (X_1) and expenditure on crop and livestock unit (X_3) have turned to be positive and highly significant indicating the positive association with annual increase in income.

Abstract contd..... **K.B. Khedkar**

The total household expenditure of farmer, at the overall level was Rs. 37921.65, while it was Rs. 24803.2, Rs. 29410.6, Rs. 41024 and Rs. 56448.8 for marginal, small, medium and large categories of households respectively. Out of the total expenditure, food consumption shared the maximum (42.89 per cent) while crop production expenditure was comparatively low (20.31 per cent). In estimated expenditure function, three independent variables viz., total annual gross family income, family size in adult units and value of capital assets jointly explained 47 per cent variation and showed a direct relationship with family expenditure.

For the management of household economy of family, it was necessary to borrow the loan from outside agencies. Generally, the loans taken were of the order of Rs. 2351.5 at the overall level. The average amount of loan borrowed was Rs.1233.6, Rs. 1581.6, Rs. 2305 and Rs. 14258.8, in the case of marginal, small, medium and large category of households, respectively. The farm families had thus a defects nature of budget at the end of the year.

The study therefore suggests to create employment and income earning opportunities in dry land areas in order to improve the socio-economic conditions of the households at large.

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INTRODUCTION

1. INTRODUCTION

1.1 General

India has been described as a rich country with poor people when it comes to quantitative assessment. There are perhaps no other areas in Indian economy that are more gray than poverty and unemployment. The proportion of population below poverty line eventhough showing a decline is still at 26.10 per cent in the country. These are the areas which affect the quality of human life more intimately than others. Its incidence varies between rural and urban areas. The major victims of these problems are farming communities in dryland area.

India is basically an agrarian country. Agriculture and allied activities contributed nearly 25 per cent of gross domestic product and about 61 per cent population is depend on agriculture (Anonymous, 2003).

Maharashtra is a leading state in the agriculture sector. As per the population census 2001, the rural population is 58 per cent of the total population. Geographical area of Maharashtra state is 3.07 lakh sq.km. Of this, net area under agriculture is about 1.77 lack sq.km. i.e. 57.6 per cent. However, the proportion of gross irrigated area to gross cropped area is only 15.52 per cent. Thus, 84.48 per cent of the area under agriculture in the state is directly dependent upon monsoon. Nearly one third area of state falls under rain shadow region where the rains are scanty and irratic. Also, the soil,

topography and climate are not much favourable to agriculture. The average size of holding in the state is 1.7 hectares and about 15.05 lakh farmers have the holding of average farm size below one hectare (Anonymous, 2002-03).

1.2 Strategies Adopted for Development of Rural Areas

The attempts have been made by Government authorities under the different development plans for upliftment of the poor sections of population in dryland areas. At the national level, Government of India has sponsored many schemes like Marginal Farmers and Agricultural Labourers (MFAL), Small Farmers Development Agency (SFDA), Antyodaya, Drought Prone Area Programme (DPAP), Crash Scheme for Rural Employment (CSRE), Integrated Area Development Programme (IADP), Integrated Rural Development Programme (IRDP), Rural Landless Employment Guarantee Programme (RLEGP), National Rural Employment Programme (NREP), Twenty Point Programme and well known Employment Guarantee Scheme (EGS) were specially directed to benefit the rural and scaricity zone people.

Maharashtra is a pioneer state in India, in launching rural development projects. The 'Integrated Area Development Programme' known as 'Page Scheme' was launched in the state during the year 1962. This scheme aimed at bringing about a change in income levels of small, marginal and medium farmers especially in dryland areas which was the first of its kind in the country. Afterwards during the year 1965, Page Scheme have been converted into Employment Guarantee Scheme (EGS) with an object to provide employment

opportunities to all who are in need. The production oriented works such as construction of roads, bunding works, horticultural plantation etc., have been launched under the scheme.

There is no doubt that our efforts in the Five Year Development Plans have yielded some positive results. However, we have not made much headway in reducing the disparities prevailing among the different classes of society.

1.3 Topic of the Study

When we consider a geographical area as a unit for regional development, one comes across the situation that some regions are more developed while the others are still under developed. Sometimes, there exist a lot of disparities in the economies of the two regions. The Drought Prone Review Committee of the Government of Maharashtra (1987) has declared those areas as 'Scarcity (drought) zone' which received on an average less than 750 mm annual rainfall and have faced at least two droughts in last successive eight years. In Maharashtra state, the scarcity zone region covers 87 tahsils from 14 districts during the year 2002. The scaricity zone highlighted the characteristics like backwardness of the rural masses, unemployment, under employment, low income, imbalance in consumption, low resource use and generally low standard of living.

Ahmednagar is one of the biggest districts in the Maharashtra which is having geographical area of 17,048 sq.km. Ahmednagar is the only district which is having large drought prone area and large irrigated area. About 3.61 lack hectares area is under irrigation i.e. 29 per cent of gross cropped area.

It is observed that Pathardi tahsil of Ahmednagar district had faced two droughts in last successive eight years and had average rainfall below 600 mm per annum. Pathardi tahsil covers 8 per cent area and 7.5 per cent population of Ahmednagar district. It is a typical drought prone area representing the State of Maharashtra where agriculture is totally dependent upon the monsoon. In view of this, it was thought interesting to study the socio-economic characteristics, employment and income pattern together with management of household expenditure of the farm households in such a dryland agriculture. The question is, how can the farm households manage their whole system of employment, income and household expenditure? What are their economic problems and what solutions should be provided to improve their economic situation (Anonymous 2002-03). The micro-level studies of such type will be more useful to the planners and policy makers. So, keeping this view in mind, the present study *viz.*, "Study on Management of Household Economy in Dryland Areas of Ahmednagar District" has been taken up with following specific objectives. It has been thus proposed to take up this study in Pathardi tahsil of Ahmednagar district.

1.4 Objectives of the Study

The specific objectives of study are as under

1. To study the socio-economic characteristics of sample households in dryland areas.
2. To study the employment pattern of sample households.
3. To study the sources of income and management of household expenditure by the sample households in dryland areas.

1.5 Hypotheses of the problem

The following hypotheses have been framed, based upon the objectives, to lead the analysis of study.

1. The problem of unemployment is predominant in dryland areas.
2. Agricultural is the main source of income in dryland areas.
3. The expenditure on food items shared the major portion of their total family expenditure.

1.6 Scope and Utility of the Study

The farmers in dryland area have the constraints of poor resource base resulting into low productivity. The green revolution and white revolution will not succeed unless we make some efforts towards the development of these farmers in dryland area. The findings of the present study will therefore, be useful for the planners and politicians for formulating and adopting suitable policies for the upliftment of household economy of such farmers in dryland areas. The results of the study will also depict the real picture of household economy of farmers in dryland areas and suggestions made for improvement based upon the actual survey of the dry areas would enable to draw these households into the main stream of economic development. The study is also useful for formulating schemes for increasing standard of living of masses in dryland areas.

The study is based on a limited sample of 120 farm families in dryland areas of Ahmednagar district. The findings of the study would, therefore, be applicable to the region where similar agro climatic and employment conditions prevails. The results of the study may therefore, be viewed accordingly.

REVIEW OF LITERATURE

2. REVIEW OF LITERATURE

Agriculture is still the largest sector of national economy offering employment to two third of population. However due to large increase in population, the problem of unemployment and under employment has become relatively serious resulting into lower income, under nourish and low standard of living particularly for the agriculturists in dryland areas. The deplorable conditions, in which the weaker sections in dryland region are living in our country have attracted the attention of planners and research workers from time to time. Various studies conducted by them have provided information for adopting suitable strategies for the development of household economy in dryland area. An attempt is made in this chapter to review the findings of some of the studies closely related to the topic of the present study. The reviews have been classified into following categories based upon the aspects under study.

2.1 Socio-economic characteristics of Rural Households

2.2 Employment Pattern of Rural Households

2.3 Sources of Income and Management of Household Expenditure

2.1 Socio-economic Characteristics of Rural Households

Pathare (1972) studied seasonal migratory labour from dry region of Ahmednagar and Beed districts working at Rahuri Co-operative Sugar Factory. He revealed that the average size of land holding was 2.71 hectares. It was somewhat higher in Pathardi

region. About 57.0 per cent had land below 6.0 ha, while 30.0 per cent had above 8.0 ha. However, he reported that the soils were mostly light, less fertile and almost dry. About 57.0 per cent of the families had wells with limited water. 86.0 per cent families reported that they had migrated to the factory because of absence of employment opportunities in village, inadequate income from agriculture and large family size.

Singh (1981) studied indebtedness among agricultural labourers in Ghaziabad district in Uttar Pradesh during the year 1979-80 and concluded that 58 per cent of agricultural labour households were under debt. It was found that about 85 per cent of the total debt incurred by the agricultural labour households were for meeting their consumption needs and socio-religious obligations. About 70 per cent of the households were in debt upto 3 years period. He suggested to provide institutional credit facilities to the agricultural labour households even for meeting the consumption needs and socio-religious obligations at low rate of interest with easy repayment facilities.

Gaikwad (1983) studied economy and problems of weaker sections in rural areas of Maharashtra. He stated that weaker section did not get sufficient employment. The wage rates were very low. The major economic problems faced by weaker section were inadequate land holding, lack of irrigation facilities, low income, unemployment, low yield, inadequate capital investment, financial assistance and imbalance in factors of production resulting in indebtedness.

Gavali (1984) studied impact of drought condition on economy of agriculturists in Ahmednagar district. He concluded that the drought condition had brought about adverse effect on income, expenditure, own farm employment and indebtedness of sample families. The decrease in net area sown and livestock heads had resulted into weakening of capital base of production activity. The downfall of capital assets, crop failure due to drought condition and reduction in net area sown led to lowering the returns from crops and livestock. The families could withstand the deplorable situation because of their increased wage earnings from Employment Guarantee Scheme Works.

Palve (1991) studied socio-economic aspects of seasonal migratory agricultural labour working in sugar factories with reference to Pathardi tahsil in Ahmednagar district. He concluded that the majority of the sample households were engaged as cultivators and agricultural labourers. The size of the family was relatively large. The majority of the members of the sample households were in the working age group, illiterate and married. In addition, they possessed mostly unirrigated land which was of a poor quality. As regards cropping pattern, the proportion of cereals and pulses was the highest due to dryland cultivation. The land was the major asset followed by building and livestock.

Radkar (1995) studied the effects of drought on economy of farmers in the scarcity region of Western Maharashtra. He concluded that the drought had adverse effect on income, expenditure, employment (especially own farm) and indebtedness of

sample families, thereby affecting the economy of the region significantly. The consumption expenditure of sample families went up during the drought year. Due to scarcity, livestock number was also reduced which ultimately resulted in lowering down the returns from livestock production activity.

Studies on socio-economic characteristics pointed out that the farm families in dryland areas did not get sufficient employment. The wage rates were very low. Own farm employment was the main source of income. The major economic problems faced by families were inadequate land holding, lack of irrigation facilities, low yield, inadequate capital investment, financial assistance and imbalance in factors of production. Crop failure incidence due to drought condition and reduction in net sown area lowering down the returns from crop and livestock was common. Majority of members of sample households were in working age group and illiterate.

2.2 Employment Pattern of Rural Households

Jha (1970) studied the wage structure, employment and earning of farm labourers in Bihar and found that adult gets employment of 261 days out of which non-agricultural employment constituted 29 per cent.

Joshi (1972) studied employment and unemployment to farm size and concluded that as farm size decreased, the employment per unit of land increased. This indicates that the labour is substituted for capital on small farms.

Ghosh (1974) studied the problem and prospects of marginal farmers and agricultural labourers in the Hooghly district of

Karnataka. He studied the pattern of employment of agricultural labourers. An average casual male labour secured the wage paid employment for 313 days in the backward village. Cultivation of land provided only 54 per cent of the income. Further he worked out per household and per capita income of marginal farmers as Rs. 2610 and Rs. 380 respectively.

Bombale (1976) studied the employment, wages and income structure of weaker sections in agriculture from Ahmednagar district. He concluded that the total annual employment of the male and female worker of the small farmer families of the under developed region was 217.33 days. The average annual family income of the small farmer was Rs. 2675.

Thakur (1979) studied unemployment in Indian rural sector. He noted that, unemployment was not a severe problem, but employment at wages below the subsistence level was the problem. Over crowding on the land was the main cause of unemployment. Low level of income rather than unemployment was the main problem in the rural sector. Another feature he observed was the voluntary unemployment.

Rajgopal (1986) undertook a study in Bastar district of Madhya Pradesh. He reported that the demand for agricultural labour remained for 245 days in a year. The major conclusion was that 46 per cent of agricultural labour force was unemployed and 21 per cent was disguised under employed.

Suryawanshi *et al.* (1988) studied the income, expenditure and employment pattern of agricultural labourers in minor irrigation

project area of Pune district in Maharashtra. They concluded that the total farm employment for male and female workers was 242 days and 238 days respectively. The total farm employment days of male were highest in *rabi* (81 days) followed by *kharif* (74 days) and summer (65 days). The income of male and female depended upon the season and type of work. The most important source of family income (88 per cent) was from agriculture.

Gadhave (1988) studied employment, income and consumption of agricultural labourers and marginal farmers in Pune district. He observed that the period of unemployment in respect of average male and female worker for landless labourers and marginal farmers was 146.67, 168.35, 233.04 and 260.09 days in a year respectively. The consumption expenditure of the sample families was found to be significantly proportionate with annual gross family income, family size and capital assets. The proportion of expenditure on food items was higher in both the categories.

Kasar *et al.* (1989) studied employment and income pattern of tribals in Pune district of Maharashtra state. They concluded that the annual total employment in case of an average male and female worker of tribal households was 276.44 and 277.30 days respectively. The farm activities were the major source of employment. The share of total farm and non farm employment in respect of male worker was 64.69 and 35.51 per cent, while that of a female worker was 84.09 and 15.91 per cent of the total annual employment. Per family annual gross family income, on an average, worked out to Rs. 5605.

Kashikar (1992) studied employment pattern and earning status of small farmers in Madhya Pradesh. The results showed that there was a considerable scope and potential to utilize manpower in development works. The level of employment and earning status of small farmers was found to be poor. The agricultural sector, the non-agricultural sector and non-specific works contributed approximately 74, 16 and 10 per cent respectively to the total income of small farmers in the area.

Bhalla (1993) studied the dynamics of wage determination and employment generation in Indian agriculture. This paper focused on wage determination and labour absorption in Indian agriculture and concluded with suggestion for agriculture employment and wage policy formulation. Interstate variation in labour productivity constituted the most significant factor explaining differences in real wage rates. He concluded that the rise in real wages has been the single most important cause of falling man days per hectare.

Gauraha *et al.* (1993) studied wage employment and earning of 70 marginal farmers in Raipur district of Madhya Pradesh. Owned farm employment was only 10 per cent of the total employment. The prevailing wage rate for the agricultural work was Rs. 16.78 in canal alongwith tube well irrigated village.

Thakur *et al.* (1993) studied employment and productivity in developed and underdeveloped agricultural regions in Bihar. This paper analysed the relationship between employment and wage productivity of agricultural labourers on different sized farms in

developed and underdeveloped areas. It was found that small farms generated more opportunities for employment than landless, marginal and large households. Employment opportunities could be generated in under developed areas by investment in the infrastructure such as irrigation, electricity and roads.

Jadhav (2001) studied employment, income and expenditure pattern of rural weaker sections in scarcity region of Satara district. The study revealed that the problem of unemployment was severe in all families. The position of farm and non-farm employment of sample families was different. The period of employment in respect of male and female worked out to 208.77 days and 162.44 days during the year respectively.

Mali *et al.* (2003) studied income, employment and expenditure pattern of farm and non-farm families in irrigated and rainfed areas of western Maharashtra. He concluded that on an average, the male worker was employed for 210 days and 215 days in the case of farm families and 269 and 239 days of non farm families in irrigated and rainfed areas respectively. However, the female worker was employed for 136 and 152 days in case of farm families and 196 and 180 days of the non-farm families in irrigated and rainfed areas, respectively.

It appears from the above reviews that, the employment of farm families largely depend, on size of holding, season, capital assets and type of work. The most important source of income (88 %) was from own farm employment. The total farm employment was highest in *rabi*, followed by *kharif* and relatively low in summer.

Generally, studies reveal that the annual employment of a male and female worker, by and large was 210-225 days and 180-200 days, respectively in rural areas.

2.3 Income and Expenditure Pattern of Sample Households

Khalon *et al.* (1970) studied the family labour income, farm investment income and farm business income of small farmers in Punjab. The per hectare family labour income, farm investment income and farm business income worked out to Rs. 498.10, 775.46 and 1054.63, respectively. The food item was the most important item of the farmers family budget which accounted for 59.65 per cent of the total expenditure.

Pawar and Gaikwad (1974) studied wages, employment and income of small farmers in Maharashtra at two points of time. They concluded that wage rates had increased by about 58 to 60 per cent during 1966 to 1972 while the family expenditure increased almost by 103 per cent. They further revealed that insufficient own farm employment, forced them to seek employment outside their own farms. Employment on others farm was one third of the total, while income from wage earning was less than one-fourth of the total family income.

Singh (1975) made a study in Ludhiana district of Punjab to examine the income and expenditure pattern of small and marginal farmers. The study showed that net cash income as well as returns to management were lower on small and marginal farms due to less marketable surplus and relatively more overhead costs on the farms. The gross farm income from the produce, value of livestock products

and from services was Rs. 7545 and Rs. 15820 on marginal and small farms respectively. It was found that inspite of equal productive efficiency of small and marginal farmers, they ended in overall deficit of Rs. 109 and Rs. 1782 respectively.

Satre (1982) studied the employment, income and expenditure pattern of weaker section in agriculture in Western Maharashtra. He concluded that an increase in the farm size and wage rate resulted into an increase in the employment for the family work force. The total annual family income of farmers, farmers cum agricultural labourers and landless agricultural labourer families in the under developed region were Rs. 9974.35, Rs. 5541.86 and Rs. 3182.99 respectively. The per capita household expenditure of the farmers, farmers cum agricultural labourers and landless agricultural labourer families in the under developed region were Rs. 819.40, Rs. 742.37 and Rs. 585.20 respectively.

Chitodkar (1992) studied pattern of employment, income and indebtedness of agricultural labourers in Dhule district. The findings of the study revealed that per day wage rates for male and female workers in crop production activities and non-crop production activities were Rs. 21.91, 12.18 and 23.14, 10.95, respectively. Of the average annual wage of attached labourer, the proportion of cash was 83.69 per cent while that of kind component was 16.31 per cent with the daily working period of 14 hours. Per family income of attached labour and causal labour households from different sources was observed to be Rs. 12313.18 and Rs. 8335.24, respectively. Importantly, wage earning was the single most source of income to

the attached labour and causal labour families. The study further concluded that consumption expenditure of the sample families was found to be significantly proportionate with the annual gross family income and the family size in adult units.

Ram *et al.* (1993) studied food consumption and expenditure of agricultural households in Jodhpur tahsil of Rajsthan state. Average household consumption expenditure of Rs. 105 per consumer unit per month was below the all India poverty line expenditure. Consumption in terms of calories was marginally below the poverty line norms for marginal (2705), small (2768) and medium (2758) farms as against the recommended level of 2800 calories per consumer unit per day. Only large farms were able to attain a level of consumption above the poverty line.

Sawant (1997) studied employment, income and consumption of rural families below poverty line in Solapur district. He revealed that the average annual family income of the small, marginal farmer, landless labour and artisian families was Rs. 9345.26, 8742.26, 8043.66 and 8719.83, respectively. The total household expenditure of the small farmer, marginal farmer, landless labour and village artisan was Rs. 10816.83, Rs. 9557.06, Rs. 9058.53 and Rs. 9416.66, respectively.

Gawade (1998) studied income, employment and expenditure pattern of rural weaker sections in Western Maharashtra. He concluded that (1) in the total employment, the share of wage earnings was 35 per cent. (2) almost 60 to 63 per cent of total expenditure was incurred on food consumption and other family

necessities by all the households under study (3) the per family average income received, at the overall level was Rs. 19237 and (4) family budgets of all the families were in deficit.

Torane *et al.* (1998) studied factors influencing the income, expenditure of agricultural labourers in Thane district. They found that an average annual income and expenditure of agriculture labour families during the year 1991-92 was Rs. 6310.0 and Rs. 6950.0, respectively leading to indebtedness of labour families. In annual income, maximum per cent expenditure was made towards food, clothing and housing together. The annual consumption expenditure was strongly influenced by adults units in the family and annual income. From each additional rupee of annual income, 0.61 was spent on food item by labour families.

Jadhav (2001) studied employment, income and expenditure pattern of rural weaker section of scarcity region of Satara district. He revealed that the major sources of income of families were crop production activity, wage earning, income from business and service and livestock activity. The per family annual income worked out to Rs. 21,500 at the overall level. The proportion of family consumption expenditure was to the extent of 70.25 per cent in case of sample families. In family consumption, expenditure on food items was higher in all the families.

Mali *et al.* (2003) studied income, employment and expenditure pattern of farm and non-farm families in irrigated and rainfed areas of Western Maharashtra. They revealed that the average annual gross family income of farm family was Rs. 1,80,548 and Rs.

92,244 in irrigated and rainfed areas respectively. Of the total income 65 to 71 per cent of farm families. The share of wage earning and business was in the range of 37 to 46 per cent and 40 to 45 per cent in both areas respectively.

The average total family expenditure per annum was Rs. 1,06,390 and Rs. 59,145 in case of farm families. In the total expenditure, the share of crop production was in the range of 31 to 46 per cent and family maintenance share ranged between 31 to 42 per cent in case of farm families.

From the foregoing discussion it is noted that, net cash income as well as returns were lower due to less marketable surplus and relatively more overhead costs on small and marginal farms in general. Consumption in terms of calories was very low. The farm families who possess little land, derive the income from their daily wages. Almost, 60-65 per cent of total expenditure was incurred on food consumption and other family necessities. In case of farm families, major source of income was crop production and livestock activity.

METHODOLOGY

3. METHODOLOGY

3.1 General

This chapter mainly deals with plan of investigation with special reference to the selection of area and sample for study, collection of data and analytical procedures adopted for arriving at meaningful conclusions for fulfilling the objectives of the study.

3.2 Selection of the Area

Ahmednagar district was purposively selected for three reasons. Firstly, it is the biggest district among the districts under the jurisdiction of Mahatma Phule Krishi Vidyapeeth, Rahuri both in terms of area and population. Secondly, on agro-climatic conditions the district could be divided into two distinct zones *viz.*, dry and irrigated and area under dryland is comparatively large. Thirdly, the district has got sizeable number of farmers belonging to scarcity area on which the study is concentrated. The Pathardi tahsil which is a typical representation of dryland area in Western Maharashtra and characterised by frequent drought conditions, from Ahmednagar district was selected for the present study. Thus, Pathardi tahsil of Ahmednagar district in Western Maharashtra was selected for the study.

3.3 The Sampling Design

The sampling design adopted for the study was a two stage stratified random sampling design with a village as primary unit

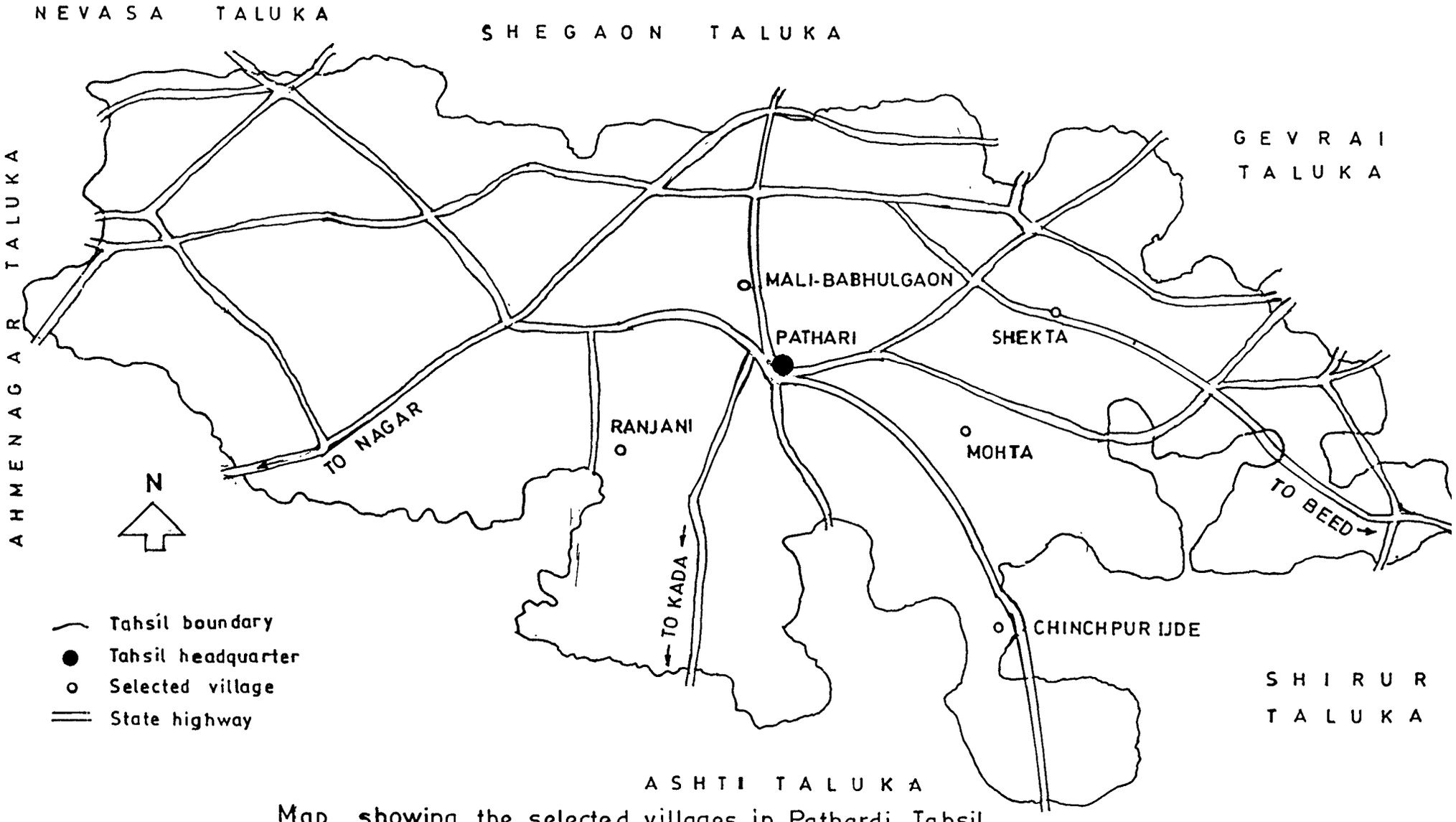
and sample of marginal, small, medium and large farmers as an alternate unit of sampling.

3.3.1 Selection of Sample Villages

The list of villages from Pathardi tahsil was prepared and villages were arranged in alphabetical order. In all five villages were selected by simple randomisation for the study. The five villages selected for the study were more or less similar in respect to population, dryland area, low infrastructural facilities. The selected villages were Mohata, Chichpur Ijade, Shekete, Mali-babhulgoan and Ranjani.

3.3.2 Selection of Sample Households

A complete list of farmers alongwith their operational size of holdings was obtained for each of the above selected villages. The farmers were categorised into four predetermined size classes such as marginal (0.01 to 1.0 ha), small (1.01 to 2.0 ha), medium (2.01 to 4.0 ha) and large (4.01 ha and above) and from each stratum, six households were selected randomly in order to make a total of 24 households for each selected village. Thus, the total sample for the study consists of 30 households each for marginal, small, medium and large size class of holdings making a total of 120 households spread over the five villages of Pathardi tahsil in Ahmednagar district. The detailed size group wise distribution among the selected villages is given in Table 3.1.



Map showing the selected villages in Pathardi Tahsil

Table 3.1 Size groupwise distribution of sample families in the selected villages

Sr. No.	Name of the village	Marginal (0.01 to 1.0 ha)	Small (1.01 to 2.0 ha)	Medium (2.01 to 4.0 ha)	Large (4.01 and above)	Total
1.	Mohata	6	6	6	6	24
2.	Chichpur Ijade	6	6	6	6	24
3.	Shekte	6	6	6	6	24
4.	Mali Babhulgoan	6	6	6	6	24
5.	Ranjani	6	6	6	6	24
	Total	30	30	30	30	120

3.4 Collection of Data

The data on different aspects such as socio-economic characteristics, on farm and off farm employment, sources of income and management of household expenditure by the sample households were collected personally by the author for the year 2001-02 with the help of a schedule designed for the purpose. A case of the schedule used is given in Appendix I. The efforts were made to get information as reliable as possible from the sample families by making them clear about the objectives of the study.

Specifically, the main components on which the information was to be obtained and included in the schedule were,

i. Socio-economic characteristics of sample households

ii. Employment pattern of sample households

iii. Income pattern of sample households and

iv. Expenditure pattern of sample households

The information on these aspects was required to accomplish the objectives under study.

3.5 Concepts and Definitions

Some of the concepts and definitions used in the present study are briefly explained as below.

i. Scaricity region

It is the area which receives, on an average, less than 750 mm annual rainfall and have at least two droughts in last eight years.

ii. Marginal farmer

He is a person whose land holding is upto one hectare.

iii. Small farmer

He is a person who holds land from one to two hectares.

iv. Medium farmer

A person who holds land from two to four hectares.

v. Large farmer

He is a person who holds land above four hectares.

vi. Employment

The period of work of a person or any working unit in an occupation is known as employment.

vii. Income

Annual earnings from different sources, is considered as income.

vii. Expenditure

Annual expenditure incurred on family consumption, crop production, livestock production is considered as the expenditure.

ix. Consumption

The annual expenditure incurred on food, clothing education, religious and social activities is considered as consumption expenditure.

3.6 Analysis of Data

A simple tabular method and regression analysis were the main tools of analysis used for present study.

3.6.1 Tabular analysis

A simple tabular method of analysis was used to study the average annual employment, per family annual gross income from different sources and per family annual consumption expenditure of families. The position of farm assets, livestock and family size were also studied.

A graphical presentation of results has also been attempted wherever needed.

3.6.2 Regression analysis

It was planned to estimate employment, income and expenditure function with the help of multiple linear regression analysis for knowing the parameters influencing on these economic indicators in respect of different size groups.

The attempt is made to estimate family employment, income and consumption expenditure function by fitting multiple linear regression equation to the data.

These functions have been estimated for all the four categories of selected farmers separately. Total number of estimated

functions were 12, comprising of 3 functions for each category separately.

The following functional farms were used with different variables.

3.6.2.1 Employment functions

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + U$$

Where,

Y = Gross family employment (days)

a = Intercept

x_1 = Live stock unit (numbers)

x_2 = Family size (in adult units)

x_3 = Net cropped area in kharif (ha)

x_4 = Net cropped area in rabi (ha)

x_5 = Family expenditure (Rs.)

x_6 = Net irrigated area (ha)

bi's = Regression coefficients

U = Error term

3.6.2.2 Income function

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + U$$

Where,

Y = Gross family annual income (Rs.)

a = Intercept

x_1 = Gross cropped area (hectares)

x_2 = Per family total annual employment (man days)

x_3 = Annual expenditure on crop and livestock (Rs.)

x_4 = Livestock unit (number)

bi's = Regression coefficients

U = Error term

3.6.2.3 Consumption expenditure

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3 + U$$

Where,

Y = Annual consumption (Rs.)
a = Intercept
x_1 = Annual gross family income (Rs.)
x_2 = Family size (numbers)
x_3 = Per family capital assets (Rs.)
bi's = Regression coefficients
U = Error term

3.7 Specification of the input variables

A great deal of caution needs to be exercised in selection, classification and aggregation of input variables used in regression analysis for studying employment, income and expenditure function. A brief description of inputs used as explanatory variables in presented study is given below.

Livestock unit

It includes bullocks, buffaloes and cows (dry and milch), calves, sheep and goats, poultry birds etc. It measured in terms of 'numbers'.

Family expenditure

It includes the expenditure on food items *viz.*, cereals, pulses, oilseeds, protective foods etc. and non-food items *viz.*, clothing, fuel and lighting religious and social expenditure, education, health, travelling, loan repay, beverages and other miscellaneous expenditure.

Total annual employment

Total annual employment includes on farm employment i.e. from crop production and livestock activity and off-farm employment i.e. from wage earnings, business, government work etc. In employment, one man day equal to eight hours for male. The female labours considered equal to 0.75 man equivalent days.

Annual expenditure on crop and livestock

Crop expenditure includes the total expenditure on crop production activity from preparatory tillage to harvesting and livestock expenditure includes feeding, maintenance etc.

Gross family income

It includes all the sources of income *viz.*, crop production, livestock activity, wages, business and government works.

Capital assets

It expressed in terms of 'rupees'. It includes residential house, farm house, cattle shed, well and irrigation structure and land.

Gross cropped area

Area sown more than once in a year has been considered as gross cropped area and expressed in terms of 'hectare'.

Net cropped area

Area under cultivation in each season has been considered as net cropped area and expressed in terms of 'hectare'.

Family size

Male and female workers family has been considered as a adult units for employment function. However, the number of family members has been considered as a family size for consumption function.

GENRAL INFORMATION ABOUT THE STUDY AREA

4. GENERAL INFORMATION OF THE STUDY AREA

4.1 General

Natural resources play an important role in agriculture. The agriculture production is largely dependent on climatic and physiographic conditions of the tract. It is therefore, necessary to study some of the physiographic features of dryland area of Pathardi tahsil of Ahmednagar district. In the present chapter, the information of geographic features of tahsil is provided in order to have some idea of economy of the tahsil. For better under standing of the existing conditions of the area under study, the presentation of the information is done under following two heads.

1. Background information of the tahsil
2. Background information of the sample villages

4.2 Background Information of the Tahsil

The district of Ahmednagar lies between $18^{0}2'$ and $19^{0}9'$ North latitude and $73^{0}9'$ and $75^{0}5'$ East longitude. The total geographical area of the district is 17,048 sq. kilometres and stands first in the State. As per the Census Report of 2001, the total population of the district is 33,73,000 and of this, the rural population is 84.16 per cent. The Ahmednagar district comprises of 14 tahsils and of these, 7 tahsils are having predominant dryland agriculture.

4.2.1 Location and geographic features of Pathardi tahsil

Pathardi is one of the tahsils of Ahmednagar district which is characterised by dryland area. Pathardi tahsil lies between $19^{0}10'$

North latitude and 75°10 East longitude. The total geographical area of the tahsil is 1,01,515 ha. This tahsil is surrounded by Ahmednagar tahsil on west, Nevasa and Shevgaon tahsils on South, Ashti and Shirur tahsils of Beed district on North and East respectively. The tahsil comprises of 130 villages.

According to 2001 census, total population of Pathardi tahsil was 1.86 lakhs with 51 per cent males and 49 per cent females. Out of total population, rural population is 1.67 lakhs. The density of population was 168 persons per square kilometre. The total working population was 76,000.

4.2.2 General nature of agriculture and agricultural economy

4.2.2.1 Soils

The Ahmednagar district is situated in Northern plains having all type of soils from deep black to red light. Soils of Pathardi tahsil are light. Moreover, the Pathardi tahsil has hilly area. These soils are suitable for cultivation of jowar and bajra crops only.

4.2.2.2 Climate and rainfall

The climate of this region is warm and dry. The maximum temperature reaches upto 41.3°C, while minimum 11.8°C. The rainfall pattern is uneven. This region receives rains mainly from South-West and North-East monsoon. The rainfall generally starts by the mid of June and spread over upto the end of November. The average rainfall received during the year 2001 was 699 mm.

4.2.2.3 Co-operatives

One co-operative sugar factory *viz.*, Vrudheshwar Sugar Co-operative Factory is located in Pathardi tahsil. There are 83

primary agricultural co-operative societies in the tahsil. Each village is having at least one primary agricultural co-operative society. Milk chilling plants are located at Pathardi and Tisgaon which are having large milk collecting centres spread over in different villages in the tahsil.

4.2.2.4 Land use pattern

It is revealed from Table 4.1 that, net sown area of Pathardi tahsil for the year 2002 was 89000 hectares i.e. 74.22 per cent of the gross cropped area. The area under fallow land and the area not available for cultivation was 12500 hectares which was 8.59 and 9.00 per cent respectively. The area sown more than once was only 10.42 per cent of the gross cropped area, which showed that double cropped area was low because of non availability of irrigation facilities. The explanation about irrigated and dry area be given here. The gross cropped area was 1,01,500 hectares and the cropping intensity worked out to 114 per cent.

4.2.2.5 Cropping pattern

The study of cropping pattern depicts the kind of crops growth and the area allocated to them. Moreover, the nature of cropping pattern shows a predominance of food grains or commercial crops which in turn provides a broad indicators of the income levels, economic condition and effects of monsoon in dryland area. The area allocation under different crops in Pathardi tahsil for the year 2002 is shown in Table 4.2.

As mentioned earlier, the gross cropped area in Pathardi tahsil was 1,01,500 hectares in the year 2002. Out of which more

Table 4.1 Land use pattern of Pathardi tahsil (2002)

(Area in "00" ha)

Sr. No.	Particulars	Area (ha)	Per cent to total geographical area
1.	Total geographical area	1199	100.00
2.	Area under forest	64	5.33
3.	Area not available for cultivation	108	9.00
a.	Land put to non-agriculture use	103	8.59
b.	Barren and uncultivable land	5	0.41
4.	Other uncultivable land excluding fallow land	34	2.83
a.	Cultivable waste	0	0
b.	Permanent pasture and other grazing land	9	0.75
c.	Land under miscellaneous trees, crops etc., not included in area sown	25	2.08
5.	Fallow land	103	8.59
a.	Current fallow	49	4.08
b.	Other fallow	54	4.51
6.	Net sown area (NCA)	890	74.22
a.	Irrigated area	87	7.28
b.	Dry area	803	66.94
7.	Area sown more than once	125	10.42
8.	Gross cropped area (GCA)	1015	84.65

Source : Socio-economic Review and Statistical abstract of Ahmednagar district (2002)

Table 4.2 Area under different crops in Pathardi tahsil (2002)

(Area in "00" ha)

Sr. No.	Crop	Area (ha)	Percentage to gross cropped area
I.	**Cereals**		
1.	Wheat	2598	2.55
2.	Jowar	32755	32.27
a.	Kharif	178	0.18
b.	Rabi	32577	32.09
3.	Bajra	52491	51.70
4.	Maize	110	0.11
5.	Other cereals	901	0.89
	Total cereals	88855	87.52
II.	**Pulses**		
1.	Gram	396	0.39
2.	Tur	2144	2.11
3.	Math	3120	3.07
4.	Kulith	454	0.45
5.	Other pulses	106	0.10
	Total pulses	6220	6.12
III.	**Cash crops**		
1.	Sugarcane	1121	1.10
2.	Condiment and spices	258	0.25
3.	Fruits and vegetables	583	0.58
4.	Cotton	141	0.14
5.	Oil seed	3913	3.86
	Total cash crops	6016	5.93
IV.	**Other crops**		
1.	Fodder crops	424	0.42
	Gross cropped area	101515	100.00

(Source : Socio-economic Review and Statistical abstract of Ahmednagar district, 2002)

than 87 per cent area was under food grain crops. Bajra was the major crop in the tahsil which alone occupied 51.70 per cent of the gross cropped area. The crops like jowar and wheat were the next important cereal crops which shared 32.27 and 2.55 per cent of the gross cropped area, respectively. In Pulses, matki was the important crop in the Pathardi tahsil occupying 3.07 per cent of the gross cropped area. Tur and kulith were the next important pulse crops. Out of total gross cropped area, 5.93 per cent of the area has been allocated for cultivation of commercially important crops such as sugarcane, fruits and vegetables, cotton etc. The most important cash crop was sugarcane which alone occupied 1.10 per cent of the gross cropped area. The area shared by cotton and oilseed crops was comparatively low i.e. 0.14 and 3.86 per cent respectively.

It is thus clear that the cropping pattern of the Pathardi tahsil is predominant with food grain crops with a lesser allocation of area for commercial crops indicating a peculiar characteristic of the dryland agriculture. Bajra alongwith tur, math and kulith in *kharif*, jowar in *rabi* and sugarcane on cash crop were the important crops grown in the tahsil.

4.3 Salient Features of Sample Villages

The present study is based on the micro level information obtained from the sample families selected from five sample villages in the Pathardi tahsil of Ahmednagar district. The villages selected for the study were Mohata, Chichpur, Ijde, Shekte, Mali-babhulgoan and Ranjani. The exact location of the sample villages is depicted in the

map on the next page. The detailed information of the sample villages is given in Table 4.3.

Table 4.3 General information of sample villages

Sr. No.	Name of the villages	Population	Operated area (ha)	Number of households	Barren area (ha)
1.	Mohata	1256	586	220	105
2.	Chichpur-Ijde	2744	1186	490	187
3.	Shekte	769	333	110	171
4.	Mali-Babhulgaon	2025	1882	428	143
5.	Ranjani	1668	960	300	124

i. Mohata

Out of the five villages, Mohata is one of the villages located at 8 km away from tahsil headquarter. The village situated on Pathardi – Beed road. The facilities such as primary school, high school, milk collection center are available in the village. The village has separate Gram-panchayat Office. The village is most popular in Maharashtra because of a famous temple of the Godess-Renuka Devi.

ii. Chichpur Ijde

Chichpur Ijde village is located at about 15 km towards east of the tahsil Pathardi on the Pathardi-Shirur road. The facilities required for dairy enterprise are available in the village. The village has education facilities such as primary school, secondary school and separate Gram-Panchayat Office.

Drinking Water Facilities in Pathardi Tahsil.

iii. Shekte

Shekte is situated on Pathardi – Geverai road, 7 km, away from Pathardi. This is a small village with the facility of primary school, drinking water, electricity etc.

iv. Mali – Babhulgoan

Mali - Babhulgoan village is situated on Pathardi – Ahmednagar road, 4 km away from Pathardi. The primary and secondary education facilities as well as separate Grampanchayat is available in the village. This is a small village with the facility of drinking water, electricity.

v. Ranjani

Ranjani is located towards south on Pathardi-Ashti road, 12 kilometers away from Pathardi. The village has Primary Agricultural Co-Operative Credit Society, Grampanchayat, primary school, a small milk collection center.

4.4 Size and Composition of Sample Families

In the present investigation size of the family refers to the total number of individuals living together under a common roof and having economic activities for the welfare of the family. The composition of average families of sample households according to their size classes is given in Table 4.4.

It can be seen from the Table 4.4 that, at the overall level, the average size of family was of 5.13 with 1.83 males (35.67 per cent), 1.47 females (28.66 per cent) and 1.83 children (35.67 per cent).

It can be observed that the average size of families of marginal, small, medium and large size classes of sample households was 4.53, 5.0, 5.28 and 5.69 members, respectively.

The average size of family was highest in case of large size group (5.69) followed by medium (5.28), small (5.00) and marginal (4.53) size group. It must be noted that the proportion of adult males and females was relatively more in medium and large size classes of holdings while that of children was more in marginal and small size classes of holdings.

4.5 Educational Status of the Sample Farm Families

The distribution of members of the sample families according to different educational level is presented in Table 4.5.

It is noted that a proportion of illiteracy was relatively more in small and medium size classes which was 21.20 and 19.52 per cent respectively. At the overall level illiteracy was to the extent of 17.78 per cent of the size of family. It is observed that the, members with primary education were 21.29, 24.2, 8.14 and 18.10 per cent in the marginal, small, medium and large size classes of holdings with an overall average of 17.77 per cent. It is important to note that the proportion of members with secondary education was more in marginal class (56.76 per cent) followed by large, medium and small size class of holdings. It looks that the members of the sample families were, by and large, literate since the overall percentage of illiteracy was only 17.78 per cent.

Table 4.4 Average size and composition of sample households according to their size groups

Sr. No.	Particular	Size group				
		Marginal	Small	Medium	Large	Overall
1.	Adult male	1.33 (29.36)	1.6 (32.00)	2.4 (42.34)	2.0 (35.15)	1.83 (35.67)
2.	Adult female	1.1 (24.28)	1.3 (26.00)	1.73 (34.88)	1.73 (30.40)	1.47 (28.66)
3.	Children	2.1 (46.36)	2.1 (42.00)	1.15 (22.78)	1.96 (34.45)	1.83 (35.67)
	Total	4.53 (100.00)	5.00 (100.00)	5.28 (100.00)	5.69 (100.00)	5.13 (100.00)

(Figures in the parentheses indicate percentages to the average size and composition of sample households)

Table 4.5 Educational status of the sample farms

Sr. No.	Level of literacy	Size group				
		Marginal	Small	Medium	Large	Overall
1.	Primary	0.96 (21.29)	1.21 (24.20)	0.43 (8.14)	1.03 (18.10)	0.91 (17.77)
2.	Secondary	2.56 (56.76)	1.90 (38.00)	2.26 (42.80)	2.73 (47.98)	2.36 (46.09)
3.	Higher secondary	0.40 (8.87)	0.63 (12.60)	0.76 (14.39)	0.50 (8.79)	0.57 (11.13)
4.	College	0.06 (1.33)	0.20 (4.00)	0.80 (15.15)	0.43 (7.55)	0.37 (7.23)
5.	Illiterate	0.53 (11.75)	1.06 (21.20)	1.03 (19.52)	1.00 (17.58)	0.91 (17.78)
	Total	4.53 (100.00)	5.00 (100.00)	5.28 (100.00)	5.69 (100.00)	5.13 (100.00)

(Figures in the parentheses indicate percentages to the educational status of the sample farms)

4.6 Land Use Pattern of Sample Farmers

The land use pattern of the sample households is presented in the Table 4.6.

The average size of holding of marginal, small, medium and large size classes of farmers was 0.82, 1.65, 3.37 and 6.90 hectares, respectively. At overall level, the average size of holding worked out to 3.19 ha. The net sown area was 0.76, 1.46, 2.73 and 5.41 hectares for marginal, small, medium and large size classes of holdings with an overall average of 2.59 hectares. It is thus clear that the proportion of net sown area was 81.19 per cent at the overall level.

It is important to note that at overall level, 60.50 per cent of the net sown area of sample farms was under dryland because of the lack of irrigation facilities and scarcity zone. Permanent fallow and current fallow land was large in case of large and medium size group 10.58 and 10.68 per cent respectively followed by small and marginal size groups. At the overall level, permanent and current fallow land was 9.72 and 9.09 per cent respectively. At overall level, cropping intensity was worked out to 121.61, it was high in case of large size group (128.65) while in case of marginal, small and medium size groups it was 111.84, 118.49 and 127.47, respectively.

Gross cropped area was highest in case of large farmer which was 6.96 ha followed by marginal (0.85 per cent), small (1.73 per cent) and medium (3.48 per cent) farmer. At the overall level it was 3.25 ha.

Livestock Grazing.

Stunted Growth of jowar crop due to lack of irrigation facilities.

Table 4.6 Average land use pattern of sample households according to their size classes

Sr. No.	Particulars	Size group				
		Marginal	Small	Medium	Large	Overall
1.	Average of holding	0.82 (100.00)	1.65 (100.00)	3.37 (100.00)	6.90 (100.00)	3.19 (100.00)
2.	Permanent fallow	0.05 (6.09)	0.10 (6.06)	0.36 (10.68)	0.73 (10.58)	0.31 (9.72)
3.	Current fallow	0.01 (1.22)	0.09 (5.46)	0.28 (8.31)	0.76 (11.02)	0.29 (9.09)
4.	Net sown area (NCA)	0.76 (92.69)	1.46 (88.48)	2.73 (81.01)	5.41 (78.40)	2.59 (81.19)
	a. Irrigated	0.04 (4.88)	0.27 (16.36)	0.75 (22.26)	1.56 (22.61)	0.66 (20.69)
	b. Dry	0.72 (87.81)	1.19 (72.13)	1.98 (58.75)	3.85 (55.79)	1.93 (60.50)
5.	Double cropped area	0.09	0.27	0.75	1.55	0.67
6.	Gross cropped area	0.85	1.73	3.48	6.96	3.25
7.	Cropping intensity	111.84	118.49	127.47	128.65	121.61

(Figures in the brackets are the percentages to the total size of holding)

4.7 Cropping Pattern

The major crops grown along with percentage share of individual crops in the gross cropped area of sample farmers for the year 2001-02 according to size classes is presented in Table 4.7. The critical examination of the cropping pattern indicated that bajra and pulses such as tur and gram were the major crops in *kharif* and jowar was major crop in *rabi* season.

It is very clear from the cropping pattern that bajra appears to be most important crop during *kharif* season which, by and large, occupied 38.77 per cent of the area at the overall level. The proportion of area under bajra was relatively more on marginal and small farms. The another important *kharif* crop was tur which alone shared 15.69 per cent of gross cropped area at the overall level. Proportion of area under tur was relatively more (27.74 per cent) on small farms followed by marginal farms.

The another important crop noted was *rabi* jowar which on an average covered 15.39 per cent of gross cropped area. The proportion of area under *rabi* jowar was relatively more on medium and large size classes of farm. The area under vegetables and oilseed crops was relatively more on medium and large size classes of sample farms. This was mainly because of availability of irrigation facilities with the medium and large size farm. It is noted that onion under vegetable and groundnut under oilseed crop were the major crop grown by the sample farms.

Table 4.7 Average cropping pattern of sample farmers according to their size classes

Sr. No.	Crop	Marginal		Small		Medium		Large		Overall	
		Area (ha)	Per cent to GCA	Area (ha)	Per cent to GCA	Area (ha)	Per cent to GCA	Area (ha)	Per cent to GCA	Area (ha)	Per cent to GCA
1.	Jowar (kharif)	0.02	2.35	0.04	2.31	0.12	3.45	0.23	3.31	0.10	3.08
2.	Jowar (rabi)	0.09	10.58	0.25	14.45	0.60	17.24	1.04	14.94	0.50	15.39
3.	Bajra	0.47	55.29	0.79	45.66	1.17	33.62	2.64	37.73	1.26	38.77
4.	Wheat	-	-	0.02	1.15	0.15	4.31	0.45	6.47	0.16	4.92
	Total cereals	0.58	68.23	1.1	63.58	2.04	58.62	4.36	62.65	2.02	62.16
5.	Tur	0.15	17.64	0.48	27.74	0.41	11.78	1.02	14.66	0.51	15.69
6.	Gram	0.05	5.88	0.03	1.73	0.20	5.75	0.37	5.32	0.16	4.92
7.	Other pulses	0.03	3.52	0.05	2.89	0.08	2.29	0.17	2.44	0.08	2.46
	Total pulses	0.23	27.05	0.56	32.36	0.69	19.83	1.56	22.42	0.75	23.07
8.	Vegetables	0.02	2.36	0.04	2.32	0.26	7.47	0.68	9.77	0.25	7.69
9.	Oil seed crops	0.02	2.36	0.03	1.74	0.49	14.08	0.36	5.16	0.24	7.08
	Total	0.85	100.00	1.73	100.00	3.48	100.00	6.96	100.00	3.26	100.00

4.8 Livestock Position of Selected Farm

The details regarding the composition of livestock with its value in Pathardi taluka are presented in Table 4.8.

Table 4.8 shows that, the average number of draft animals per farm was more followed by sheep and goat and milch animals at the overall level. The values of the draft animals were constituted about 49.01 per cent at the overall level. The proportion of average number of draft animal was more on large farms followed by small and medium farms. The another type of livestock was milch animal which alone contributes 27.63 per cent of the total investment of the livestock. The average number of sheep and goat on the sample farms at the overall level was more but it contributes very less investment.

The another important livestock noticed from the table was the poultry bird. The average number of poultry bird was 2.68 and it shared about 0.81 per cent investment in the total investment.

It is noticed from the above discussion that, the average number and the value of the draft animal was more for all the categories of farm. The average number of milch animal was less but the value invested was more.

4.9 Farm Assets of Sample Farmers

The information on average values of capital assets are presented in Table 4.9.

Table 4.9 shows that, the average value of land was more at the overall level which alone contributes about 82.02 per cent. The average value of residential house was about Rs. 52,024 followed by the value of well and irrigation appliances (Rs. 25896). The average

Table 4.8 Average livestock position according to size classes of sample farms

Sr. No.	Crop	Marginal		Small		Medium		Large		Overall	
		Average No.	Value (Rs.)	Average No.	Value (Rs.)	Average No.	Value (Rs.)	Average No.	Value (Rs.)	Average No.	Value (Rs.)
1.	Draft animals	1.66	10383	2.20	13933	1.86	11466	2.43	16202	2.04	12996
			(51.18)		(51.72)		(47.23)		(46.85)		(49.01)
2.	Milch animals	0.66	4119	0.94	5650	1.26	8296	1.69	11243	1.14	7327
			(20.30)		(20.98)		(34.18)		(32.51)		(27.63)
3.	Dry animals	0.63	3793.33	0.79	5649	0.46	2899	1.03	5706	0.73	4511.83
			(18.70)		(20.97)		(11.94)		(16.50)		(17.01)
4.	Calves	0.16	316.66	0.16	223	0.46	816.66	0.13	386.03	0.23	435.58
			(1.56)		(0.83)		(3.37)		(1.12)		(1.64)
5.	Sheep and goat	1.60	1475.00	1.5	1233	0.66	623.30	0.83	806.3	1.15	1034.40
			(7.27)		(4.58)		(2.57)		(2.33)		(3.90)
6.	Poultry birds	2.00	2.00	2.43	248	3.1	174.60	3.2	240.3	2.68	215.73
			(0.99)		(0.92)		(0.71)		(0.69)		(0.81)
	Total	6.71	20286.99 (100.00)	8.02	26936 (100.00)	7.8	24275.56 (100.00)	9.31	34583.63 (100.00)	7.97	26520.54 (100.00)

(Figures in the parenthesis are the percentages to the average livestock position according to size[36] classes of sample farms)

value of farm house and cattle shed was less as compared to the above capital assets and contributes a negligible share in the total value.

The above description clearly indicates that, the average value of land and residential house is more in all the categories of farms followed by the well and other irrigation appliances.

Table 4.9 Average capital assets and their value according to the size classes of sample farms

Sr. No.	Particulars	Size group				
		Marginal	Small	Medium	Large	Overall
1.	Land	134783	182800	349500	876920	386000.75
		(72.08)	(69.74)	(78.80)	(88.58)	(82.02)
2.	Residential	30633	50066	62166	65233	52024.50
	house	(16.38)	(19.10)	(14.02)	(6.59)	(11.05)
3.	Well and irrigation appliances	17766	24266	25020	36533	25896.25
		(9.50)	(9.26)	(5.64)	(3.69)	(5.50)
4.	Cattle shed	3800	4986	€171	5816	5193.25
		(2.04)	(1.90)	(1.39)	(0.59)	(1.10)
5.	Farm house	-	-	666.60	5466	1533.15
				(0.15)	(0.55)	(0.33)
	Total	186982	262118	443523.6	989968	470647.9
		(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

(Figures in the brackets are the percentages to the respective total value of capital assets)

Residential Farm in Pathardi Tahsil.

Livestock Byre.

RESULTS AND DISCUSSION

5. RESULTS AND DISCUSSION

In this chapter, the results are presented in accordance with the objectives formulated in the first chapter. The aspects such as employment pattern, income sources, expenditure pattern and management of household economy for the year 2001-02 are discussed thoroughly in the subsequent sections as follows.

5.1 Employment pattern

5.2 Employment function

5.3 Income sources

5.4 Income function

5.5 Expenditure pattern

5.6 Expenditure function

5.7 Management of household economy

5.1 Employment Pattern

Average annual employment patterns of farm family workers, male workers and female workers are depicted in Table 5.1 a, 5.1 b and 5.1 c, respectively.

It is revealed from Table 5.1 a that, the total annual employment per family worker was 182.14 days at the overall level. Own farm employment was the major source of employment contributing 64.51 per cent of the total employment and remaining 35.49 per cent employment was contributed by off-farm employment.

Among the different size groups of farm, the total annual employment per family worker was the highest (200.82 days) in large size group and was followed by medium (178.96 days), small

(177.74 days) and marginal (171.02 days) farms. It was mainly due to the difference in average size of land holding, capital assets, size of family etc. There existed a direct relationship between the size of farms and the own farm employment and inverse relationship between the size of farms and the off-farm employment. As far as different sources of employment are concerned, the crop production activity provided major employment to all the size groups of farms excepting marginal farms wherein the wages was the main source of employment.

As could be seen from Table 5.1 b that, at the overall level, the total availability of annual employment of a male worker was 210.52 days. The major sources of employment to the male worker were crop production (51.51 per cent) and livestock activity (14.69 per cent). The contribution of off-farm employment was 33.80 per cent. The picture is depicted for the different size groups of farms which clearly indicates that the proportion of off farm employment showed a decline as the size class of holding increases.

The total annual employment period of female workers was 153.73 days at the overall level (Table 5.1c). There is a similarity of the trend of female workers employment with that of male workers employment. It is very clear from these tables that the period of unemployment, at the overall level, was 182.86, 211.27 and 154.48 days in the case of an average family workers, female and male workers, respectively.

As such, the hypotheses at serial No. 1 and 2 indicating that the problem of unemployment is predominant in dryland areas

Table 5.1a. Average annual employment of family workers of sample households (days)

Sr. No.	Particulars	Size group				
		Marginal	Small	Medium	Large	Overall
I.	**Own farm employment**					
a.	Crop production	47.63	65.95	94.08	150.64	89.57
		(27.85)	(37.11)	(52.57)	(75.00)	(49.18)
b.	Livestock activity	17.37	20.89	34.51	38.93	27.93
		(10.16)	(11.75)	(19.28)	(19.39)	(15.33)
c.	Total own farm	65.00	86.84	128.59	189.57	117.50
	employment	(38.01)	(48.86)	(71.85)	(94.39)	(64.51)
II.	**Off farm employment**					
a.	Wages	76.11	36.03	23.07	8.75	35.99
		(44.50)	(20.27)	(12.89)	(4.36)	(19.76)
b.	Service/business/ Govt.	29.91	54.87	27.30	2.50	28.65
	works	(17.49)	(30.87)	(15.26)	(1.25)	(15.73)
c.	Total off farm	106.02	90.90	50.37	11.25	64.64
	employment	(61.99)	(51.14)	(28.15)	(5.60)	(35.49)
III.	**Total employment**	171.02	177.74	178.96	200.82	182.14
		(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

(Figures in the parentheses are the percentages to the respective totals)

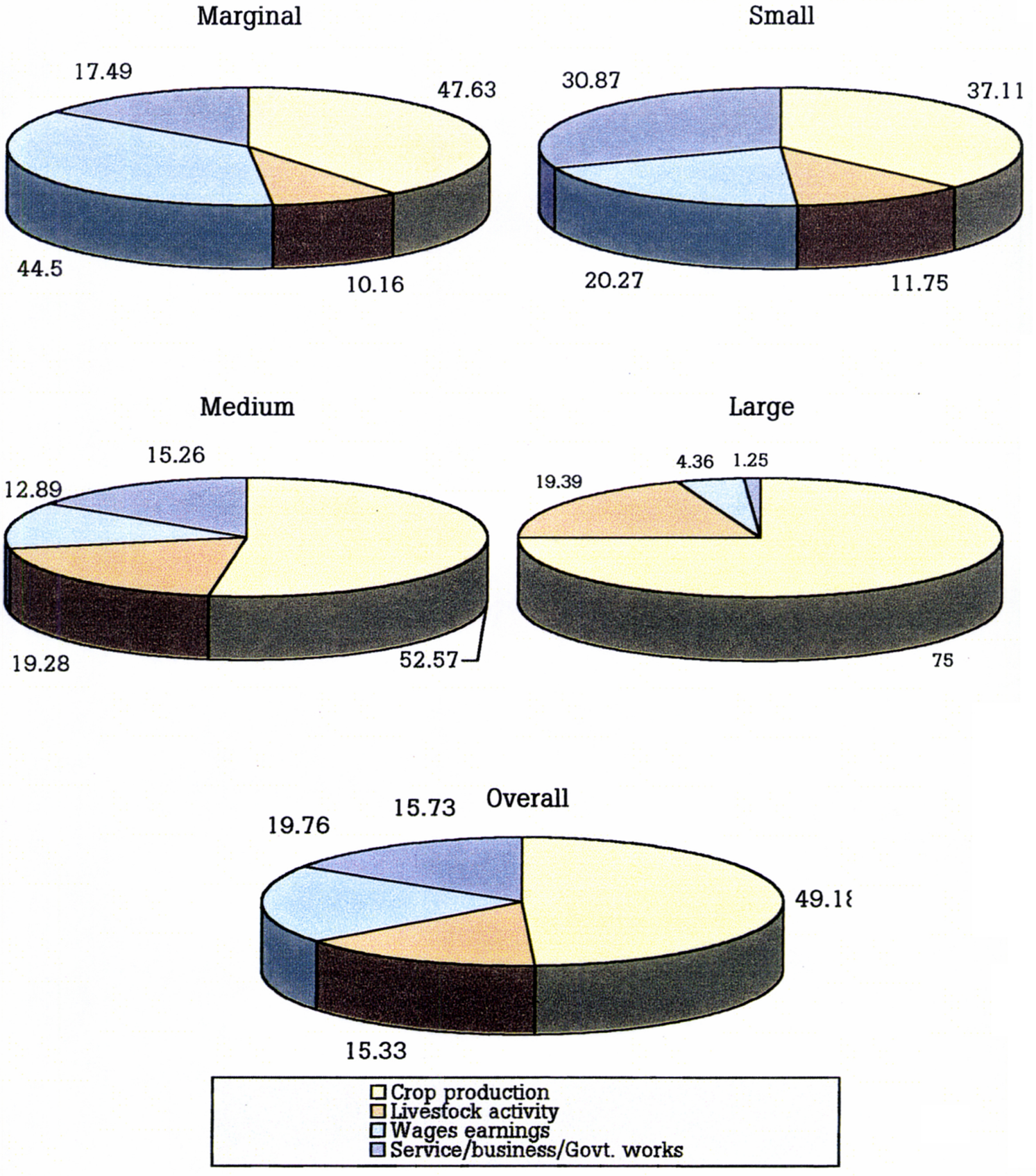


Fig. 2. Average annual employment of family workers of sample households

Table 5.1b. Average annual employment of a male worker of sample households (days)

Sr. No.	Particulars	Size group				
		Marginal	Small	Medium	Large	Overall
I.	**Own farm employment**					
a.	Crop production	55.00	80.76	117.63	180.44	108.45
		(28.05)	(39.29)	(56.63)	(77.52)	(51.51)
b.	Livestock activity	22.49	23.72	35.26	42.26	30.93
		(11.47)	(11.54)	(16.98)	(18.16)	(14.69)
c.	Total own farm employment	77.49	104.48	152.89	222.70	139.38
		(39.52)	(50.83)	(73.61)	(95.68)	(66.20)
II.	**Off farm employment**					
a.	Wages	88.21	46.26	26.03	7.06	41.89
		(44.98)	(22.51)	(12.53)	(13.03)	(19.89)
b.	Service/business/ Govt. work	30.39	54.80	28.80	3.00	29.25
		(15.50)	(26.66)	(13.86)	(1.29)	(13.91)
c.	Total off farm employment	118.60	101.06	54.83	10.06	71.14
		(60.48)	(49.17)	(26.39)	(4.32)	(33.80)
III.	**Total employment**	196.09	205.54	207.72	232.76	210.52
		(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

(Figures in the parentheses are the percentages to the respective totals)

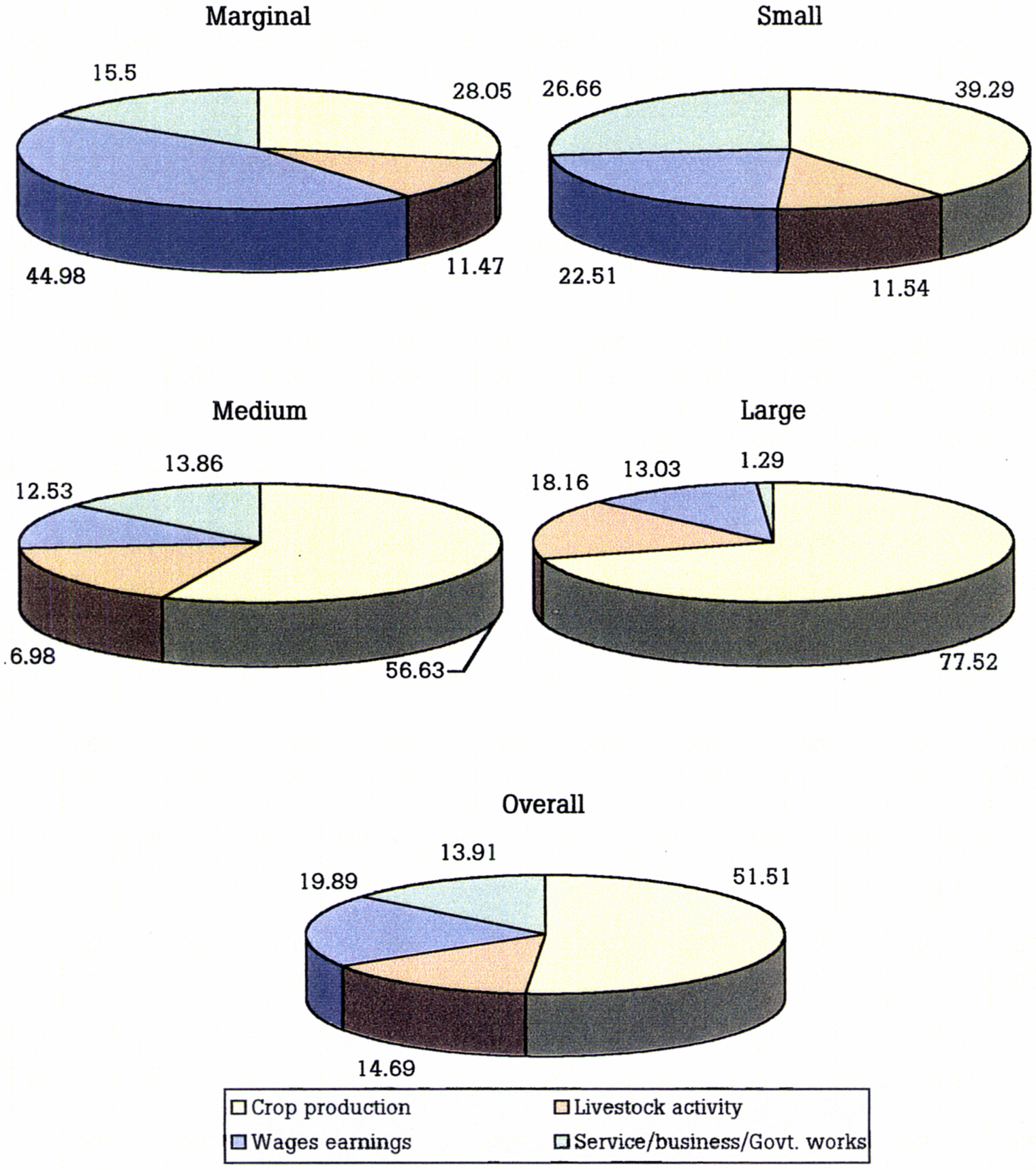


Fig. 3. Average annual employment of a male worker of sample households

Table 5.1c. Average annual employment of a female worker of sample households (days)

Sr. No.	Particulars	Size group				
		Marginal	Small	Medium	Large	Overall
I.	**Own farm employment**					
a.	Crop production	40.26	51.14	70.53	120.83	70.69
		(27.59)	(34.12)	(46.96)	(71.56)	(45.98)
b.	Livestock activity	12.26	18.06	33.76	35.60	24.92
		(8.40)	(12.05)	(22.48)	(21.08)	(16.21)
c.	Total own farm	52.52	69.20	104.29	156.43	95.61
	employment	(35.99)	(46.17)	(69.44)	(92.64)	(62.19)
II.	**Off farm employment**					
a.	Wage earnings	64.00	25.79	20.10	10.43	30.08
		(43.86)	(17.20)	(13.38)	(6.18)	(19.57)
b.	Service/business/ Govt.	29.41	54.93	25.80	2.00	28.04
	work	(20.15)	(36.64)	(17.18)	(1.18)	(18.24)
c.	Total off farm	93.41	80.72	45.90	12.43	58.12
	employment	(64.01)	(53.84)	(30.56)	(7.36)	(37.81)
III.	**Total employment**	145.93	149.92	150.19	168.86	153.73
		(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

(Figures in the parentheses are the percentages to the respective totals)

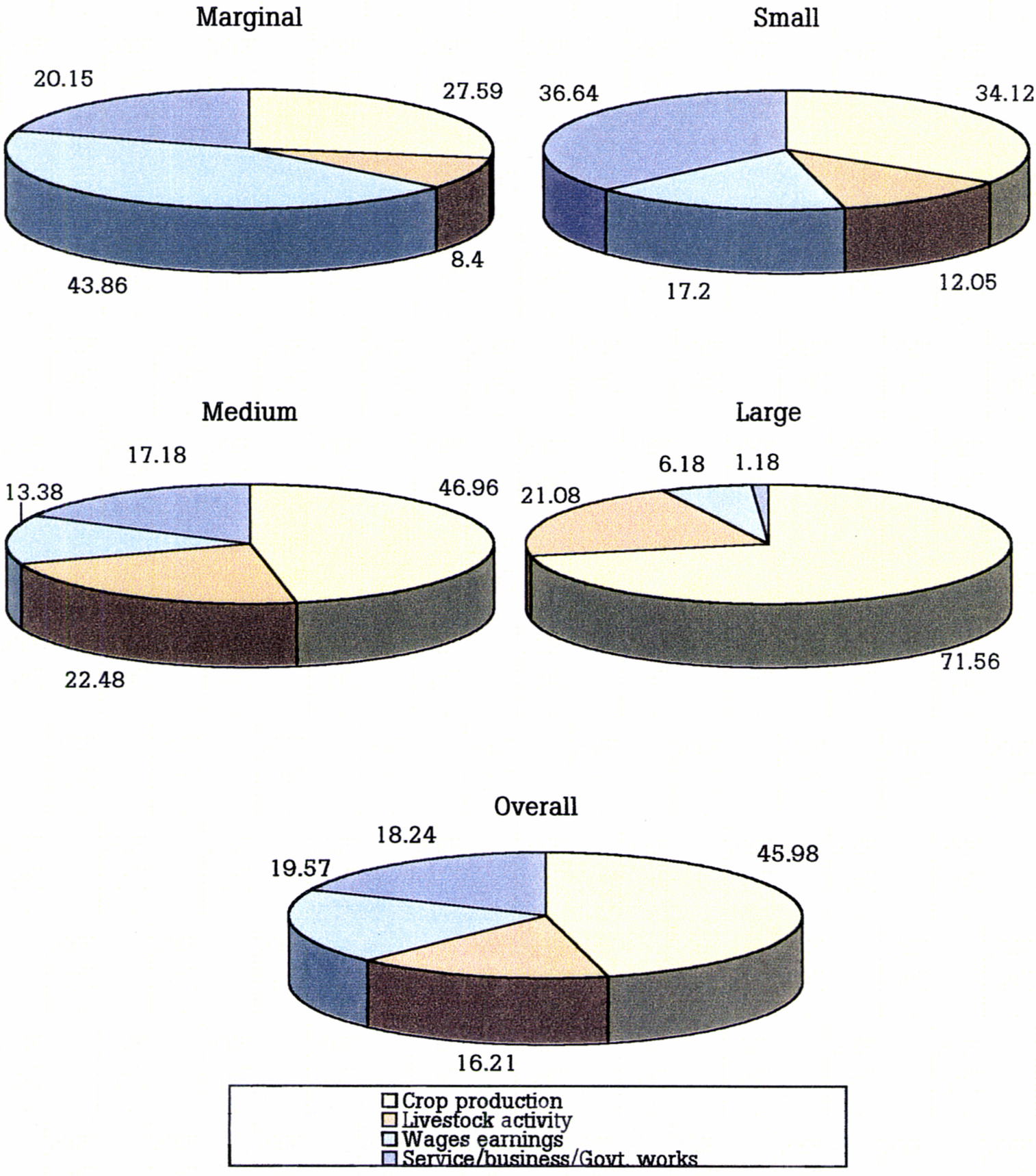


Fig. 4. Average annual employment of a female worker of sample households

Employment Guarantee Scheme in Pathardi Tahsil.

Seasonal Migration For employment.

and agriculture is the main source of income in dryland areas are accepted.

5.2 Employment Function

From the discussion on employment in earlier part of this section, it is seen that the per farm total employment varied greatly among the different size groups depending upon livestock unit, family size, net irrigated area and net cropped area. In this context, it is attempted to estimate multiple linear regression equation for understanding the nature of total employment. For this purpose, following variables were chosen.

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + Ut$$

Where,

Y : Gross family employment (days)

X_1 : Livestock unit (numbers)

X_2 : Family size (Number)

X_3 : Net cropped area in kharif (ha)

X_4 : Net cropped area in rabi (ha)

X_5 : Family expenditure (Rs.)

X_6 : Net irrigated area (ha)

bi^s : Regression coefficients

Ut : error term

The results of the estimated employment function are presented in Table 5.2 for all the size groups of farms.

At the overall level, the value of the coefficient of multiple determination (R^2) was 0.64. Though all the independent variables were significant, the variables viz., X_4 and X_5 were non significant.

Table 5.2 Results of estimated employment functions for different categories of sample families

Sr. No.	Categories	Constant	Regression coefficients of independent variables						R^2	F value
			X_1	X_2	X_3	X_4	X_5	X_6		
1.	Marginal (N=30)	80.13	13.2257***	30.98***	-115.921^{NS}	194.19*	-4.46^{NS}	-49.419^{NS}	0.80	2.55**
2.	Small (N=30)	149.23	0.53673^{NS}	42.1427***	19.8520^{NS}	3.9889^{NS}	-0.007^{NS}	4.8651^{NS}	0.75	11.50***
3.	Medium (N=30)	70.48	5.9265^{NS}	18.7257**	5331.95^{NS}	-5327.05^{NS}	0.0034^{NS}	13.959^{NS}	0.37	2.25**
4.	Large (N=30)	542.32	1.43^{NS}	-13.62^{NS}	-20.62^{NS}	5.41^{NS}	-0.0043^{NS}	53.06**	0.21	2.01**
5.	Overall (N=120)	131.81	7.0798**	40.8960***	18.6709*	-21.237**	-0.0020**	16.1904**	0.64	37.66***

*, ** and *** indicates 10, 5 and 1 per cent level of significance.

The values of the coefficient of multiple determination (R^2) ranged in between 21 to 80 per cent. It can simply be inferred that the factors under consideration explained relatively higher proportion of total variation in the employment of marginal and small farm families in comparison with the large size groups.

The regression coefficients of net cropped area in *kharif* (X_3) and family expenditure (X_5) turned out to be non-significant for all the size groups. In marginal size group, livestock unit (X_1), family size (X_2) and net cropped area in *rabi* (X_4) were significant. In marginal and small farm families, family size (X_2) was highly significant, which showed that increase in family member by one unit would call for additional employment of 30.98 and 42.14 days, respectively. In large size group, only net irrigated area (X_6) was significant, which showed that increase in net irrigated area by one hectare would result in additional employment of 53.06 days. All the F values were significant which by and large indicate the goodness of fit for all the equations so far estimated.

5.3 Income sources

The details of income and sources of income of dry land farm families are presented in Table 5.3.

The total annual income of the farm families was contributed by the on farm income (*viz.*, crop production and livestock activity) and off-farm income (*viz.*, wages, business, Government works and loan taken from outside).

The results clearly indicated that, at the overall level, the per family total annual income was Rs. 37,921.65. This income was

Table 5.3 Average annual income from different sources to a farm family according to their size losses (Rs)

Sr. No.	Source of income	Marginal	Small	Medium	Large	Overall
1.	On farm	11608 (46.79)	17226 (58.57)	34013 (82.91)	49448 (87.59)	28073.75 (74.03)
	a. Crop production	9549 (38.49)	14865 (50.54)	29235 (71.26)	42991 (76.15)	24160 (63.71)
	b. Livestock	2059 (8.30)	2361 (8.03)	4778 (11.64)	6457 (11.44)	3913.75 (10.32)
2.	Off farm (wages)	10517 (42.40)	5545 (18.85)	2713 (6.61)	983 (1.74)	4939.5 (13.03)
3.	Other	1444.6 (5.84)	5058 (17.20)	1993 (4.86)	1732 (3.07)	2556.9 (6.74)
	a. Business	419.6 (1.69)	4515 (15.35)	1006 (2.45)	1266 (2.24)	1801.65 (4.75)
	b. Government works	1025 (4.15)	543 (1.85)	987 (2.41)	466 (0.83)	755.25 (1.99)
4.	Loan taken	1233.6 (4.97)	1581.6 (5.38)	2305.0 (5.62)	4258.8 (7.60)	2351.5 (6.20)
5.	Total	24803.2 (100.00)	29410.6 (100.00)	41024 (100.00)	55448.8 (100.00)	37921.65 (100.00)

(Figures in the parentheses are the percentages to the respective totals)

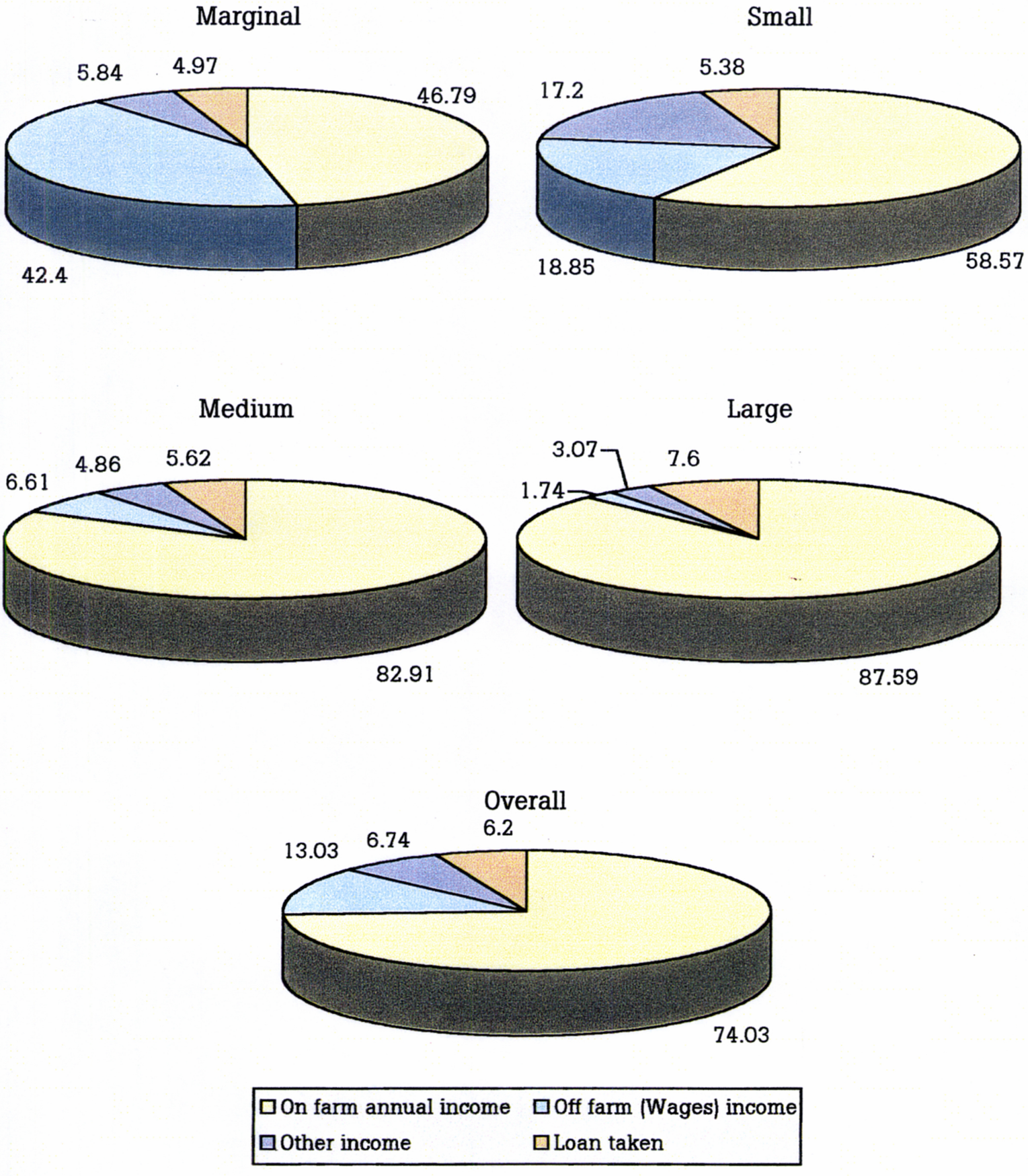


Fig. 5. Percentage share of different items in an annual family income

jointly contributed by on farm (74.03 per cent) and off farm activity (25.97 per cent). The income from crop production was the single largest contributor of total annual income of the farm families (63.71 per cent). In off-farm activities, the business and the Government works together contributed 6.74 per cent share while, nearly double (13.03 per cent) contribution was made by wages. All the above sources of income at the disposal of farm families were inadequate to meet the total expenses. They had to depend, on an average, a debt of Rs. 2351.5 (6.20 per cent) to meet their family requirements.

Among the different categories of farm families, the per family total income from various sources was relatively more in the case of large size group (Rs. 55448.8). In the case of marginal, small and medium size groups it was Rs. 24803.2, Rs. 29410.6 and Rs. 41024.0, respectively. There existed a direct relationship between size of farms and the on farm income and inverse relationship with the off-farm income. The same picture is noted in the case of medium and large size group of farms, which by and large is similar to that of income at the overall level. The contribution of wages was the single largest source of income for marginal size group (42.40 per cent).

5.4 Income Function

In order to establish the functional relationship between the income and the factors like gross cropped area in hectares (X_1), per family total annual employment (X_2), annual expenditure on crop and livestock (X_3) and livestock unit in numbers (X_4), the multiple regression linear model was fitted and the results are presented in Table 5.4.

On critical examination of Table 5.4, it is revealed that, at overall level, the four independent variables jointly explained 88 per cent of total variation. The F ratio obtained from the analysis of variance turned to be highly significant, indicating thereby overall significance of the estimated function. The gross cropped area in hectares (X_1) and annual expenditure on crop and livestock (X_3) turned out to be highly significant at 1 per cent level indicating that these are the important variables to which income was highly responsive.

In various size groups, the values of the coefficient of multiple determination (R^2) ranged in between 36 to 68 per cent. It can simply be inferred that the factors under consideration explained relatively higher proportion of total variation in the income of large size group in comparison with the medium size group.

The gross cropped area (X_1) and livestock units (X_4) in marginal size group, annual expenditure on crop and livestock (X_3) and livestock unit (X_4) in small size group, gross cropped area (X_1) and annual expenditure on crop and livestock (X_3) in medium size group and per family total annual employment (X_2) and annual expenditure on crop and livestock (X_3) in large size group were turned to be positive and significant indicating that these are the important variables for which the total income was responsive. It clearly indicated that the annual expenditure on crop and livestock was mainly responsible for increasing the income of small, medium and large size class of farm families while the number of livestock units was responsible to influence the income of marginal and small size group of farms.

Table 5.4 Result of estimated income function for different categories of sample families

Sr. No.	Categories	Constant	Regression coefficient of independent variables				R^2	F value
			X_1	X_2	X_3	X_4		
1.	Marginal (N=30)	16897.86	6786.44***	-0.4460$^{N.S.}$	0.3537$^{N.S}$	-253.221**	0.58	8.63***
2.	Small (N=30)	14877.44	1267.31$^{N.S.}$	7.1077$^{N.S.}$	0.9189***	352.50*	0.56	7.90***
3.	Medium (N=30)	11412.89	2831.08*	12.9494$^{N.S}$	1.6449**	245.63$^{N.S}$	0.36	3.51***
4.	Large (N=30)	20857.98	1301.89$^{N.S.}$	42.4452***	1.6449**	257.97$^{N.S}$	0.68	10.11***
5.	Overall (N=120)	10411.12	4516.17***	-0.7253$^{N.S.}$	1.5287***	169.91$^{N.S}$	0.88	21.04***

* ** and *** indicates 10, 5 and 1 per cent level of significance.

5.5 Expenditure Pattern

The details of expenditure incurred by the sample farm families on different items of expenditure are given in Table 5.5.

After critical examination of the table, it is revealed that at the overall level the annual family expenditure was Rs. 37,921.65. Most significantly, it is noted that 42.89 per cent of household expenditure was used for food consumption only. Whereas, 23.02 per cent was used for other expenditure *viz.*, clothing, education, health, social activities, etc. The expenditure towards crop production (20.31 per cent) and livestock activity (6.61 per cent) was relatively lower than that of food consumption expenditure. Land improvement expenditure was negligible (0.82 per cent) due to lack of financial resources and technology diffusion. The loan repayment expenditure was 6.35 per cent. Summarily, a large chunk of expenditure was incurred on household consumption (65.91 per cent), while a relatively lower proportion of expenditure was allocated to other expenditure like crop production, livestock activity though they were the major sources of income.

As regards the size groupwise family expenditure, it revealed that, per family annual expenditure was more in large size group (Rs. 56448.8) followed by medium (Rs. 41024), small (Rs. 29410.60) and marginal (Rs. 24803.2) farms, respectively. There is a direct relation between average size of holding and total expenditure by the farm families while the proportion of total household expenditure showed a decline with an increase in the size of holding.

Table 5.5 Per family itemwise annual expenditure of sample farm families (Rs)

Sr. No.	Items	Size group				
		Marginal	Small	Medium	Large	Overall
1.	Crop production	3271 (13.18)	4633 (15.75)	7743 (18.88)	15172 (26.88)	7704.75 (20.31)
2.	Livestock activity	1498 (6.04)	1956.6 (6.65)	2293 (5.59)	4275 (7.57)	2505.65 (6.61)
3.	Household expenditure					
	a. Food consumption	12130 (48.91)	14078.7 (47.87)	18345.1 (44.71)	20498.9 (36.32)	16263.1 (42.89)
	b. Other expenditure (cloth, education, health etc.)	6253.2 (25.21)	7004.4 (23.81)	9832.13 (23.97)	11837.1 (20.97)	8731.7 (23.02)
	c. Total household expenditure	18383.2 (74.21)	21083.1 (71.68)	28177.23 (68.68)	32336 (57.29)	24994.8 (65.91)
4.	Land improvement	186 (0.75)	210 (0.72)	344 (0.84)	500 (0.89)	310 (0.82)
5.	Loan repay	1465 (5.91)	1527.9 (5.20)	2466.8 (6.01)	4165.8 (7.37)	2406.37 (6.35)
6.	Total expenditure	24803.2 (100.00)	29410.6 (100.00)	41024.0 (100.00)	56448.8 (100.00)	37921.65 (100.00)

(Figures in the parentheses are the percentages to the respective totals)

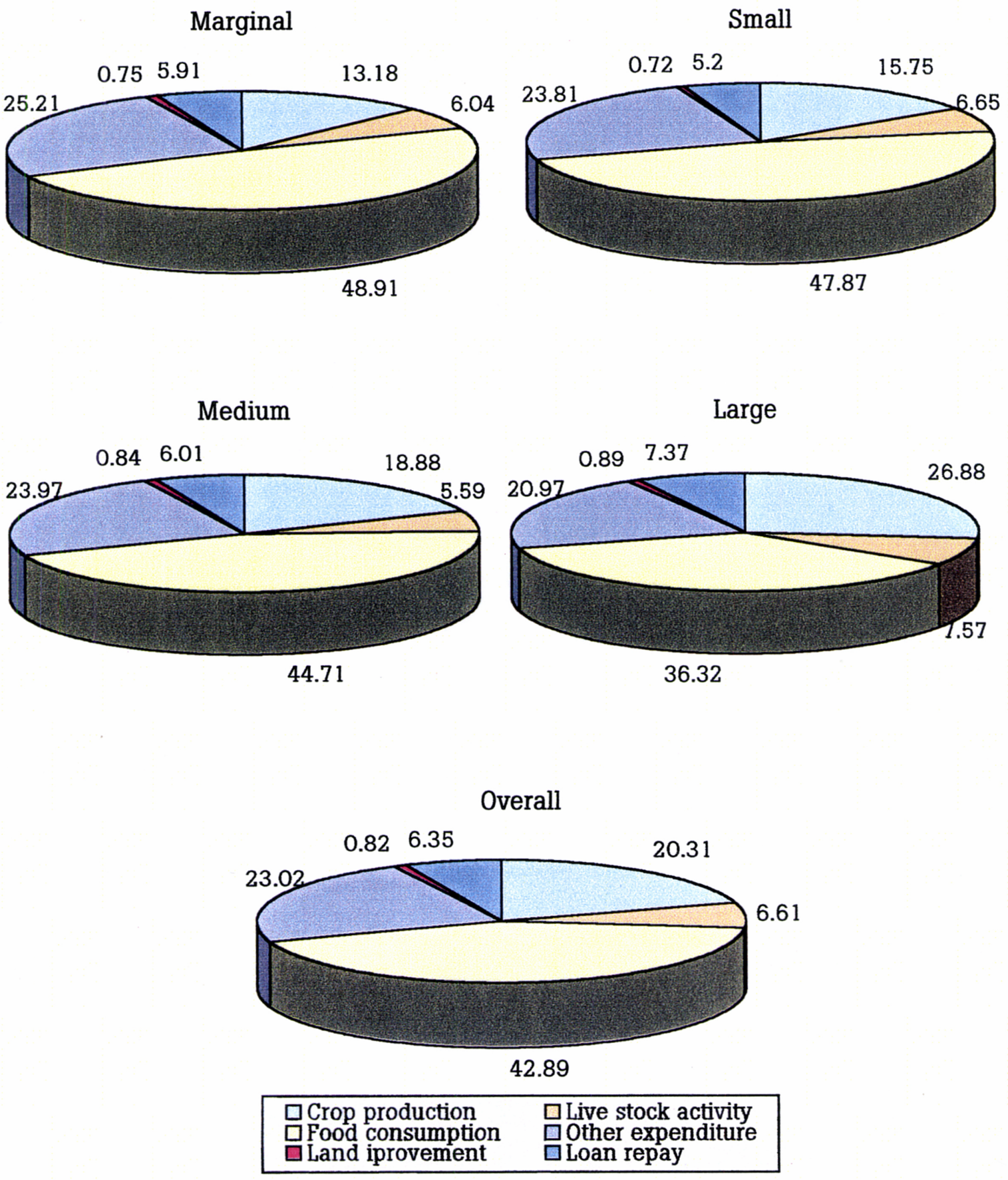


Fig. 6. Percentage share of different items in an annual family expenditure

The above discussion endorse the hypothesis at Sr. No. 3 under Chapter I indicating that the expenditure on food items shared a major portion in total family expenditure of sample households in dry land agriculture.

5.6 Expenditure Function

The results of the family expenditure function are presented in Table 5.6. It is observed from the table that, at the overall level, the three independent variables jointly explained 47 per cent of the total variation. The F ratio obtained from the analysis of variance turned out to be highly significant, indicating the overall significance of the estimated functions. The total annual gross family income (X_1), family size in adult units (X_2) and value of capital assets (X_3) turned out to be positive and significant. Out of the above said significant variables X_1 and X_2 were highly significant at 1 per cent level indicating that these are the important variables to which the expenditure was highly responsive.

Among the different size groups, three variables have jointly explained as high as 61 per cent variation in small size group and as low as 24 per cent variation in large size group. The F ratios obtained from the analysis were highly significant at 1 per cent level for all the expenditure functions excepting large size group, which was significant at 5 per cent level.

The regression coefficient of value of capital assets (X_3) turned out to be non-significant to all the categories, which showed no relationship with the expenditure of households. Total annual gross family income (X_1) was significant in all the size groups

Table 5.6 Result of estimated expenditure function for different categories of sample families

Sr. No.	Categories	Constant	Regression coefficient of independent variable			R^2	F value
			X_1	X_2	X_3		
1.	Marginal (N=30)	6645.71	0.41029***	2018.29***	-0.03028$^{N.S.}$	0.49	8.3***
2.	Small (N=30)	1195.16	0.1183*	1416.03***	0.0136$^{N.S.}$	0.61	13.5***
3.	Medium (N=30)	6768.28	0.09470***	646.53**	0.00730^{NS}	0.47	7.98***
4.	Large (N=30)	7650.90	-0.02685^{NS}	1528.03**	0.02406$^{N.S.}$	0.24	2.73**
5.	Overall (N=120)	4715.62	0.03517***	1248.06***	0.01702**	0.47	34.28***

*, ** and *** indicates 10, 5 and 1 per cent level of significance.

excepting large farm families and it indicated the magnitude of change in expenditure resulting from the unit change in gross family income (X_1). The positive and significant regression coefficient of family size in adult unit (X_2) in all the size groups indicated that the expenditure was largely influenced by family size. The magnitude of the regression coefficient of family size in adult unit was maximum (2018.29) in marginal size group. It indicated that the total annual expenditure will increase by Rs. 2018.29 with an addition of one adult unit in family.

5.7 Management of Household Economy

The income and expenditure pattern of the sample farm families is discussed in the preceding sections of this chapter. The management of household economy is presented in Table 5.7. It is noted from the Table 5.7 that on an average, the farm families spent the amount of Rs. 37921.65 for all their necessities. However, it could be observed that the various sources of income are contributing to a meagre sum which can't meet even total family expenditure over an annum. Though the farm families are seen drawing a sizable income from on farm and off-farm sources, (Rs. 35570.15), yet the same is too little to contribute substantially.

In such a scenario, the farm families from dry land areas are left with a single option of borrowing from outside. At the overall level, to meet the total expenditure, the farm families required a debt of Rs. 2351.5. The debt taken was equal to the total expenditure of the farm families. The same trend in the above case was seen in each category of the farm families, but the share of debt taken was varied.

Thus, it was difficult to manage the total expenditure by the farm families without borrowing from outside. Generally, the farm families had taken the loan from local money lenders, friends and savkars. Furthermore, the situation goes on worsening because the farm families took the loans from the above mentioned non institutional agencies in spite of the institutional agricultural credit.

Table 5.7 Management of household economy

(Rs.)

Sr. No.	Items	Size group				
		Marginal	Small	Medium	Large	Overall
1.	Total annual income	23569.6 (95.03)	27829.0 (94.62)	38719.0 (94.38)	52190.0 (92.40)	35570.15 (93.80)
2.	Total loan taken	1233.6 (4.97)	1581.6 (5.38)	2305.0 (5.62)	4258.8 (7.60)	2351.50 (6.20)
3.	Total expenditure	24803.2 (100.00)	29410.6 (100.00)	41024.0 (100.00)	56448.8 (100.00)	37921.65 (100.00)

(Figures in the parentheses are the percentages to the respective totals)

SUMMARY AND CONCLUSIONS

6. SUMMARY AND CONCLUSION

This chapter intends to summarise the findings and to draw conclusions from the present study. As indicated in chapter-I that Ahmednagar is the biggest district in Maharashtra and has large dryland area which adversely affects the whole economy of the region and creates an imbalance in the economy. The dryland condition leaves permanent marks viz., low standard of living, low employment opportunities on the economy of the region. This in turn sets in motion several other forces influencing various aspects of the economy and changing socio-economic conditions.

In order to investigate in detail the effects of dryland condition on employment, income and expenditure of the farm families, the present study viz., "study on management of household economy in dryland areas of Ahmednagar district" was undertaken with the following specific objectives.

1. To study the socio-economic characteristics of sample households in dryland areas.
2. To study the employment pattern of sample households.
3. To study the sources of income and management of household expenditure by the sample households in dryland areas.

In order to accomplish the objectives, the two stage stratified random sampling design was used for selecting the sample families with village as a primary unit and sample farm families as a secondary unit. A sample for the study consists of 120 farm families selected randomly from five villages of Pathardi tahsil which has

predominantly a dryland agriculture in Ahmednagar district. It was planned to choose six farmers each from marginal (0.01 to 1.0 ha), small (1.01 to 2.0 ha), medium (2.01 to 4.0 ha) and large (4.01 ha and above) categories of households randomly in order to have 24 households in a village.

The primary data for the year 2001-02 concerning to socio-economic characteristics, employment, sources of income, pattern of household expenditure and its management were collected with the help of a specially designed schedule by survey method. The data so obtained were subjected to both simple tabular method and regression analysis to attain the objectives under study.

6.1 Summary

The results of the study are briefly sumarised as below.

1. The average size of family ranged between 4.53 to 5.69 members among the four different size categories with an overall average of 5.13.
2. The literacy percentage was relatively high in case of small farm families. The proportion of illiteracy was around 17.18 per cent at the overall level.
3. The average size of holding was 0.82, 1.65, 3.37 and 6.9 ha in marginal, small, medium and large size groups of farmers, respectively with an overall average of 3.19 hectares. Importantly, the area under dryland condition was 1.93 ha i.e. 60.50 per cent of the total holding of the sample households at the overall level.

4. Because of non-availability of irrigation facility, there was a decrease in the area sown to a considerable extent. At the overall level, almost 9.72 and 9.09 per cent of the total area remained as permanent and current fallow respectively.
5. The intensity of cropping increased with an increase in the size of holding with an overall average of 121.61 per cent.
6. The cropping pattern of the farm families, by and large was dominated by bajra (38.77 per cent), rabi jowar (15.39) under cereals and tur (15.69 per cent) and gram (4.92 per cent) under pulses. The vegetables shared 7.69 per cent and oil seed crops occupied 7.08 per cent of the gross cropped area.
7. The per family number of livestock heads and investment increased with an increase in the size of holdings. At the overall level, investment in draft animal was more (49.01 per cent) followed by milch animals (27.63 per cent).
8. Per family capital assets investment was Rs. 86982, Rs. 262118, Rs. 443523.6 and Rs. 989968 in the case of marginal, small, medium and large size groups, respectively with an overall average of Rs. 470647.9. It is noted that the land was the major item of capital investment followed by residential house, well and irrigation appliances.
9. The total employment of family worker for marginal, small, medium and large size groups worked out to 171.02, 177.74, 178.96 and 200.82 days respectively. In case of marginal and small size group, off farm employment have contributed more share i.e. 61.99 and 51.14 per cent. The proportion of owned

farm employment was maximum in medium (71.85) and large (94.39) size groups of farm families in dryland areas.

At the overall level, total employment of a family worker worked out to 182.14 days.

10. At the overall level, male worker gets 210.52 days employment in dryland areas while in marginal, small, medium and large size groups, it was 196.09, 205.54, 207.72 and 232.76 days, respectively. In marginal size group, off-farm employment was the major (60.48 per cent) source of employment while other categories of households could get more employment from own-farm employment.

11. The total employment of a female worker at the overall level, worked out to 153.73 days. It was 145.93, 149.92, 150.19 and 168.86 days for marginal, small, medium and large size groups, respectively. Off-farm employment shared maximum in total employment of marginal (64.01 per cent) and small (53.84 per cent) size groups in dryland areas. Crop production and livestock activity i.e. owned-farm employment was the major source of employment in medium (104.29 days) and large (156.43) size groups. Generally, at the overall level, 62.19 per cent employment was from owned farm activity, in dryland areas.

12. At the overall level, average annual income of farm families was Rs. 37921.65. It, however, increased with an increase in size of holdings. In case of marginal size group, it was Rs. 24803.2 from different sources and of these off farm employment i.e.

wages was the single most major contributor (42.40 per cent) of total annual income. In small, medium and large size groups, the average annual income from different sources was Rs. 29410.6, Rs. 41024 and Rs. 55448.8, respectively. On farm income was the major source of income which ranged from 49.79 to 87.59 per cent among the different size classes with an average of 74.03 per cent at the overall level.

13. At the overall level, the average annual expenditure was Rs. 37921.65. Out of the total expenditure, food consumption shared a maximum (42.89 per cent) followed by other expenditure such as clothing, religious, education etc., put together (23.02 per cent) and crop production expenditure (20.31 per cent). Livestock and loan repayment had shared Rs. 2505.65 and Rs. 2406.37, respectively. In the case of different size groups viz., marginal, small, medium and large, the total family expenditure was Rs. 24803.2, Rs. 29410.6, Rs. 41024 and Rs. 56448.8, respectively.

14. The employment function analysis indicated a potential for increasing employment days. The regression coefficients of four independent variables viz., livestock unit (X_1), family size (X_2), net cropped area in kharif (X_3) and net irrigated area (X_6) have turned out to be positive and significant which have indicated a positive association for boosting employment of sample households.

As regards the income function analysis, the regression coefficients of two independent variables viz., gross cropped

area (X_1) and expenditure on crop and livestock (X_3) have turned out to be positive and highly significant which depicted their positive association for increasing the income of sample households. In expenditure function analysis, it was very clear that, the regression coefficients of three independent variables viz., total annual gross family income (X_1), family size in adult units (X_2) and value of capital assets (X_3) had turned out to be positive and significant which showed their direct relationship with the family expenditure.

15. Interestingly, per family loan taken had increased with an increase in the size of holding to accomplish the family expenditure i.e. to manage the total expenditure. At the overall level the loan taken from the outside agencies was Rs. 2351.5, while it showed an increase from Rs. 1233.6 to Rs. 4258.8 among different size groups of farms.

6.2 Conclusions

The above findings enabled to draw the following specific conclusions from the present study.

In dryland areas, low standard of living, high percentage of illiteracy with education upto primary level in same cases, low capital investment in productive assets was seen. Though livestock unit showed positive relationship with employment and income, it was relatively a small unit. Due to lack of irrigation facilities and climatic fluctuation, reduction in net area sown had the effect on lowering down the returns from crop and livestock production activities to a grater extent.

Wages, Government and scaricity works gave additional employment to some farm families, who had minimum land holdings. Majority of income sources were from agriculture and allied activities. In total expenditure, food consumption expenditure had the lions share to the extent of 42.89 per cent. It was difficult to manage family total expenditure without securing the loan from outside agencies.

Based on the above discussions, it is clear that dryland conditions had brought about adverse effects on income, expenditure, employment and indebtedness position of farm families in the area under study. They were hit hard economically due to dryland conditions.

6.3 Suggestions

1. The various works to be started for providing employment and there by income to the farm families, must aim at conserving soil and water resources which would be useful for reducing the severe effects of dry conditions in the future.
2. Water conservation programmes need to be intensified and expanded and implementation of different dryland agricultural techniques for increasing income and employment at the individual farm level.
3. With a view to augment income to farm families and to provide them gainful employment, an alternative of supporting establishment of sheep and goat, poultry rearing project, cottage and small scale industry seems to be feasible and possible.

4. In dryland areas, the sufficient credit should be made available through bank loans at a proper time to the farm families.
5. Basically, priority must be given to the basic human necessities and infrastructural facilities such as drinking water, electricity, roads, transportation facilities etc., to put these area in flow.

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7. LITERATURE CITED

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APPENDIX

8. APPENDIX

STUDY ON MANAGEMENT OF HOUSEHOLD ECONOMY IN DRYLAND AREAS OF AHMEDNAGAR DISTRICT

Questionnaire

1. General information of the family :

A. Head of the family :

B. Village : C. Tahsil :

D. Age : E. Education :

2. Family size and its composition :

Sr. No.	Name of the family member	Age	Education	Relationship with the head	Occupation	
					Main	Subsidiary
1.						
2.						
3.						
4.						
5.						
6.						
7.						

3. Land utilization pattern

Sr. No.	Particulars	Dry (ha)	Irrigated (ha)	Total (ha)
1.	Total land			
2.	Barren and uncultivable			
3.	Current fallow			
4.	Net sown area			
5.	Double cropped area			
6.	Type of land			
7.	Value of land			
8.	Irrigation charges (Rs.)			
9.	Land revenue (Rs.)			

4. Cropping pattern

Sr. No.	Season	Survey No.	Crop and variety	Cultivated area (ha)		Production (Rs.)
				Dry	Irrigated	
1.	Kharif					
2.	Rabi					
3.	Summer					
4.	Perinial					
5.	Fruit crop					

5. Information about capital assets

Sr. No.	Construction type	Year of construction	Original value (Rs.)	Present value (Rs.)	Remarks
1.	Residential house				
2.	Farm house				
3.	Cattle shed				
4.	Well, empine etc.				
5.	Shop for business				
6.	Others				

6. Livestock inventory

Sr. No.	Kind	Number	Age (yrs)	Present value (Rs.)	Remaining life (years)	Remarks
1.	Draft animals					
a.	Bullocks					
b.	He-buffaloes					
2.	Milch animals					
a.	Cows					
b.	Buffaloes					
3.	Dry animals					
a.	Cows					
b.	Buffaloes					
4.	Calves					
5.	Sheep and goats					
6.	Poultry birds					

7. Inventory of implements and machineries

Sr. No.	Kind	Number	Purchase cost (Rs.)	Present value (Rs.)	Repairing charges (Rs.)	Remaining life (year)	Remarks
A.	**Implements**						
1.	Wooden plough						
2.	Iron plough						
3.	Bullock cost						
4.	Harrow						
5.	Seed drill						
6.	Hoe						
7.	Sickle						
8.	Axe						
9.	Ghamella						
10.	Weeding hock						
11.	Rope						
12.	Others						
B.	**Machineries**						
1.	Electric motor						
2.	Tractor						
3.	Thresher						
4.	Spray pump						
5.	Others						

8a. Employment and income of family

Sr. No.	Category	Working units	Farm work															
			Employment on own farm				Employment on other farm				Employment on own subsidiary				Employment in other's subsidiary			
			No of employed	No of days employed	Wage rate	Income	No. of employed	No. of days employed	Wage rate	Income	No. of employed	No. of days employed	Wage rate	Income	No of employed	No of days employed	Wage rate	Income
A.	**Kharif**																	
1.	Male																	
2.	Female																	
B.	**Rabi**																	
1.	Male																	
2.	Female																	
C.	**Summer**																	
1.	Male																	
2.	Female																	
D.	**Total**																	
1.	Male																	
2.	Female																	

8b. Employment and income of family

Sr. No.	Category	Working units	Non farm work															
			Government work				Business				Service				Others			
			No. of employed	No. of days employed	Wage rate	Income	No. of employed	No. of days employed	Wage rate	Income	No. of employed	No. of days employed	Wage rate	Income	No. of employed	No. of days employed	Wage rate	Income
A.	**Kharif**																	
1.	Male																	
2.	Female																	
B.	**Rabi**																	
1.	Male																	
2.	Female																	
C.	**Summer**																	
1.	Male																	
2.	Female																	
D.	**Total**																	
1.	Male																	
2.	Female																	

9. Annual income of family

a. Income from farm work

Name of crop	Area (ha)	Opp. producers	Yield of crop						Total value	Income from crop production
			Main produce			By-produce				
			Qty.	Rate	Value	Qty.	Rate	Value		

b. Income from working on other's farm

Category	Number	Working days	Wage rate	Income (Rs.)
Male Female Children Bullocks				

c. Income from other sources

Source of income	Total production		Consumed Qty.		Sold Qty.		Value/ rate
	Qty.	Value	Qty.	Value	Qty.	Value	
Sale of milk Sale of eggs Sale of poultry birds Hire charges of bullocks Others							

d. Non farm income

1. Services
2. Business
3. Home rent received
4. Income from fruits/trees/forest products
5. Others

10. Family consumption expenditure

Sr. No.	Items	Owned		Purchase		Total	
		Quantity (kg)	Value (Rs.)	Quantity (kg)	Value (Rs.)	Quantity (kg)	Value (Rs.)
A.	**Food expenditure**						
1.	Cereals						
2.	Pulses						
3.	Oilseeds						
4.	Protective foods						
i.	Vegetables						
ii.	Fruits						
iii.	Milk and milk product						
iv.	Oil, Ghee						
v.	Mutton, Fish, Eggs						
vi.	Spices and condiments						
vii.	Sugar, Tea						
viii.	Others						
B.	**Non-Food expenditure**						
1.	Clothing						
2.	Fuel and light						
3.	Religious and social						
4.	Education						
5.	Heath						
6.	Travelling						
7.	Foot wears						
8.	Soap etc.						
9.	Repayment of loans						
10.	Tobacco, beverages and smoking						
11.	Others						
	Total (A + B)						

11. Livestock maintenance expenditure

Sr. No.	Livestock	Owned		Purchased	
		Qty. (Qt.)	Value (Rs.)	Qty. (Qt.)	Value (Rs.)
1.	Dry fodder				
2.	Green fodder				
3.	Concentrates				
4.	Rareing fees				
5.	Medical charges				
6.	Cattle shed/Byre maintenance				
7.	Others (ropes,etc.)				

Table 12. Crop production expenditure

Sr. No.	Item of expenditure	Crops									
		Jowar		Bajara		Wheat		Oilseeds		Pulses	
		No.	Value (Rs.)	No.	Value (Rs.)	No.	Value (Rs.)	No.	Value (Rs.)	No.	Value (Rs.)
1.	**Preparatory tillage**										
A.	Family labour										
i.	Male										
ii.	Female										
iii.	Bullock										
B.	Hired labour										
i.	Male										
ii.	Female										
iii.	Bullock										
C.	Machinery (hours)										
2.	**Manuring and fertilizer**										
A.	Owned										
B.	Purchased										
C.	Wages										
3.	**Sowing**										
A.	Owned seeds										
B.	Purchased seeds										
C.	Wages										
4.	**Intertillage**										
A.	Fertilizer application										
i.	Value										
ii.	Wages										
B.	Irrigation										
C.	Weeding										
5.	**Harvesting and threshing**										
A.	Machinery hrs.										
B.	Wages										
6.	**Produce**										
A.	Main										
B.	By products										
7.	**Total**										

13. Indebtedness position

Year	Agency	Purpose	Type of loam ST/MT/LT	Amount taken (Rs.)	Rate of interest (%)	Loan repayed (Rs.)	Outstanding amount (Rs.)
Current year							
Last year							

14. Management of income and expenditure

Sr. No.	Year	Income	Expenditure pattern			How expenditure							
			Farming	Family	Total	Farm				Family			
						Self	Other			Self	Other		
							Institution	Borrowing	Friend		Institution	Borrowing	Friend

VITA

9. VITA

Kirankumar Bhimrao Khedkar

A candidate for the degree

of

MASTER OF SCIENCE (AGRICULTURE)

in

AGRI-BUSINESS MANAGEMENT

Title of the thesis	:	"Study on Management of Household Economy in Dryland Areas of Ahmednagar District"
Major Field	:	Agricultural Economics
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* Information	:	Born at Shevgaon, Tal. Shevgaon, Dist. Ahmednagar on October 15, 1979. Son of Shri. Bhimrao Maruti and Sou. Indubai Bhimrao Khedkar.
* Educational	:	Attained Primary School at Zilha Parishad Primary School, Pathardi, Dist. Ahmednagar.
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	:	Passed H.S.C. from Shri. Tilok Jain Junior College, Pathardi, Dist. Ahmednagar in 1997 with First class.

: Completed the Bachelor of Science (Horticulture) degree programme with First class in 2001 from the College of Agriculture, Pune, M.P.K.V., Rahuri.

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: Selected as a Police Sub-Inspector in Central Police organization (C.R.P.F.) in 2003.