Affectionately dedicated to
my beloved parents
Sou. Aai, Shri. Baba
and Grand mother
Late. Sou. Saraswati A. Nalawade

.... Vaibhav

EMPLOYMENT, INCOME AND EXPENDITURE PATTERN OF RURAL WEAKER SECTION IN SCARCITY REGION OF SATARA DISTRICT

By

Vaibhav Machhindra Jadhav

(Reg.No.97116)

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

AGRICULTURAL ECONOMICS

DEPARTMENT OF AGRICULTURAL ECONOMICS
POST GRADUATE INSTITUTE
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2001

CANDIDATE'S DECLARATION

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

Place : MPKV,Rahuri
Dated :11/05 /2001

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CERTIFICATE

This is to certify that the thesis entitled, "**EMPLOYMENT, INCOME AND EXPENDITURE PATTERN OF RURAL WEAKER SECTION IN SCARCITY REGION OF SATARA DISTRICT**", submitted to the Faculty of Agriculture, Mahatma Phule Krishi Vidyapeeth, Rahuri, Dist. Ahmednagar, Maharashtra, in partial fulfilment of the requirements for the degree of **MASTER OF SCIENCE** (AGRICULTURE) in **AGRICULTURAL ECONOMICS**, embodies the results of a piece of *bona fide* research work carried out by **Shri. Vaibhav M. Jadhav**, under my guidance and supervision and that no part of the thesis has been submitted for any other degree, diploma or publication in any other form.

The assistance and help received during the course of this investigation have been duly acknowledged.

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(S.S. Kadam)

Place : MPKV, Rahuri

Dated : /05/2001.

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Jadhav .

Place : MPKV, Rahuri (V.M. Jadhav)

Date :11 /05/2001

CONTENTS

LIST OF TABLES

List of table contd....

List of table contd.....

LIST OF FIGURES

ABSTRACT

EMPLOYMENT, INCOME AND EXPENDITURE PATTERN OF RURAL WEAKER SECTION IN SCARCITY REGION OF SATARA DISTRICT

By

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2001

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An attempt has been made in the present investigation to study the employment, income and expenditure pattern of rural weaker section in scarcity region of Satara district. The study was based on the primary data obtained from the sample of 126 households, selected from 9 villages by using two stage stratified random sampling design with village as a primary unit and sample family as secondary unit. Out of 126 sample families, 36 small farmers, 36 marginal farmers, 36 agricultural labourers and 18 were village artisans.

Abstract contd..... Jadhav V.M.

The data on the relevant aspects of the study were collected by survey method for the year 1997-98. The data collected were analysed with the help of simple tabular method and regression analysis technique.

It was revealed from the study that the problem of unemployment is 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. The major source of income of families were crop production activity, wage earnings income from business and services and livestock activity. The per family annual income worked out to Rs. 21500 at the overall level income of agricultural. labourers and village artisans are lower than small and marginal farmers. All the families of scarcity region are having problem of indebtedness. 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. The regression analysis indicated that wage rates and percentage of earners per family have significant influence over the annual employment of the sample families. In case

of agricultural labourers and village artisans the factors such as employment in man days and number of milch animals have significant influence on the family income. The annual gross expenditure of the families was found to be significantly proportionate with family size and total annual income of family.

Based on the findings of the study various suggestions are made for creating additional employment and income opportunities such as micro-level planning, dry land technology, development of social forestry, horticultural plantation, development of agro-based and cottage industries, soil and water conserving measures and arrangement of cheaper credit facilities for productive purpose.

INTRODUCTION

1. INTRODUCTION

1.1 General

India is a rich country in natural resources. However, magnitude of poverty in India is very high. About 36 per cent population is living below the poverty line. The problem of the poor is that they cannot even meet the minimum requirements of life. The victims of poverty in rural areas are the weaker section of the society comprised of small and marginal farmers, agricultural labourers and village artisans etc.

India is basically an agricultural country. About 29 per cent of the total national income is derived from agriculture and about 65 per cent of its population is dependent on agriculture and agrobased industries. The percentage of working population to the total population is 37.7 and 43 per cent in India and Maharashtra, respectively. In Maharashtra, the agricultural workers accounts for 64.14 per cent of the total working force (1991).

Approximately 84.60 per cent of total land in Maharashtra is unirrigated. The average size of holding in the state is 2.11 hectares per family. There are 15.05 lakh farmers with an average farm holding size below one hectare, which covers operating area of 7.06 lakh hectares. The Maharashtra is one of the predominantly farming states in the country.

1.2 Strategies adopted for developments of rural areas

Attempts have been made under the different development plans for upliftment of the weaker sections of the population. 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 poor.

Maharashtra is the pioneering state in launching rural development projects. The `Integrated Area Development Project' known as `Page Scheme' launched in the state which aimed at bringing about a change in income levels of small and marginal farmers, was the first of its kind in the country. Page Scheme converted into Employment Gurantee Scheme (EGS) with the object of employment to all who needs. 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 quite positive results.

However, we have not made much headway in reducing the disparities prevailing among the different classes. As indicated above, the proportion of population living below the poverty line has been considerably more.

1.3 Subject of the study

When we consider a geographical limit as a unit, one comes across the situation that some regions are more developed while the others are still under developed. Sometimes, there exists 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 area as `Scarcity regions' which received on an average less than 750 mm annual rainfall and have faced at least two droughts in last eight years. This scarcity region covers 87 tahsils from 14 districts of Maharashtra state. Scarcity region having characteristics like backwardness of the rural masses, unemployment, under employment, low income, imbalance in consumption, low resource use and generally low standard of living.

It is observed that the tahsils Khatav, Man and Khandala of Satara district are facing at least two droughts in last eight years and having rainfall below 700 mm per annum. Khatav, Man and Khandala tahsils cover 31.40 per cent area and 20.78 per cent population of Satara district. So it is necessary to study the problems of weaker sections in this scarcity region.

Previously attempts were made by a few researchers to study the nature of disparities of these regions. But all attempts were made at macro level. Micro-level studies for smaller areas will be more useful to the planners and policy makers. So, keeping this in view, the present study has been undertaken viz., "Employment, income and expenditure pattern of rural weaker sections in scarcity region of Satara district".

1.4 Objectives of the study

The main objectives of the study were

1. To study the employment pattern of agricultural labourers, marginal farmers, small farmers and village artisans.
2. To analyse sourcewise annual income of agricultural labourers, marginal farmers, small farmers and village artisans.
3. To examine consumption pattern and extent of self reliance/ indebtedness of agricultural labourers, marginal farmers, small farmers and village artisans.
4. To suggest measures to alleviate problems of agricultural labourers, marginal farmers and village artisans.

1.5 Hypotheses of the study

The important hypotheses formulated are as under

1. The position of farm employment and non-farm employment of sample families is different.
2. The problem of unemployment is more severe in sample families of scarcity region.

3. Income of agricultural labourers and village artisans are lower than farmers and therefore, the standard of living is low as compared to farmers.
4. The families of scarcity region are having the problem of indebtedness.

1.6 Scope and utility of the study

Now a days, there is an increased demand for employment as the Government is trying to encourage more employment opportunities to rural population in rural area itself throughout the year through successful implementation of different schemes and establishment of rural industries.

Present study mainly deals with the various aspects of farm economy such as income and expenditure pattern, consumption pattern, employment pattern, repayment and indebtedness in case of different sample families viz., small farmers, marginal farmers, agril. labourers and village artisans. All the above aspects form the basis for comparision with the different groups of sample families.

The findings of the present study will, therefore be useful for the planners and policy makers for adopting suitable policies for the upliftment of weaker sections in scarcity region. The study will be useful for formulating policies for increasing agricultural and non-agricultural employment opportunities in rural areas, so as to draw the unemployed and under employed weaker sections into the main stream of economic development.

The study is however based on information obtained by survey method from limited sample of 126 households, from four size groups, viz., small farmers, marginal farmers, agril. labourers and village artisans randomly selected from Khatav, Man and Khandala tahsils of Satara district.

REVIEW OF LITERATURE

2. REVIEW OF LITERATURE

Agriculture still is 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 nutrition and low standard of living particularly for the agriculturists and landless agricultural labourers in the country. The deplorable conditions, in which the weaker sections 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 weaker sections in the country. 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 the following three categories.

1. The studies related with the concepts and definitions for weaker sections.
2. The studies related on employment, income and expenditure pattern of the weaker sections.
3. The studies related on Indebtedness strategies and solutions for the development of weaker sections.

2.1 The studies related with the concepts and definitions for weaker sections

According to National Commission on Agriculture (1969), an agricultural labouer is one who is basically unskilled, unorganised and has little for his livelihood other than personal labour. Thus, a person whose main source of income is wage employment from agriculture, falls in this category.

Gopalan (1974) defined a small farmer as a person cultivating two crops on less than two hectares of irrigated land or a single crop on less than four hectares of dry land earning on annual income of less than Rs. 3000.

Kamat (1974) defined a small farmer as one who potentially can become viable land holder by taking modern agricultural techniques when made available. According to him, a small farmer is a person who holds land from one hectare to three hectares. A marginal farmer is one whose land holding is upto one hectare.

Khandewale (1979) considered the definitions formed by Small Farmer's Development Agency. The small farmers is the one having land upto five acres. The Integrated Area Development Programme have adopted multiple criteria to define small farmer. One criteria is based on irrigated land upto 2.5 acres or rainfed paddy area of 3.0 acres or 2.5 acres of prennially irrigated area or 10 acres of warkas land. The other constraints were that the total land revenue

should not exceed Rs. 10 and that annual gross income of the house hold should not exceed Rs. 2400.

2.2 The studies related on employment, income and expenditure pattern of weaker section

Jha (1970) studied the wage structure, employment and earning of farm labourers in Bihar and found that adult get employment of 261 days out of which non-agricultural employment constituted 29 per cent. He found that, family labour got additional income in the form of breakfast, lunch etc.

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.

Chakravarty (1972) studied the farm income of small farmers family in West Bengal. The total farm business income of the selected small cultivators was about Rs. 2000 per family per annum.

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

Singh (1973) conducted the case study of a village in Bihar state. He estimated under utilization of the farm labourers on different holding size groups. Assuming 313 working days in a year the weighted mean of work days performed by a male worker was 206.9 days in a year and that of female worker it was 135.5 days. Utilization and non-utilization of male labour force was 66 and 34 per cent respectively.

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 provides 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.

Gupta (1974) studied the interregional and inter-period variations in agricultural wages in Punjab. In this study, he observed that the overall wage rates varied between Rs. 4.23 and Rs. 5.29, whereas agricultural wages varied from Rs. 4.53 to 6.32. The non-agricultural wage rates varied over a narrow range of Rs. 3.99 to Rs. 5.15. The range and variation was profound in different seasons.

Pawar and Gaikwad (1974) studied wages, employment and income of small farmers in Maharashtra at two points of time. They conclude that wage rates were increased by about 58 to 60 per

cent during 1966 to 1972 while the family expenditure increased almost by 103 per cent. It 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 Jit (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 at Rs. 109 and Rs. 1782 respectively.

Bombale (1976) studied the employment, wages and income structure of weaker section in agriculture from the 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.

Satre (1982) studied the employment, income and expenditure pattern of weaker section in agriculture from the western Maharashtra. He concluded that an increase in the farm size and wage rate results 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.

Gaikwad (1983) studied economy and problems of weaker section in rural area of Maharashtra. He stated that the weaker sections did not get sufficient employment. The wage rates are very low. The expenditure pattern of the weaker section indicated very low standard of living as the food and clothing constituted major items of the expenditure. The major economic problems faced by the weaker section were inadequate land holding, lack of

irrigation facilities, low income and unemployment, low yield and inadequate capital investment.

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.

Aravinda et al. (1987) discussed the employment and wage income and consumption pattern of agricultural labour households in two villages of Kerala. The authors found that despite improvement in the wage rates of agricultural workers there still exists a gap between the wages of male and female labourers.

Singh et al. (1987) studied the structure of employment in two villages in the Kandi area, Indian Punjab, located immediately below and along the Shiwalik hills. A large majority of those working were found to be under employed. Most of the inhabitants of the area live below the poverty line.

Suryawanshi et al. (1988) studied the income, expenditure and employment pattern of agricultural labourers in minor irrigation project area of Pune district in Maharashtra. He 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 depends upon the

season and type of work. The most important source of family income (88 %) 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 tribals house holds 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.

Deshpande et al. (1990) studied the irrigation impact on employment and income in Krishi Raja Sagar Command Area in Mysore and Mandya district of Karnataka. He concluded that human

labour increased with irrigation in the range of 10 to 252 man days per hectare depending upon the crop. If any new area is brought under irrigation this range extends from 82 to 365 man days. Irrigated crop yields 2 to 4 times more for rainfed crops except in the case of silk caccons where, there is little difference. Irrigation generates income in the range of Rs. 1203, Rs. 21497 per hectare depending on crop but if new area is brought under irrigation the income generation is in the range of Rs. 1200 - Rs. 9100.

Chakravarti et al. (1991) studied exploitative employment and income of tribal agricultural labour in Udaipur district of Rajasthan. Agricultural labourers constitute the single largest group below the poverty line in India, a situation which can only be relieved through increased productivity. The study attempts to examine the exploitation condition that may exist in the context of income and employment situation of tribal agricultural labourers in a district of Udaipur in Rajasthan in the year 1986-87. The main objective is to examine whether, their income corresponded with the labour, they put to findout if there exist in exploitation situation in the employment pattern of agricultural labourers.

Chitodkar (1992) studied the pattern of employment, income and indebtedness of agricultural labourers in Dhule district. He concluded that the agricultural labourers did not get adequate employment and sufficient income from it. Crop production activity was major source of employment. The expenditure pattern of

agricultural labourers indicated very low standard of living as the food and clothing constituted major items of the expenditure. The food taken by the agricultural labourers was mostly cereals while proportion of protective food was quite low.

Kashikar (1992) studied employment pattern and earning status of small farmers in Madhya Pradesh. The results showed that there is 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 farmer in the area.

Bhalla (1993) studied the dynamics of wage determination and employment generation in Indian agriculture. This paper focuses on wage determination and labour absorption in Indian agriculture and concludes with suggestion for agriculture employment and wage policy formulation. Interstate variation in labour productivity constitutes the most significant factor explaning 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.

Gauthan et al. (1993) studied the wage employment of rural labour and variation in wage earnings by labour class and operations in Mehabubnagar district of Andhra Pradesh. The results revealed that the wage employment was 165 days in farming and 60

days in non-farming activities. Preparatory cultivation and sowing were the major farm activities for male. While sowing and harvesting were the major sources of employment for female labour.

. Gauraha et al. (1993) studied wage employment and earning of 70 marginal farmers in Raipur district of Madhya Pradesh. Own 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.

· 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.

. Thakur et al. (1993) studied employment and productivity in developed and underdeveloped agricultural regions in Bihar. This paper analyses 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.

Chadda (1994) examines changes in the structure of employment and earnings of the weaker sections of the population in response to the changing levels and nature of development. An attempt was made to explore on farm and off-farm employment linkages. The major conclusions are that (1) a crucial role is played by non-farm employment in poverty alleviation, (2) that is futile to increase employment opportunities without also paying attention to productivity and (3) the trickle down effect does work in practice.

Acharya et al. (1995) studied agricultural wage trends in India. It is generally recognised that casual agricultural labourers who possess little or no land, derive the income mainly from their daily wage, are a majority of rural poor. The paper therefore uses state level time series data on wages of agricultural labourers in India to shed light on trend of the income of the poor.

Radkar (1995) studied the effects of drought on economy of farmers in 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, there by 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.

Gawade (1998) studied on income, employment and expenditure pattern of rural weaker sections in Western Maharashtra. The study was conducted with the following objectives To understand nature and size of business persuits of the weaker sections and to study employment, income and expenditure pattern of rural weaker sections. The data of 105 sample households was obtained from CPMCC scheme of the Department of Agril. Economics, M.P.K.V., Rahuri.

They concluded that (1) In the total employment the share of wage earning was 35 per cent. (2) Almost 60-63 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 budget of all the families are in deficit.

2.3 The studies related on indebtedness, strategies and solutions/suggestions for the development of weaker sections

Many workers and policy makers had suggested ameliorating measures to overcome the problems faced by the weaker section and new policies that can be adopted to ensure the overall development of the weaker section.

Bhatia (1981) suggested that the answer to the unemployment problem in a country principally lies not in industralisation but in rapid development of agriculture.

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 is found that about 85 per cent of the total debt incurred by the agricultural labour households were for meeting their consumption need and socio-religious obligations. About 70 per cent of the indebted households were indebted 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 intrest with easy repayment facilities.

Desai (1982) while concern, perhaps rightly is shown towards the problem of a large population of agricultural labourers and low wage rates and poverty of this class, enough attention is not paid to skills and labour productivity which would tackle the problem of low wages and poverty.

Gupta et al. (1982) studied on investment pattern of borrowings and indebtedness among landless agricultural labourers in Haryana. The author concluded that three fourth of credit borrowed from land lords and professional money landers was for unproductive purpose. It was observed that only one fifth of the total borrowings provided by co-operatives and banks were utilized for productive purpose.

Dangat (1986) in his study `Farm income stabilization in dry farming areas' used linear programming technique to arrive at the plans with optimum farm income with existing as well as improved techniques. His main suggestions were (1) Use of dry farming technology should be encouraged, as it is labour oriented, it can help for employment also. (2) Due to high risk in dry farming, it is necessary to develop farm plans for different holding sizes based on varying levels of risk. It will provide a good range of choice for farmers to select a plan on the basis of their resources, financial position and risk bearing ability.

Jalihal (1987) studied the problem of increasing the income of small farmers and marginal farmers. He recommended on two fold strategy at to increase the productivity in farming and provision of subsidiary activities. These programmes were initiated in the fourth five year plan through the small farmers and marginal farmers development agency. It is shown that many small farmers do not get adequate employment even during the cropping season. The

paper presents estimates of income from agriculture and wage employment of marginal farmers in dry farming areas and proposes economically viable units of different farming systems to help the poorest marginal farmers to rise above the poverty line.

Narayana (1987) studied the financing of small farmers and the weaker sections by co-operative agricultural development bank in Andhra Pradesh. It followed a policy allocating about a half of its total loan to small farmers including scheduled caste and scheduled tribe farmers. The loan package involves a number of concession (low in best rate, long repayment period, low loan evaluation fee etc.) aimed at attracting small borrowers. Although successful on the whole, the schemes achievements vis-a-vis scheduled caste and scheduled tribe farmers remain mediare.

Vasanthakumar et al. (1987) analysed constraints to agriculture development of small and marginal farmers from Tamil Nadu. The constraints expressed were classified into (1) general constraints, (2) technological, (3) input oriented, (4) credit oriented and (5) infra structural. The study concludes that although the constraints are many, it is administratively feasible to eliminate them.

Singh et al. (1987) examines the impact of the Integrated Rural Development Programme (IRDP) on the level of income and employment of small and marginal farmers. It considers the constraints in the effective implementation of the IRDP and suggests suitable measures to overcome them.

Bandyopadhyay (1989) studied poverty alleviation through special employment programmes in rural India A detailed comparative analysis of the studies on the evaluation of the Integrated Rural Development Programmes (IRDP) in India. This investigation is extended into specific focus on household investment pattern and the crucial role of the financial institutions in supporting anti-poverty programmes.

Hanumantha Rao et al. (1989) suggested the reorientation of agriculture development strategy with greater emphasis on extension of physical infrastructure like irrigation and electrification, development of labour intensive technological packages for logging regions and crops, effective implementation of land reforms and strengthening of credit and market infrastructure. They further opined that, total elimination of drought is not possible. So, it would be imperative to undertake short-run measures for stabilizing income and employment of the rural poor particularly in the scarcity regions.

Kurkulkaṛ (1989) studied the employment, wage rates and level of living of landless agricultural labour families in a drought prone area of Aurangabad district of Maharashtra. The study measures the impact of Employment Guarantee Scheme (EGS) of the government of Maharashtra on the economic conditions of the landless since the inception of the scheme in 1972. A critical evaluation is made of the scheme, focusing on its objectives,

organization and operation. In spite of constraints identified in the field of implementation, it is concluded that the scheme is suitable for inhibition in other state of the Indian union.

It seems from the past studies that there is variation in the results according to regions and also over a period of time. However, the trend of poverty, unemployment, low income, the nature of consumption and indebtedness is common among the weaker sections. Hence these studies influences the researcher for detail investigation of the problem.

METHODOLOGY

3. METHODOLOGY

3.1 General

This chapter is developed to discuss in brief the methodology adopted for the study. It deals with the types of data required for the study, the source of data and analytical procedure adopted to fulfil the requirements of the objectives of the study.

3.2 Selection of the study area

The state of Maharashtra could be divided into nine agroclimatic zones. Of these zones the scarcity zone consisting of parts of seven districts of central Maharashtra and three districts of Marahtwada region which receive rainfall less than 700 mm per annum. Keeping this view in mind, present study was conducted in Satara district. It needs to be mentioned that 87 Tahsils are identified as drought prone tahsils in the state.

In Maharashtra state there were 87 tahsils which represents the scarcity area. Out of 11 tahsils in Satara district four tahsils, which represent the scarcity zone of western Maharashtra were purposively selected for the present study. Out of these four scarcity tahsils Phaltan tahsil is having good source of irrigation and hence it is excluded from the study. The remaining three tahsils viz., Khatav, Man and Khandala were purposively selected for the present investigation.

3.3 The Data Requirement

The basic approach of the study is to examine the employment, income and expenditure pattern of the weaker section in scarcity region of Satara district. For this purpose it became necessary to procure the data on the aspects such as family composition, resource inventory, land use pattern, cropping pattern, farm and non-farm employment, source of income, consumption behaviour and indebtedness of sample families.

3.4 Sampling design

The study is located in Khatav, Man and Khandala tahsils of Satara district. The sampling design adopted for the study was two stage startified random sampling, with village as a primary unit and weaker households as secondary unit.

3.4.1 Selection of the sample villages

The tahsilwise list of villages were obtained from the respective tahsils office. As per the norms of revenue department the villages having paisewari of 60 paise and below are treated as scarcity villages in drought prone areas. It is necessary to selecte the villages which are having paisewari of 60 paise and below.

Only scarcity villages were considered for the present study. A list of such villages according to tahsilwise prepared alphabetically and three villages from each tahsil were selected randomly. Thus total nine villages were selected for the study. These villages were as follows.

I. Khatav tahsil
   1. Dhakatwadi
   2. Ranshingwadi
   3. Vanzoli

II. Man tahsil
   1. Dhuldeo
   2. Palvan
   3. Pangari

III. Khandala tahsil
   1. Bhada
   2. Harali
   3. Zgalwadi

3.4.2 Selection of the sample families

The village wise list of small farmers (holding 1-2 ha land), marginal farmers (holding below 1 ha land), agril. labourers, village artisans were obtained from the respective Talathi and Grampanchayat offices. The villagewise small farmers and marginal farmers were arranged according to the size of holdings and four sample families each were selected randomly. However, the list of agril. labourers and artisans were arranged alphabetically. From each villages, four agril. labourers and two village artisans were selected randomly. Thus a total number 126 sample families including 36

small farmers, 36 marginal farmers, 36 agril. labourers and 18 village artisans formed the ultimate sampling units.

3.5 Collection of data

The survey method was adopted in collection of data from sample households with the help of a specially designed questionnaires for the purpose. The sample families were personally contacted to get the relevant information on the aspects of the study either at their residence or on the farms. The data were collected for the complete agricultural year 1997-98.

3.6 Concepts and definitions

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

1. Scarcity region

Scarcity region is the area which receives on an average less than 750 mm annual rianfall and have faced at least two droughts in last eight years.

2. Small farmer

He is a person who holds land from one to two hectares and fully dependent on their own agriculture.

3. Marginal farmer

He is a person whose land holding is upto one hectare and are partially dependent on their own agriculture and partially on the wage earnings.

4. Agricultural labour

They are the labourers who are fully dependent on wage earnings in agriculture. They don't have their own lands for cultivation.

5. Employment

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

6. Income

Annual earnings from different sources such as farm produce, wages earned, livestock and other services etc. is considered as income.

7. Expenditure

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

8. Consumption

The annual expenditure incurred on food, clothing, utensils, education, religions and family welfare activities etc. is considered as consumption expenditure.

3.7 Method of analysis

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

3.7.1 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 the selected sample families. The position of farm assets, livestock and family size were also studied.

3.7.2 Regression analysis

It was planned to estimate the employment, income and expenditure function with the help of multiple linear regression analysis for knowing the parameters influencing these economic indicators in respect of sample families. The data at the household level irrespective of size groups were used for the purpose.

A. Employment functions

The multiple regression equation used for estimating the employment function was as under.

1. Small farmers and Marginal Farmers

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

Where,

Y = Annual gross family employment (man days)

a = Intercept

bi's = Regression coefficients of respective explanatory variables

U = Error term

x_1 = Gross cropped area (hectares)

x_2 = Earners per family (percentage)

x_3 = Milch animals (numbers per family)

x_4 = Wage rates (Rupees)

x_5 = Capital assets (Rupees) (Excluding value of land, well and house)

2. Agricultural labourers and village artisans

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

Where,

Y = Annual gross family employment (man days)

a = Intercept

bi's = Regression coefficients of respective explanatory variables

U = Error term

x_1 = Earners per family (percentage)

x_2 = Milch animals (numbers per family)

x_3 = Wage rates (Rupees)

x_4 = Capital assets (Rupees) (Excluding value of land, well and house)

B. Income function

The income function was estimated by fitting multiple linear regression equations to the data. The function is as under.

1. Small farmers and Marginal Farmers

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

Where,

Y = Average annual gross family income (Rupees)

a = Intercept

bi's = Regression coefficients of respective explanatory variables

U = Error term

x_1 = Gross cropped area (hectares)

x_2 = Gross employment (man days)

x_3 = Earners per family (percentage)

x_4 = Area under cash crop (percentage to gross cropped area)

x_5 = Milch animals (Numbers per family)

2. Agricultural labourers and village artisans

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

Where,

Y = Average annual gross family income (Rupees)

a = Intercept

bi's = Regression coefficients of respective explanatory variables

U = Error term

x_1 = Gross employment (man days)

x_2 = Earners per family (percentage)

x_3 = Milch animals (numbers per family)

C. Expenditure function

The equation used to estimate this function was as under.

1. Small farmers and Marginal Farmers

$Y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_5 + U$

Where,

Y = Annual average family expenditure (Rupees)

a = Intercept

bi's = Regression coefficients of respective explanatory variables

U = Error term

x_1 = Gross income of family (rupees)

x_2 = Family size (adult units)

x_3 = Capital assets (Rupees) (excluding value of land)

x_4 = Gross cropped area (hectares)

2. Agril. labourers and village artisans

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

Where,

Y = Annual average family expenditure (Rupees)

a = Intercept

bi's = Regression coefficients of respective explanatory variables

U = Error term

x_1 = Gross income of family (rupees)

x_2 = Family size (adult units)

x_3 = Capital assets (rupees) (excluding value of land)

With the help of above equations an attempt was made to find out the relationship between dependent and independent variables. The significance of the coefficient variables, the coefficient of multiple determination (R^2) and regression coefficient (bi's) were tested on the basis of `F' value.

* = Significant at 10 per cent level of significance

** = Significant at 5 per cent level of significance

*** = Significant at 1 per cent level of significance

N.S. = Non significant

n = Number of sample size

a = Constant in the equation

GENERAL INFORMATION OF THE STUDY AREA

4. GENERAL INFORMATION ABOUT THE STUDY AREA

It is absolutely essential for the agricultural research worker to get acquainted with the tract under study. Because, agricultural production is dependent on many climatic and geographical factors like temperature, rainfall, soil type, etc. In fact, the entire planning of farming is done on the basis of these factors. Having the background information about the tract under study, facilitates the readers to understand the results of research in more effective manner. With this view the general information of the tract is described in the present chapter.

4.1 Physical features

Satara district is situated to the western side of Deccan platau and lies between 17°5′ to 18°11′, Northen latitutde and 73°34′ to 74°54′ Eastern longitude. Some part of the Satara district is situated in Bhima basin and majority of the part is situated in the Krishna basin. Satara district is surrounded by Pune district to Northern side, Solapur to Eastern side, Sangli to western side and Raigad to North western side. Total geographical area of the district is 10484 square kilometres covering 3.4 per cent of the total geographical area of Maharashtra state. Satara district stands 15th in the state of Maharashtra as far as geographical area is concerned.

4.2 Population

The male and female population of the district was 49.29 and 50.71 per cent of the total population respectively. Total population of the District was 2451000 as per 1991 census 87 per cent of the total population was living in rural areas and literacy percentage was 66.67 per cent in the district.

4.3 Climate and rainfall

The climate of Satara district is characterised by dry and hot climate during summer season in plain areas while cool climate in hilly areas. During winter, climate is generally cool in plain areas and temperature is very low in hilly areas. The three seasons viz., rainy season starts from middle of June upto September. Rainy season is followed by winter from October to February and summer season starts from March and lasts upto the end of May.

As per geographical situation, there is vast difference in the intensity of rainfall in various parts of the district. Yearly average rainfall is as low as 462 mm, in drought prone tahsil of Man in the eastern side and it is as high as 6182 mm, in Western part of Mahabaleshwar which is the highest in the state. To the western side, it ranges from 500 mm in between western part of 1200 to 2000 mm in the eastern part which comprises the tahsils of Patan and Jawali. The central and southern part of district which comprises of Satara, Wai, Koregaon and Karad tahsils, receive rainfall to the extent of 600 to 1200 mm. The eastern side tahsils Phaltan, Man and Khatav and

northen side tahsil Khandala fall in the belt of low rainfall area receiving less than 600 mm. So insufficient and untimely rain must have created a scarcity situation which must have resulted crop failures as well as insufficient drinking water and non availability of fodder, etc. Among all the tahsils of Satara district Man, Khatav and Khandala tahsils were severely affected by the drought conditions. So, these three scarcity prone blocks are selected for the present study.

4.4 Soils

In the western side of district, which comprises of Mahabaleshwar, Jawali, Wai and Patan tahsils, soil is formed from laterite rocks. Lands in the basins of Krishna, Venna and Koyna rivers from Wai, Jawali and Patan tahsils are deep and fertile soils. Soils from Khandala, Man, Khatav tahsils are rocky and infertile. Khatav, Man and Khandala are scarcity prone tahsils.

4.5 History of Drought in Satara district

Satara district suffered due to famine and scarcity almost once in every 3 years. The droughts of 1901-02 and 1952-53 were wide-spread droughts. In recent years, Satara district was worst hit by drought in 1970-73 and scarcity situation was also existent in 1981-82.

The history of drought in the district helps us to understand the severity of the scarcity problem in the district.

The committee appointed by Government of Maharashtra under the Chairmanship of Mr. Sukhthankar better known as Sukhthankar Committee (1973) has identified the drought prone areas in the district and these Khatav, Man and Khandala tahsils which are selected for the study.

4.6 Size of holding and distribution of cultivating households in Satara district

The distribution of cultivating house holds and land brought under cultivation by them is shown as percentage in Table 4.1.

It is seen from the table that, nearly 57 per cent of total cultivating households cultivate less than 1 hectares of land i.e. only 17 per cent of cultivable land. There are 23 per cent people having 1 to 2 hectares of land which is 24 per cent of the total cultivable land while 13 per cent cultivators were having 2 to 3 hectares of land while the area cultivated by them was 26 per cent of total cultivable area. While remaining 5.88 per cent cultivators having holding above 4 hectares cultivates 32 per cent of total cultivable land. It can be seen that 80 per cent marginal and small farmers cultivates only 41 per cent of the total cultivated land.

4.7 Land utilization

The land utilization pattern in Satara district during the year 1996-97 is given in Table 4.2.

Table 4.1 Distribution of cultivating households in Satara district by size of land holding in 1996-97

Sr. No.	Size group	Percentage of total cultivating household	Percentage of total cultivated land
1.	Below 1 ha	57.49	17.24
2.	1 - 1.99 ha	23.38	24.39
3.	2 - 3.99 ha	13.25	26.46
4.	4 - 9.99 ha	5.20	21.71
5.	10 and above 10 hectares	0.68	10.20
	Total	100.00	100.00

Source : Socio-economic Review and District Statistical Abstract of Satara district (1997-98)
Directorate of Economics and Statistics, Government of Maharashtra, Mumbai

Table 4.2 Land utilization in Satara district, during the year 1996-97

(Thousand hectares)

Sr. No.	Land use category	Area	Percentage to total area
1.	Total geographical area	1058.00	100.00
2.	Forest	142.00	13.42
3.	Barren and uncultivable land	28.00	2.65
4.	Land put to non-agricultural use	94.00	8.89
5.	Cultivable waste	37.00	3.50
6.	Permanent pasture and other grazing land	76.00	7.18
7.	Land under misc. trees, groves and crops not included in the area sown	7.00	0.66
8.	Current fallow	32.00	3.02
9.	Other fallow land	67.00	6.33
10.	Net sown area	575.00	54.35
11.	Double cropped area	97	9.17
12.	Gross cropped area	672	-
13.	Cropping Intensity (%)	116.87	-

Source : Socio-economic Review and District Statistical Abstract of Satara district (1997-98)
Directorate of Economics and Statistics, Government of Maharashtra, Mumbai

It is seen from the table that total geographical area of Satara district was 1058000 hectares. Out of the total geographical area net sown area shared to the extent of 54 per cent. Next to the cropped area, the major land use were consisting of forest land 13.42 per cent, land put to non agricultural use 8.89 per cent and permanent pastures and other grazing land 7.18 per cent. Only 9.17 per cent of the area was sown more than once and intensity of cropping was found to be 116.87 per cent.

It can be reviewed from Table 4.3, which shows the land utilization pattern for three sample tahsils that, the total area was 1365, 1508 and 536 thousand hectares in case of Khatav, Man and Khandala tahsils respectively. Proportion of net area sown to the total area was found to be 71.28 per cent, 46.22 per cent and 59.51 per cent in case of Khatav, Man and Khandala tahsils, respectively. Intensity of cropping was found to be 123.84, 115.06 and 140.75 per cent in case of Khatav, Man and Khandala tahsils, respectively. The proportion of forest land was more in case of Khandala tahsils (12.13 per cent) followed by Man (8.62 per cent) and Khatav (3.00 per cent), while the proportion of barren and uncultivable land was highest in Khandala (16.98 per cent) followed by Man and Khatav where it was found to be 15.45 per cent and 7.40 per cent, respectively.

4.8 Cropping pattern

The area under different crops in Satara district during 1996-97 is presented in Table 4.4

Table 4.3 Land utilization in Khatav, Man and Khandala tahsils of Satara district during the year 1996-97

Sr. No.	Land use category	Area in thousand hectares		
		Khatav	Man	Khandala
1.	Total geographical area	1365 (100.00)	1508 (100.00)	536 (100.00)
2.	Forest	41 (3.00)	130 (8.62)	65 (12.13)
3.	Barren and uncultivable land	101 (7.40)	233 (15.45)	91 (16.98)
4.	Land put to non-agril. use	12 (0.88)	20 (1.33)	2 (0.37)
5.	Cultivable waste	3 (0.22)	115 (7.63)	5 (0.93)
6.	Permanent pastures and other grazing land	55 (4.03)	241 (15.98)	51 (9.51)
7.	Land under misc. bees, groves and crops not sown	21 (1.54)	-	1 (0.19)
8.	Current fallow	3 (0.22)	-	1 (0.19)
9.	Other fallow land	156 (11.43)	72 (4.77)	1 (0.19)
10.	Wet sown area	973 (71.28)	697 (46.22)	319 (59.51)
11.	Double cropped area	232	105	130
12.	Gross cropped area	1205	802	449
13.	Cropping intensity (%)	123.84	115.06	140.75

(Figures in parenthesis denote percentages to total land)

Source : Socio-economic Review and District Statistical Abstract of Satara district (1997-98)
Directorate of Economics and Statistics, Government of Maharashtra, Mumbai

Table 4.4 Area under different crops in Satara district during the year 1996-97 (Hectares)

Sr. No.	Crop	Area	Percentage to total cropped area
1.	Jowar	202602	30.17
2.	Bajrara	111917	16.67
3.	Wheat	32586	4.86
4.	Rice	36430	5.42
5.	Other cereals	17810	2.65
I.	Total cereals	401345	59.77
6.	Pulses	86527	12.89
II.	Total food grains	487872	72.66
7.	Sugarcane	50389	7.50
8.	Fruits and vegetables	18652	2.78
9.	Miscellaneous food crops	6615	0.98
III.	Total food crops	563528	83.92
10.	Cotton	5359	0.80
11.	Other fibres	684	0.10
12.	Oil seeds	67307	10.02
13.	Total drugs and narcotics	283	0.04
14.	Misc. non food crops	42	0.006
15.	Total fodder crops	34266	5.10
IV.	Total non food crops	107941	16.08
V.	Total cropped area (III + IV)	671469	100.00

Source : Socio-economic Review and District Statistical Abstract of Satara district (1997-98)
Directorate of Economics and Statistics, Government of Maharashtra, Mumbai

It is seen from the Table that out of the total cropped area, a large area amounting to 83.92 per cent was alloted to grow food grain crops. The major food grain crops were jowar, bajara, wheat, and pulses. The cereal crops alone occupied the largest land space which accounts for 59.77 per cent of the total cropped area followed by pulses which shared 12.89 per cent of the total cropped area. The non food crops mainly consisted of oilseeds and fodder crops upto the 10.02 per cent and 5.10 per cent, respectively. Other crops constituted to very small extent.

It can be reviewed from Table 4.5 that the area under different crops for sample tahsils that, area under food crops was to the extent of 93.85, 94.48 and 82.34 per cent in case of Khatav, Man and Khandala tahsils, respectively. Area under non food crops was 6.15 per cent, 5.52 per cent and 17.66 per cent in case of Khatav, Man and Khandala tahsils, respectively. Proportion of cereals was 64.39, 78.27 and 64.32 per cent in case of Khatav, Man and Khandala tahsils, respectively.

Thus, it is clear that the cropping pattern of three sample tahasils dominated with cereals and pulses with relatively lesser area under fruits and vegetables and sugarcane etc.

4.9 Livestock population

Livestock production forms an important activity next to crop production in the rural areas. The details of livestock population in the year 1992 is given in Table 4.6. It can be seen from the table

Table 4.5 Area under different crops in sample tahsils during the year 1996-97

Sr. No.	Crop	Area in hectares		
		Khatav	Man	Khandala
1.	Jowar	32680 (27.11)	22909 (26.35)	15046 (33.51)
2.	Bajrara	41403 (34.35)	36943 (46.05)	12069 (26.88)
3.	Wheat	2591 (2.15)	1974 (2.46)	720 (1.60)
4.	Rice	202 (0.17)	88 (0.11)	568 (1.26)
5.	Other cereals	731 (0.61)	880 (1.10)	479 (1.07)
I.	Total cereals	77607 (64.39)	62794 (78.27)	28882 (64.32)
6.	Pulses	30416 (25.24)	9482 (11.82)	4509 (10.04)
II.	Total food grains	108023 (89.63)	72276 (90.09)	33391 (74.36)
7.	Sugarcane	970 (0.80)	466 (0.58)	1692 (3.77)
8.	Fruits and vegetables	3723 (3.09)	2865 (3.57)	1710 (3.81)
9.	Miscellaneous food crops	392 (0.33)	190 (0.24)	180 (0.40)
III.	Total food crops	113108 (93.85)	75797 (94.48)	36973 (82.34)
10.	Cotton	1269 (1.05)	2280 (3.21)	9 (0.02)
11.	Other fibres	68 (0.05)	-	9 (0.02)
12.	Oil seeds	5736 (4.76)	1124 (1.40)	2776 (6.18)
13.	Total drugs and narcotics	8 (0.007)	-	3 (0.006)
14.	Misc. non food crops	-	-	8 (0.02)
15.	Total fodder crops	336 (0.29)	727 (0.91)	5127 (11.42)
IV.	Total non food crops	7417 (6.15)	4431 (5.52)	7932 (17.66)
V.	Total cropped area (III + IV)	120525 (100.00)	80228 (100.00)	44905 (100.00)

(Figures in the parentheses denote percentage to total cropped area)

Table 4.6 Livestock population in sample tahsils as per livestock census 1992 (Numbers)

Sr. No.	Livestock group	Khatav	Man	Khandala
1.	Cattle	48504	44757	20241
		(30.66)	(18.03)	(23.36)
2.	Buffaloes	34608	17416	6223
		(21.87)	(7.01)	(7.18)
3.	Total bovines	83112	62173	26464
		(52.53)	(25.04)	(30.54)
4.	Sheep	31265	133718	37682
		(19.76)	(53.87)	(43.49)
5.	Goats	39755	50482	21999
		(25.13)	(20.34)	(25.38)
6.	Other livestock	4080	1874	517
		(2.58)	(0.75)	(0.59)
7.	Total livestock	158212	248247	86652
		(100.00)	(100.00)	(100.00)
8.	Total poultry birds	149368	201402	59728

(Figures in the parenthesis denote percentage to total)

Source : Socio-economic Review and District Statistical Abstract of Satara district (1997-98)
Directorate of Economics and Statistics, Government of Maharashtra, Mumbai

that total livestock population was 158212, 248247 and 86652 in case of Khatav, Man and Khandala tahsils, respectively. Out of the total population, bovine population constituted to the extent of 52.53, 24.04 and 30.54 per cent in case of Khatav, Man and Khandala tahsils respectively. Among all the bovine animals cattles were 30.66, 18.03 and 23.36 per cent in case of Khatav, Man and Khandala tahsils, respectively. The population of sheep are found to be the highest i.e. 53.87 of the total livestock population in Man tahsils, followed by Khandala (43.49 per cent) and Khatav (19.76 per cent). The number of poultry birds were 1.49 lakhs, 2.01 lakhs and 0.59 lakhs in case of Khatav, Man and Khandala tahasils, respectively.

4.10 Brief information about the sample villages

The information regarding the selected villages is briefly given in the discussion that follows.

1. Dhakatwadi

The village is situated 21 kilometres west of tahasils place Waduj. Main crops of the village are jowar, wheat, bajara, beans and safflower. The facility like primary school and post office is available in village. The village has a Grampanchayat, a co-operative credit society and fair price shop. However, the village has problem of drinking water during summer season. It is connected by a katcha road about 10 km.

2. Ranshingwadi

This village is situated 32 kilometers north-west of Waduj. Main crops of the village are jowar, bajara and groundnut. The facility like primary school, fair-price shop and postal communication is available. The village has group Grampanchayat.

3. Vanzoli

This village is situated 22 kilometres south-west of Waduj. It is situated near the town Pusesawli. It is connected by a Kaccha road and hence there exists a problem of transportation during rainy season. Main crops of the village are jowar, bajra and safflower.

The primary school is upto fourth standard. The high school facilities are available at the nearest village viz., Wadgaon. Facilities like Grampanchyat and fair price shop are available in the village. However, the village has the serious problem of drinking water during summer season.

4. Dhuldeo

This village is situated 17 km east of tahsil place. Main crops of the village are jowar, wheat, bajara and groundnut. Facilities like primary school, post office and fair-price shop are available in the village.

5. Palvan

This village is situated 26 km north west of tahsil place main crops of the village are jowar, bajra, wheat. Facilities like primary school, Grampanchayat and fair price shop are available in the village. It is connected with taluka head quarter by a pucca road.

6. Pangari

The village Pangari is situated 8 km north of tahsil place Dahiwadi. Main crops of the village are jowar, bajara and pulses. Facilities like primary school and Grampanchayat are available. Village is connected with a pucca road. However, the village has problem of drinking water during summer season.

7. Bhada

This village is situated 18 km west - east of tahsil place Khandala. Main crops of the village are jowar, bajara and wheat. Facilities of education such as primary school available in village. The village has Grampanchayat, co-operative society and fair-price shop.

8. Harali

This village is situated 6 km north of tahsil place Khandala. Main crops of village are jawar, bajara, groundnut etc. Facilities like primary school and multipurpose society are available in the village.

9. Zagalwadi

Zagalwadi is situated 12 km to the west of tahsil place. Main crops of the village are jowar, bajara and pulses. Facilities like primary school, co-operative society, fair price shope, post office available in the village.

The location of individual sample village is shown in Fig. 1.

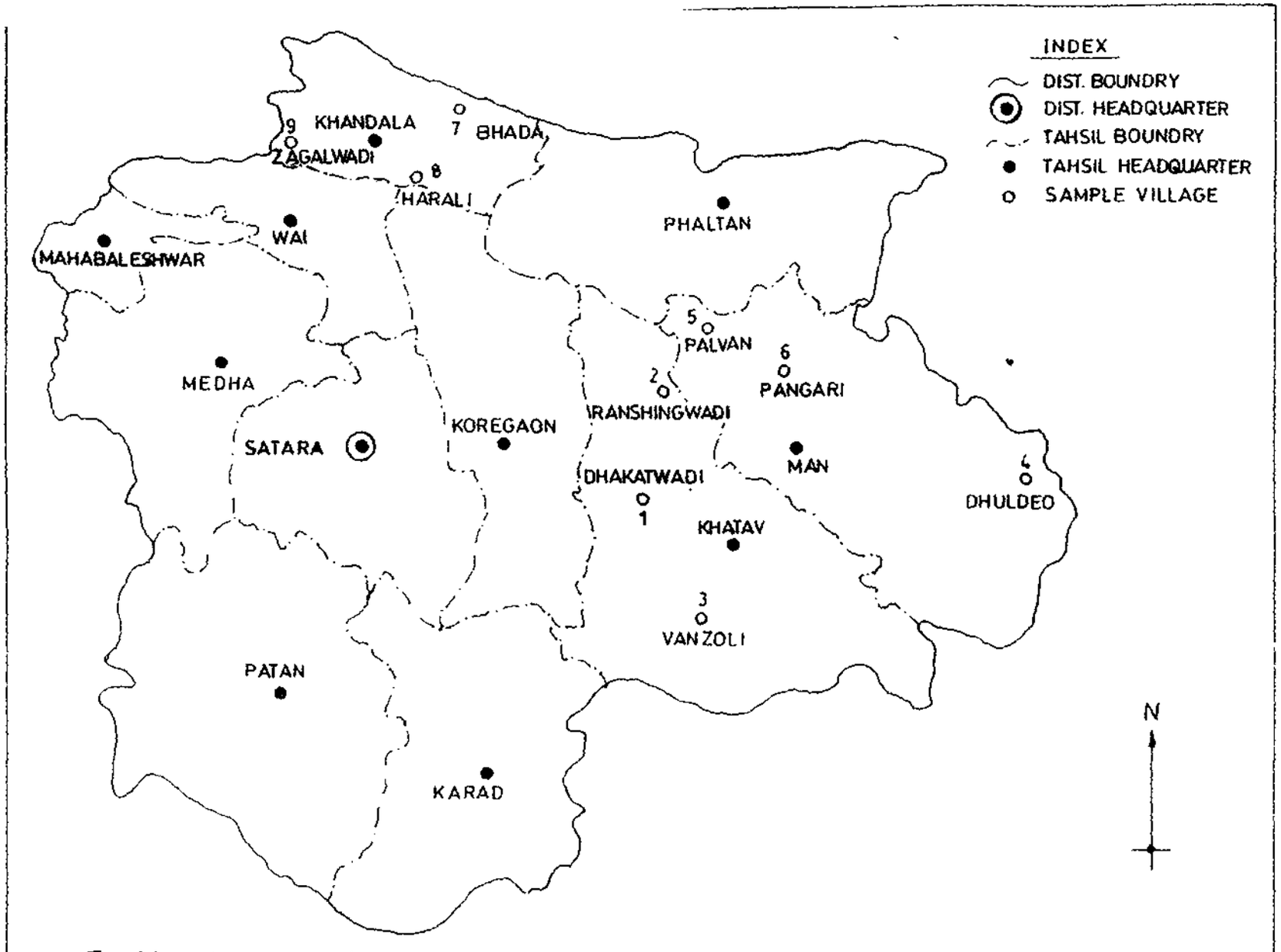


Fig. 1. Location map of sample villages selected for the study (Satara district)

RESULTS AND DISCUSSION

5. RESULTS AND DISCUSSION

5.1 Socio-economic background of sample families

The social and economic aspects of the sample families small farmers, marginal farmers, agril. labourers and village artisans would influence the income, employment and expenditure pattern directly or indirectly. The social aspects like composition of the sample families, provide the information regarding work force available with the sample families. Besides the social aspects, the economic aspects like land utilization, cropping pattern, livestock population, farm assets etc., are analysed for the presentation of results.

5.1.1 Average size of family and its composition

The details of average size of families and its composition in respect of four groups viz., small farmers, marginal farmers, Agril. labourers and village artisans and its overall level is presented in Table 5.1.

It could be seen from the table that the average size of family at overall level was 4.64 persons per family. Out of which 39.01 per cent were men, 32.97 per cent were women and 28.02 per cent were children. The lowest and the highest size of family was in case of agril. labourers and small farmers, respectively. Thus, it could be concluded that there existed no relationship between the farm size and the family size. However, the notable conclusion from the above

Table 5.1 Average composition of the sample families

(Numbers)

Sr. No.	Particulars	Small farmers	Marginal farmers	Agril. labourers	Village artisans	Overall
1.	Earners					
a.	Male	1.39	1.25	1.11	1.22	1.24
		(25.84)	(27.47)	(27.54)	(26.81)	(26.72)
b.	Female	1.14	1.00	0.97	0.94	1.02
		(21.19)	(21.98)	(24.07)	(20.66)	(21.98)
	Total	2.53	2.25	2.08	2.16	2.26
		(47.03)	(49.45)	(51.61)	(47.47)	(48.70)
2.	Dependants					
a.	Male	0.69	0.58	0.45	0.50	0.57
		(12.82)	(12.75)	(11.17)	(10.99)	(12.29)
b.	Female	0.61	0.44	0.39	0.67	0.51
		(11.34)	(9.67)	(9.68)	(14.63)	(10.99)
c.	Children	1.55	1.28	1.11	1.22	1.30
		(28.81)	(28.13)	(27.54)	(26.81)	(28.02)
	Total	2.85	2.30	1.95	2.39	2.38
		(52.97)	(50.55)	(48.39)	(52.53)	(51.30)
3.	Total family composition					
a.	Male	2.08	1.83	1.56	1.72	1.81
		(38.66)	(40.22)	(38.71)	(37.80)	(39.01)
b.	Female	1.75	1.44	1.36	1.61	1.53
		(32.53)	(31.65)	(33.75)	(35.39)	(32.97)
c.	Children	1.55	1.28	1.11	1.22	1.30
		(28.81)	(28.13)	(27.54)	(26.81)	(28.02)
	Total	5.38	4.55	4.03	4.55	4.64
		(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

(Figures in parentheses denote percentage to total)

said table could be drawn that the average number of women per family was less than the average number of men in case of all the sample families.

At the overall level, it was observed that 48.70 per cent of the family members were earners and 51.30 per cent were dependents. At the overall level the lowest and the highest earners were in case of small farmers and agril. labourers. The percentage of male earners was more than the female earners in all the size groups.

5.1.2 Livestock population

The information of the livestock population of sample families is presented in Table 5.2.

It can be seen from the table that at the overall level average livestock population was 1.61 numbers per family. The lowest and the highest number of livestock was observed in case of village artisans and small farmers, respectively. The proportion of sheep and goats were found to be 75.44 per cent in case of agril. labourers higher than any other group. It was observed that, at the overall level, milch animals were 21.11 per cent which may affect the annual family income.

5.1.3 Land use pattern of sample farms

Details of land use pattern of sample farms are presented in Table 5.3.

It was observed that, the average size of land holding was 0.99 hectares. The average size of holding owned by the small

Table 5.2 Average livestock composition of the sample families

(Numbers)

Sr. No.	Particulars	Small farmers	Marginal farmers	Agril. labourers	Village artisans	Overall
1.	Bullocks	1.14	0.53	-	-	0.48
		(43.68)	(34.64)			(29.81)
2.	Milk animals	0.72	0.30	0.11	0.16	0.34
		(27.59)	(19.61)	(9.65)	(22.22)	(21.11)
3.	Calves and	0.19	0.28	0.17	0.06	0.19
	heifers	(7.28)	(18.30)	(14.91)	(8.33)	(11.80)
4.	Goats and sheep	0.56	0.42	0.86	0.50	0.60
		(21.45)	(27.45)	(75.44)	(69.45)	(37.28)
5.	Total	2.61	1.53	1.14	0.72	1.61
		(100.00)	(100.00)	(100.00)	(100.00)	(100.00)
6.	Poultry birds	0.06	0.69	1.67	0.94	0.68

(Figures in parentheses denote percentage to total)

Table 5.3 Average land use pattern of the sample families

(Hectares)

Sr. No.	Particulars	Small farmers	Marginal farmers	Overall
1.	Total size of holding	1.42	0.56	0.99
		(100.00)	(100.00)	(100.00)
2.	Barren and	0.14	0.06	0.10
	uncultivated land	(9.86)	(10.72)	(10.10)
3.	Cultivated land	1.28	0.50	0.89
		(90.14)	(89.28)	(89.90)
a.	Irrigated	0.16	0.11	0.13
		(11.27)	(19.64)	(13.13)
b.	Unirrigated	1.12	0.39	0.76
		(78.87)	(69.64)	(76.77)
4.	Current fallow	0.11	0.07	0.09
		(7.75)	(12.50)	(9.09)
5.	Net sown area	1.17	0.43	0.80
		(82.39)	(76.78)	(80.81)
a.	Irrigated	0.16	0.11	0.13
		(11.27)	(19.64)	(13.13)
b.	Unirrigated	1.01	0.32	0.67
		(71.12)	(57.14)	(67.68)
6.	Double cropped area*	0.16	0.11	0.13
		(13.79)	(25.58)	(16.25)
7.	Gross cropped area*	1.33	0.54	0.93
		(114.66)	(125.58)	(116.25)

(Figures in parentheses denote percentage to total holding)

* Percentage to net sown area

farmers and marginal farmers was 1.42 and 0.56 hectares respectively. The average area under cultivation of respective categories was 1.28 and 0.50 hectares respectively. It is seen that at the overall level 89.90 per cent area was under cultivation. Out of which 13.13 per cent area was irrigated as compared to the total holding. However 9.09 per cent area remains as current fallow at the overall level. It is noted that average gross cropped area was 1.33 and 0.54 hectares of the small farmers and marginal farmers respectively, with an overall level of 0.93 hectares.

5.1.4 Cropping pattern of the sample farms

Cropping pattern of the farms is dependent on many factors viz., fertility of soil, availability of irrigation resources, decision making ability of the cultivator, under the situation of changing price structure, relative prices of output of different crops, rainfall and other agro-economic factors. The cropping pattern of the area is characterised by uncertainties of rainfall and inadequate irrigation water resources remains stabilised over a long period and price factor proved to be inefficient in exerting their influences on cropping pattern.

Table 5.4 represents the cropping pattern of the sample farms. It is seen from note worthy information on cropping pattern that the area under cereals was 1.04 and 0.40 hectares in case of small farmers and marginal farmers respectively, with an overall average of 0.72 hectare i.e. 77.42 per cent of total gross cropped area. Among

Table 5.4 Average cropping pattern of the sample farm families

(hectares)

Sr. No.	Particulars	Small farmers	Marginal farmers	Overall
1.	Jowar	0.52	0.20	0.36
		(39.10)	(37.03)	(38.71)
2.	Bajara	0.41	0.16	0.29
		(30.82)	(29.63)	(31.18)
3.	Wheat	0.11	0.04	0.07
		(8.27)	(7.41)	(7.53)
I.	Total cereals	1.04	0.40	0.72
		(78.19)	(74.07)	(77.42)
4.	Pulses	0.15	0.07	0.11
		(11.28)	(12.97)	(11.82)
II.	Total food grains	1.19	0.47	0.83
		(89.47)	(87.04)	(89.24)
5.	Oil seeds	0.06	0.03	0.04
		(4.51)	(5.56)	(4.30)
6.	Vegetables	0.04	0.02	0.03
		(3.01)	(3.70)	(3.23)
7.	Fodder crops	0.04	0.02	0.03
		(3.01)	(3.70)	(3.23)
8.	Gross cropped area	1.33	0.54	0.93
		(100.00)	(100.00)	(100.00)
9.	Cropping intensity	114.66	125.58	116.25

(Figures in parentheses denote percentage to GCA)

the cereals it is seen that jowar was the most important crop followed by bajara and wheat. The area under pulses ranges from 0.07 hectares in case of marginal farmers to 0.15 hectare in case of small farmers, with an overall 11.82 per cent to the total gross cropped area. At the overall, the area under total food grains was 0.83 hectare i.e. 89.24 per cent of the total gross cropped area.

The area under oilseed crops viz., groundnut at the overall level was only 0.04 hectares i.e. 4.30 per cent to the total gross cropped area. It is also seen that area under vegetables also negligible i.e. 3.23 per cent at the overall level. Area under fodder crops was also negligible.

It seems that the rainfed condition prevailing in above selected study areas is the predominantly cereal cropping pattern i.e. about 77.42 per cent and very little area is alloted to other crops. The cropping intensity is only 116 per cent. There is no scope for altering the proportionate change in component crops of the cropping pattern because of the subsistence farming.

5.1.5 Capital assets of sample families

Information regarding value of different capital assets with sample families is given in Table 5.5.

The data presented in table reveals that at the overall level, the total value of capital assets was worked out to Rs. 98682. Per family value of capital assets was Rs. 212286, 106246, 13680 and 26352 in case of small farmers, marginal farmers, agril. labourers and

Table 5.5 Average capital assets of the sample families

(Rupees)

Sr. No.	Particulars	Small farmers	Marginal farmers	Agril. labourers	Village artisans	Overall
1.	Residential and farm houses	27286 (48.78)	21297 (54.97)	11639 (85.08)	21833 (82.85)	20325 (58.53)
2.	Livestock	9161 (16.38)	4936 (12.74)	1444 (10.55)	1060 (4.02)	4592 (13.22)
3.	Cattle shed	1686 (3.01)	796 (2.05)	436 (3.19)	42 (0.16)	840 (2.42)
4.	Farm implements, machinery and other equipments	4542 (8.12)	2189 (5.65)	161 (1.18)	3417 (12.97)	2457 (7.08)
5.	Irrigation structure	13264 (23.71)	9528 (24.59)	-	-	6512 (18.75)
I.	Total	55939 (100.00)	38746 (100.00)	13680 (100.00)	26352 (100.00)	34726 (100.00)
6.	Land	156347	67500	-	-	63956
II.	Grand total	212286	106246	13680	26352	98682

(Figures in parentheses denote percentages to total)

village artisans respectively. It is obvious that the value of the assets of the agril. labourers and village artisans is less than other sample groups as they do not have owned land. Among the items of fixed investment land was the major item 64.81 per cent to the total fixed investment at an overall level. In case of agril. labourers the residential building accounts for 85.08 per cent to the total capital assets followed by livestock, 10.55 per cent. In case of village artisans, residential building accounts for 82.85 per cent which is maximum followed by business implements and tools to the extent of 12.97 per cent to the total capital assets. The capital assets excluding land was maximum in case of small farmers followed by marginal farmers, village artisans and agril. labourers. Thus, it can be revealed that the small and marginal farmers investment in capital assets was more in land, while the capital assets investment of agril. labourers and village artisans was more in buildings. Other assets showed a meagre proportion in the total capital assets.

5.2 Employment pattern of sample families

This section is designed to present the results of the analysis of data relating to employment of sample families. It is quite obvious that there is a definite effect of reduction in gross cropped area, capital assets, size of livestock herd and the family size and number of earners on the pattern of employment of the families. An attempt is, therefore, made to study in detail the farm and non farm average employment position of male and female workers in

order to get a clear idea about changing pattern of employment of the families.

5.2.1 Average annual employment and un-employment position of the male worker

The farm and non-farm employment position of an average male worker belonging to the families of different categories is given in Table 5.6.

It is apparent that the total annual employment of a male worker at the overall level was 208.77 days i.e. 57.20 per cent of the total days in a year. This means that the period of unemployment of an average male worker was 156.23 days i.e. 42.80 per cent. The period of employment of a male worker ranged from 182.41 days in village artisans to 219.88 days in small farmers in a year. The main source of employment for Agril. labourers was to work on others farm and it was to the extent of 72.96 per cent of the total employment. However it was lowest for village artisans to the extent of 7.16 per cent only. The own farm employment at the overall level was 57.70 days (27.64 per cent). The own farm employment was maximum i.e. 112.88 days in case of small farmers and minimum i.e. 75.89 days in case of marginal farmers. The employment from livestock production activity was 28.42 days i.e. 11.83 per cent of the total employment in small farmers and declined to 5.59 days i.e. 3.06 per cent in case of village artisans.

Table 5.6 Average annual employment of male workers of the sample families

(Number of days)

Sr. No.	Particulars	Small farmers	Marginal farmers	Agril. labourers	Village artisans	Overall
1.	Own farm	112.88	75.89	-	-	57.70
		(51.33)	(37.99)			(27.64)
2.	Other's farm	52.58	69.58	160.18	13.05	79.34
		(23.91)	(34.84)	(72.96)	(7.16)	(38.00)
3.	Livestock	28.42	23.42	6.75	5.59	17.53
		(12.93)	(11.73)	(3.07)	(3.06)	(8.40)
4.	Non farm	26.00	30.84	52.62	163.77	54.20
		(11.83)	(15.44)	(23.97)	(89.78)	(25.96)
5.	Total employment	219.88	199.73	219.55	182.41	208.77
		(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

(Figures in parentheses denote percentages to total employment)

The total non-farm employment ranged from 26.00 days in small farmers to 163.77 days in village artisans with an overall of 54.20 days. It is noted that the absolute non-farm employment of village artisans was maximum i.e. 89.78 per cent of the total employment days.

It is observed that the main source of employment for small and marginal farmers is farm employment, for agril. labourers it is other's farm work and for village artisans non-farm work. The average annual employment of a male worker is presented graphically in Fig. 2.

5.2.2 Average annual employment and un-employment position of the female worker

The farm and non-farm average annual employment position of an female worker belonging to the families of different categories is given in Table 5.7.

The total annual employment of a female worker at the overall level was 162.44 days i.e. 44.50 per cent of the total days in a year. The period of total employment of a female worker ranged from 138.86 days i.e. 38.04 per cent in marginal farmers to 195.09 days i.e. 53.44 per cent in agril. labourers. The period of unemployment therefore at the overall level, worked out to 202.56 days i.e. 55.50 per cent of the total days in a year.

Of the total employment of a female worker, the employment on other's farm contributes maximum i.e. 46.33 per cent.

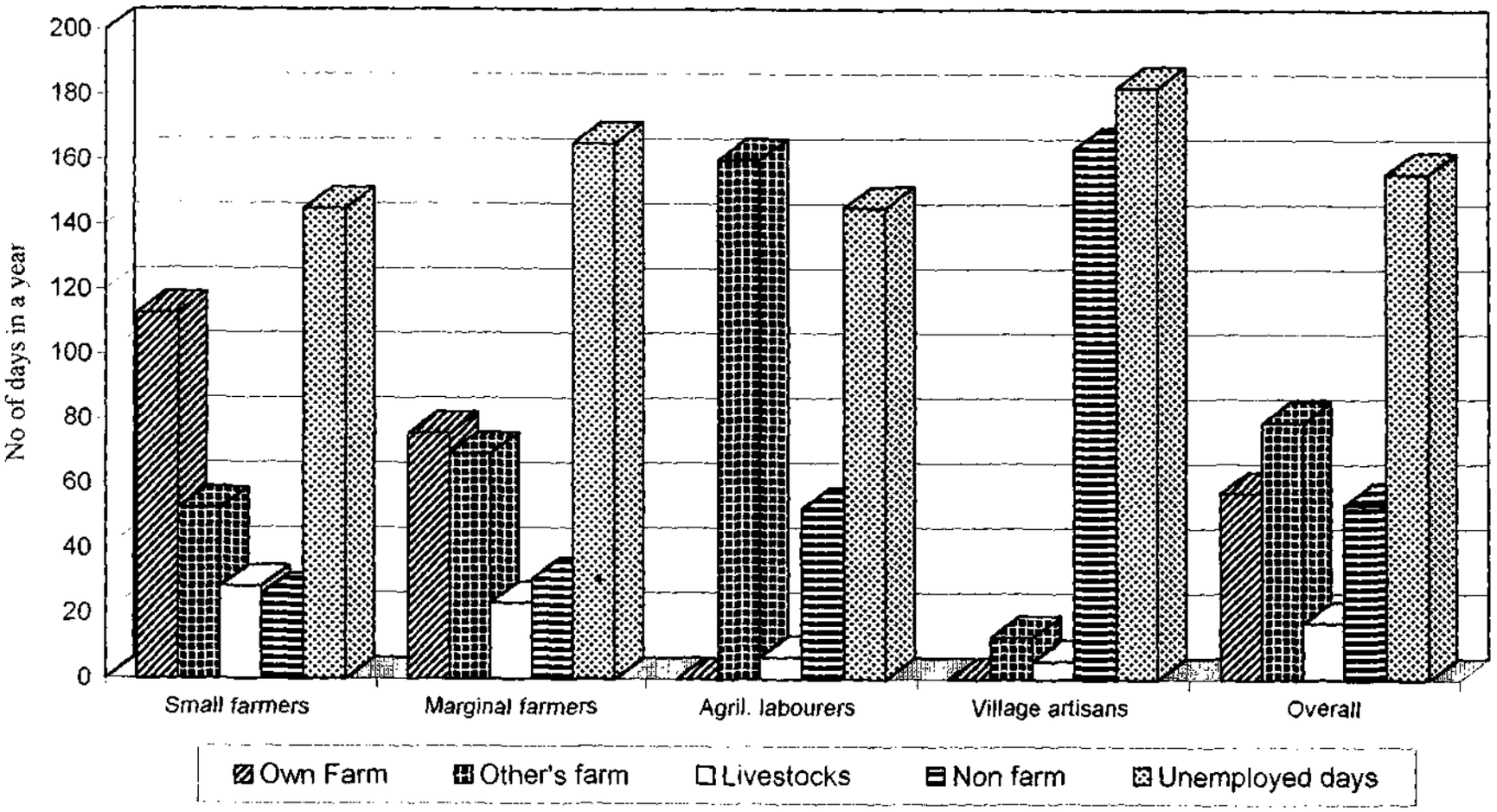


Fig. 2. Average annual employment of male workers

Table 5.7 Average annual employment of female workers of the sample families

(Number of days)

Sr. No.	Particulars	Small farmers	Marginal farmers	Agril. labourers	Village artisans	Overall
1.	Own farm	93.51	70.61	-	-	49.43
		(57.86)	(50.85)			(30.43)
2.	Other's farm	45.22	42.69	152.55	57.53	75.26
		(27.98)	(30.74)	(78.19)	(39.08)	(46.33)
3.	Livestock	12.88	8.78	6.80	5.41	9.10
		(7.97)	(6.32)	(3.49)	(3.68)	(5.60)
4.	Non farm	10.00	16.78	35.74	62.94	28.65
		(6.19)	(12.09)	(18.32)	(42.76)	(17.64)
5.	Total employment	161.61	138.86	195.09	147.18	162.44
		(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

(Figures in parentheses denote percentages to total employment)

The other's farm employment was maximum 152.55 days i.e. 78.19 per cent of the total employment in case of agril. labourers and minimum 45.22 days i.e. 27.98 per cent in case of small farmers. The own farm employment at the overall level was 49.43 days i.e .30.43 per cent in case of small and medium farmers. The own farm employment was maximum i.e. 93.51 days in case of small farmers and minimum i.e. 70.61 days in case of marginal farmers. The employment from livestock production activity was 12.88 days i.e. 7.97 per cent of the total employment in small farmers and was declined to 6.80 i.e. 3.49 per cent in case of agril. labourers.

The total non-farm employment ranged from 10.00 days in small farmers to 62.94 days in village artisans. It is noted that the absolute non farm employment of village artisans was maximum than any other group.

The females from small farmers and marginal farmers engaged more in farm activities while, females of agril. labourers and village artisans engaged in others farm and non-farm employment respectively. The average annual employment of a female worker is presented graphically in Fig. 3.

In the whole, it can be said that the annual total employment in case of an average male and female worker of sample families was 208.77 and 162.44 days i.e. 57.20 and 44.50 per cent of the total days in a year respectively. This means that the period of unemployment in respect of male and female worked out to 156.23

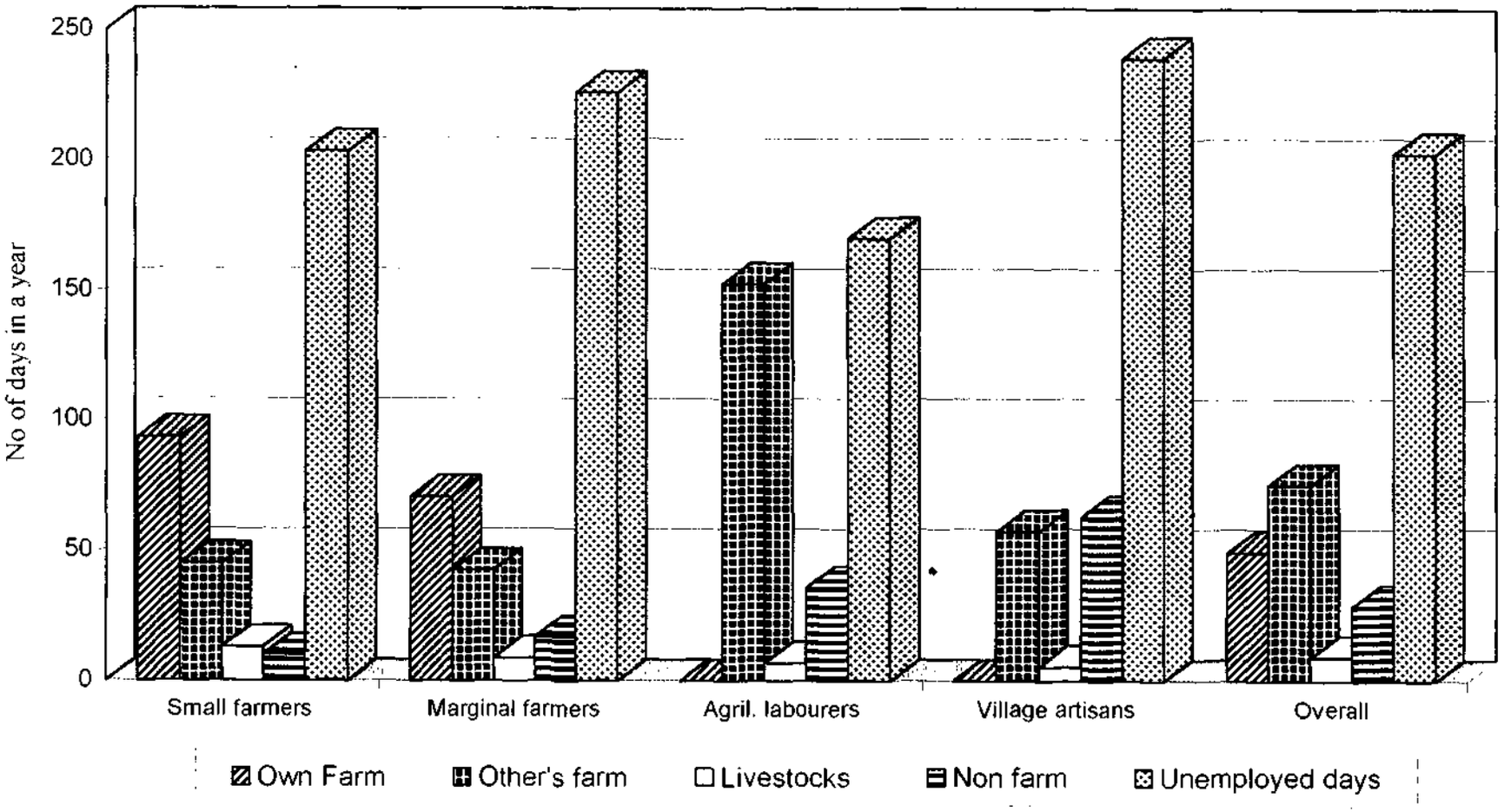


Fig. 3. Average annual employment of female workers

and 202.56 days respectively. It is also noted that the share of total own farm and others farm employment in respect of a male worker was 25.96 per cent while that of a female worker was 17.64 per cent of the total annual employment.

This has indicated that the farm activities were major source of employment of the sample families. The female workers are more engaged in farm activities as compared to the male workers.

5.2.3 Employment function of the sample families

A. Employment function for small farmers

The results of functional analysis of employment function for small farmers are presented in Table 5.8.

The regression coefficient of gross cropped area (X_1) was 195.95 which found to be significant at 1 per cent level. This means that increasing in gross cropped area by one hectare , other things held constant the gross family employment of the small farmers will increased by 195.95 days. The coefficient of (X_2) i.e. earners percentage to the adult units of family and the coefficient of (X_3) i.e. number of milch animals has turned out to be non-significant. The regression coefficient of (X_4) i.e. wage rate was 6.76 which found to be significant at 1 per cent level. This means that increase in wage rate by 1 unit will results into increase employment by 6.76 units for the family work force. The coefficient of capital base (X_2) turned out of be non significant.

Table 5.8. Employment function - Regression coefficient and their test of significance - Small farmers

Sr. No.	Independent variables	Unit	Regression coefficients	Standard error	`t' value
1.	Gross cropped area (X_1)	Hectares	195.95***	42.59	4.6
2.	Earners per family (X_2)	Percentage	-0.10 N.S.	0.81	-0.12
3.	Milch animals (X_3)	Number/ families	5.08 N.S.	13.36	0.38
4.	Wage rates (X_4)	Rupees	6.76**	0.55	12.26
5.	Capital assets (X_5)	Rupees	0.0009 N.S.	0.0018	0.502

n = 36; a = 736.85; R^2 = 0.82; `F' ratio = 27.33 ***

Where,

n = Sample size
a = Constant in the equation
R^2 = Co-efficient of multiple determination
* = Significant at 10 per cent level of significance
** = Significant at 5 per cent level of significance
*** = Significant at 1 per cent level of significance
N.S. = Non significant

The coefficient of multiple determination (R^2) was 0.82 which has indicated that the selected five independent variables have jointly explained 82 per cent variation in the gross family employment of the small farmers. The `F' ratio was 27.33 and observed to be highly significant at one *per cent* level indicating the overall significance of the fitted equation.

B. Employment function for marginal farmers

The results of functional analysis of employment function for marginal farmers are presented in Table 5.9.

The regression coefficient of gross cropped area (X_1) has turned out be non-significant. The coefficient of (X_2) i.e. earners percentage to the adult units was 0.69 which found to be significant at 10 per cent level. This means that increasing in earners per family results into increased employment for the family work force. The coefficient of (X_3) i.e. number of milch animals has turned out to be non-significant. The regression coefficient of (X_4) i.e. wage rate was 4.54 which found to be significant at 1 per cent level. This means that increase in wage rate results into increased employment for the family work force. The coefficient of capital base (X_5) turned out to be non-significant.

The coefficient of multiple determination (R^2) was 0.60 which has indicated that the selected five independent variables have jointly explained 60 per cent variation in the gross family employment of the marginal farmers. The `F' ratio was 9.23 and

Table 5.9. Employment function - Regression coefficient and their test of significance - Marginal farmers

Sr. No.	Independent variables	Unit	Regression coefficients	Standard error	`t' value
1.	Gross cropped area (X_1)	Hectares	-101.73 NS	84.22	-1.21
2.	Earners per family (X_2)	Percentage	0.69*	0.39	1.74
3.	Milch animals (X_3)	Number/ families	0.49 NS	25.1	0.019
4.	Wage rates (X_4)	Rupees	4.54***	0.75	6.03
5.	Capital assets (X_5)	Rupees	0.007 NS	0.05	1.25

n = 36; a = 592.76; R^2 = 0.60; `F' ratio = 9.23 ***

observed to be significant at 1 per cent level indicating the overall significance of the fitted equation.

C. Employment function for agril. labourers

The results of functional analysis of employment function for agril. labourers are presented in Table 5.10.

The regression coefficient of (X_1) earners percentage to the adult units was 1.26 which found to be significant at 10 per cent level. This means that increase in one unit of earners will result into increase in employment by 1.26 for the family work force. The coefficient of (X_2) i.e. number of milch animals has turned out to be non-significant. The regression coefficient of (X_3) i.e. wage rate was 10.49 which found to be significant at 10 per cent level. This means, increasing in wage rate results into increased employment for the family work force. The coefficient of capital base (X_4) turned out to be non-significant.

The coefficient of multiple determination (R^2) was 0.64 which has indicated that the selected four independent variables have jointly explained 64 per cent variation in the gross family employment of the agril. labourers. The `F' ratio was 13.33 and observed to be significant at 1 per cent level indicating the overall significance of fitted equation.

D. Employment function for village artisans

The results of functional analysis of employment functions for village artisans are presented in Table 5.11.

Table 5.10. Employment function - Regression coefficient and their test of significance - Agril. labourers

Sr. No.	Independent variables	Unit	Regression coefficients	Standard error	`t' value
1.	Earners per family (X_1)	Percentage	1.26*	0.69	1.82
2.	Milch animals (X_2)	Number/ family	-57.54 NS	83.34	-0.65
3.	Wage rates (X_3)	Rupees	10.49***	3.05	3.43
4.	Capital assets (X_4)	Rupees	0.031 NS	0.03	1.08

n = 36; a = 674.21; R^2 = 0.64; `F' ratio = 13.33 ***

Table 5.11. Employment function - Regression coefficient and their test of significance - Village artisans

Sr. No.	Independent variables	Unit	Regression coefficients	Standard error	`t' value
1.	Earners per family (X_1)	Percentage	1.94***	0.78	2.48
2.	Milch animals (X_2)	Number/ family	54.75 NS	102.26	0.54
3.	Wage rates (X_3)	Rupees	6.05**	2.95	2.05
4.	Capital assets (X_4)	Rupees	-0.001 NS	0.017	-0.09

n = 36; a = 586.62; R^2 = 0.62; `F' ratio = 5.51 ***

The regression coefficient of (X_1) earners percentage to the adult units was 1.94 which found to be significant at 1 per cent level. This means increasing in earners per family results into increased employment for the family work force. The coefficient of (X_2) i.e. number of milch animals has turned out to be non-significant. The regression coefficient of (X_3) i.e. wage rate was 6.05 which found to be significant at 5 % level. This means, increasing in wage rate results into increased employment for the family work force. The coefficient of capital base (X_4) turned out to be non-significant.

The coefficient of multiple determination (R^2) was 0.62 which has indicated that the selected four independent variables have jointly explained 62 per cent variation in the gross family employment of the village artisans. The `F' ratio was 5.51 and observed to be significant.

5.3 Average total annual income of sample families

The details of per family annual income from various sources are presented in Table 5.12.

The main items of the total annual income of the families were income from crop production, livestock production, wage earnings and income from other sources including business and service.

It is seen that the average total annual income from different sources was Rs. 32819, Rs. 20464, Rs. 14368 and Rs. 15199 in

Table 5.12 Sourcewise per family annual income of sample families

(Rupees)

Sr. No.	Particulars	Small farmers	Marginal farmers	Agril. labourers	Village artisans	Overall
1.	Crop production	21628	11658	-	-	9510
		(65.90)	(56.97)			(44.23)
2.	Livestock	5583	1839	993	826	2522
		(17.01)	(8.99)	(6.91)	(5.44)	(11.73)
3.	Wage earnings	4191	4243	12889	3510	6594
		(12.77)	(20.73)	(89.71)	(23.09)	(30.67)
4.	Business and service	1417	2724	486	10863	2874
		(4.32)	(13.31)	(3.38)	(71.47)	(13.37)
5.	Total	32819	20464	14368	15199	21500
		(100.00)	(100.00)	(100.00)	(100.00)	(100.00)
6.	Per earner	12972	9095	6652	7037	9513
7.	Per capita	6100	4498	3565	3340	4634

(Figures in parentheses denote percentages to total)

case of small farmers, marginal farmers, agril. labourers and village artisans respectively. However it was Rs. 21500 at overall level. The average total annual family income was more in small farmers followed by marginal farmers village artisans and agril. labourers.

It is observed that, the income from wage earnings accounts for 30.67 per cent of the total income at overall level. The wage income contributes for larger share to the extent of 89.71 per cent in case of agril. labourers. However, it was lowest for small farmers.

The next important source of income of the sample families was the business and services which on an average provided the income Rs. 2874 i.e. 13.37 per cent of the total family income. The income from business and services was maximum to the extent of Rs. 10863 i.e. 71.47 per cent in case village artisans. While, it was minimum to Rs. 486 i.e. 3.38 per cent in case of agril. labourers.

The income from crop production accounted for 65.90 per cent in small farmers and 59.97 per cent in marginal farmers, which was the major source for both the categories. At the overall level, crop production income was Rs. 9510 i.e. 44.23 per cent of the total annual income. It is also noted that crop production income increases with an increase in farm size. The income from livestock was relatively more in small farmers followed by marginal farmers agril. labourers and village artisans. At the overall level the income from

livestock was Rs. 2522 i.e. 11.73 per cent of the total annual family income.

Per capita income worked out to Rs. 4634 at the overall level. It ranged from Rs. 3340 in village artisans to Rs. 6100 in small farmers. In short, it is concluded that the major source income for the marginal farmers and small farmers was from crop production and livestock activities, while for agril. labourers it was wage earning and for village artisans it was from business. The average total annual income from different sources of the sample family is presented graphically in Fig. 4.

5.3.1 Income function of the sample families

A. Income function for small farmers

The results of functional analysis of income function for small farmers are presented in Table 5.13.

The coefficient of multiple determination (R^2) suggests that the selected five independent variables have jointly explained 67 per cent of variation in the total annual family income of small farmers. The sign and magnitude of coefficients of gross cropped area in ha (X_1), employment in man days (X_2), cash crops area (percentage to GCA) (X_3), number of milch animals (X_5) are proper and appropriate. However, only one factor viz., earners percentage to adult units (X_3) turned out to be non-significant. Regression coefficient of X_1 indicates that on an average gross cropped area of one hectare added Rs. 12258.5 in annual family income. Regression

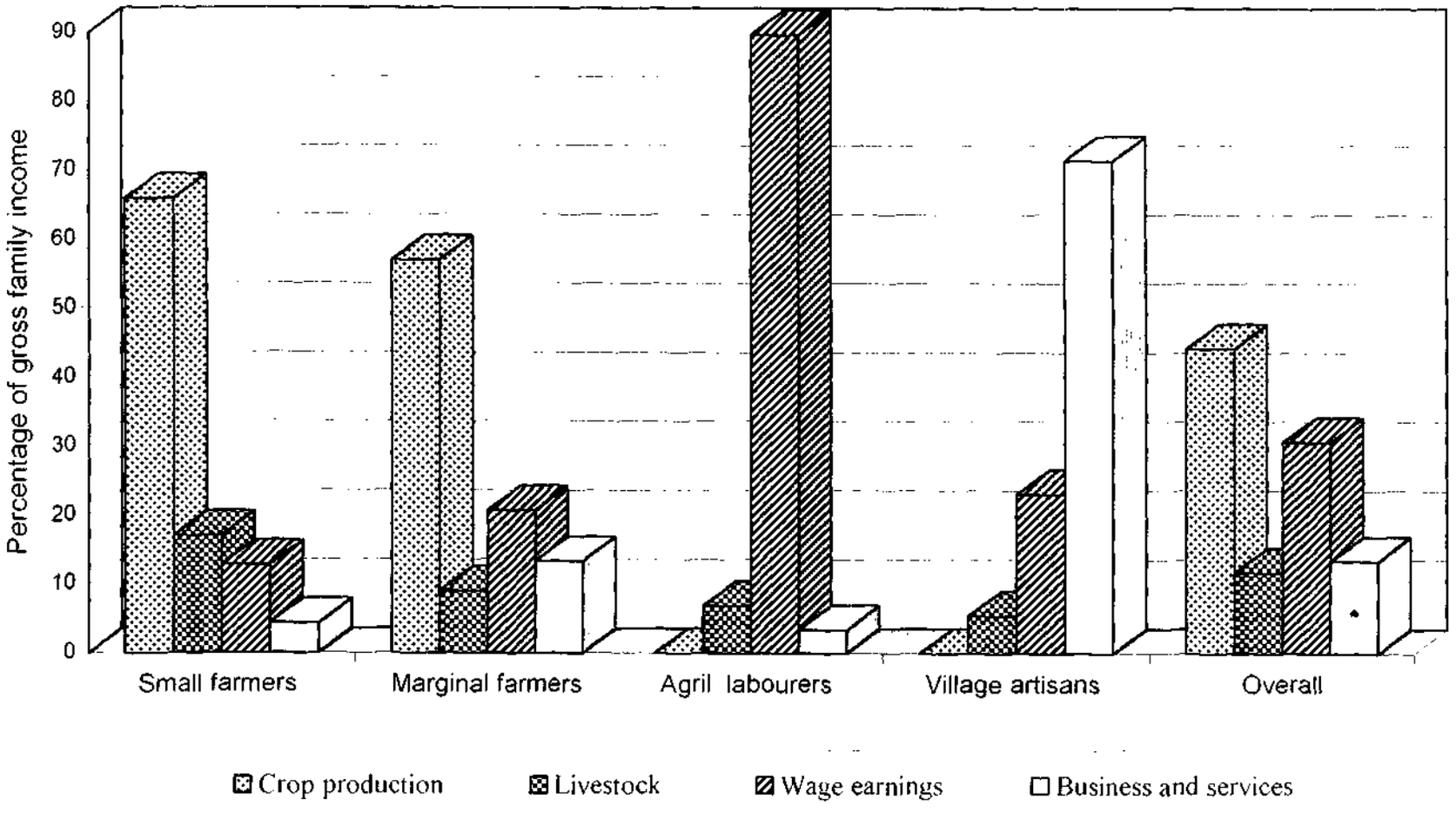


Fig. 4. Average annual gross family income from different sources

Table 5.13. Income function - Regression coefficient and their test of significance - Small farmers

Sr. No.	Independent variables	Unit	Regression coefficients	Standard error	`t' value
1.	Gross cropped area (X_1)	Hectares	12258.5***	2111.80	5.80
2.	Employment in man days (X_2)	Days	12.39***	3.79	3.27
3.	Earners per family (X_3)	Percentage	-47.77 NS	41.83	-1.14
4.	Cash crop Area (X_4)	Percentage	324.33*	177.13	1.83
5.	Milch animals (X_5)	Numbers/ family	1076.95*	587.04	1.83

n = 36; a = 10523.18; R^2 = 0.67; `F' ratio = 12.18 ***

coefficient of X_2 indicates that on an average employment of one man day added Rs. 12.39 in the total income. The regression coefficient of cash crop percentage to total gross cropped area (X_4) is 324.33. It implies that the family income increases by Rs. 324.33 if an additional unit increased in cash crops. Regression coefficients of X_5 indicates that on an average one number of milch animals increases Rs. 1076.95 in the total income.

The estimated `F' ratio was 12.18 and observed to be significant at 1 per cent level indicating the overall significance of fitted equation.

B. Income function for marginal farmers

The results of functional analysis of income function for marginal farmers are presented in Table 5.14.

The coefficient of gross cropped area (X_1) was 3288.44 and found to be significant at 10 per cent level. It means that an increase in gross cropped area by one hectare, the other factors being held constant, the total family income would increase by Rs. 3288.44 annually. The value of coefficient of gross employment in man days (X_2) was 14.49 and observed to be significant at 5 per cent level. This means, the total annual family income will increase by Rs. 14.49 if additional gross employment of one man day is provided to the sample families. However, coefficient (X_3) earness percentage to adult unit and coefficient (X_4) cash crops percentage to gross cropped area and (X_5) number of milch animals turned out to be non-significant.

Table 5.14. Income function - Regression coefficient and their test of significance - Marginal farmers

Sr. No.	Independent variables	Unit	Regression coefficients	Standard error	`t' value
1.	Gross cropped area (X_1)	Hectares	3288.44*	1687.98	1.94
2.	Employment in man days (X_2)	Days	14.49**	6.46	2.24
3.	Earners per family (X_3)	Percentage	21.90 NS	21.70	0.69
4.	Cash crop Area (X_4)	Percentage	-35.13 NS	201.46	-0.17
5.	Milch animals (X_5)	Numbers/ family	-141.28 NS	1267.55	-0.11

n = 36; a = 12777.31; R^2 = 0.60; `F' ratio = 9.23 ***

The coefficient of multiple determination (R^2) was 0.60 which has indicated that the selected five independent variables have jointly explained 60 per cent variation in the total annual family income of the marginal farmers. The `F' ratio was 9.23 and observed to be significant at 1 per cent level indicating the overall significance.

C. Income function of agril. labourers

The results of functional analysis of income function for agril. labourers are presented in Table 5.15.

The coefficient of variable gross employment in man days (X_1) was 32.25 and observed to be significant at 1 per cent level. This means that the total annual family income will increase by Rs. 32.25 if additional gross employment of one man day is provided to the sample families. Regression coefficient of X_3 indicates on an average one milch animal increases family income by Rs. 1472.34 and it is significant at 1 per cent level. However, only one factor viz., earners percentage to adult unit (X_2) turned out to be non-significant.

The coefficient of multiple determination (R^2) was 0.71 which has indicated that the selected three independent variables have jointly explained 71 per cent variation in the total annual family income of agril. labourers. The `F' ratio was 26.22 and observed to be significant at 1 per cent level indicating the overall significance.

D. Income function of village artisans

The results of functional analysis of income function for village artisans are presented in Table 5.16.

Table 5.15. Income function - Regression coefficient and their test of significance - Agril. Labourers

Sr. No.	Independent variables	Unit	Regression coefficients	Standard error	`t' value
1.	Employment in man Days (X_1)	Days	32.25***	1.90	16.95
2.	Earners per family (X_2)	Percentage	2.70 NS	12.31	0.22
3.	Milch animals (X_3)	Numbers/ family	1472.34***	560.33	2.63

n = 36; a = 1812.58; R^2 = 0.71; `F' ratio = 26.22 ***

Table 5.16. Income function - Regression coefficient and their test of significance - Village artisans

Sr. No.	Independent variables	Unit	Regression coefficients	Standard error	`t' value
1.	Employment in man Days (X_1)	Days	41.65***	3.52	11.82
2.	Earners per family (X_2)	Percentage	6.13 NS	21.71	0.28
3.	Milch animals (X_3)	Numbers/ family	2635.32***	971.03	3.02

n = 18; a = 904.76; R^2 = 0.72; `F' ratio = 12.00 ***

The coefficient of variable gross employment in man days (X_1) was 41.65 and observed to be significant at 1 per cent level. This means the total family income will increase by Rs. 41.65 when additional gross employment of one man day is provided to the sample families. Regression coefficient of X_3 indicates on an average one milch animal increases family income by Rs. 2935.32 and it is significant at 1 per cent level. However, only one factor viz., earners percentage to adult units (X_2) turned out to be non-significant.

The coefficient of multiple determination (R^2) was 0.72. The `F' ratio was 12.00 and observed to be significant at 1 per cent level indicating the overall significance.

5.4 Average annual expenditure pattern of sample families

The details of the expenditure incurred by the sample families on different items of expenditure such as crop production family consumption expenditure on livestock, business expenditure and repayment of loan etc. are given in Table 5.17.

It is seen that total annual expenditure incurred on various items was worked out to Rs. 21887 at the overall level. Total expenditure was Rs. 32953, Rs. 20806, Rs. 14817 and Rs. 16056 in case of small farmers, marginal farmers, agril. labourers and village artisans respectively. At the overall level, out of the total expenditure the maximum share was contributed by the family consumption expenditure (70.25 per cent) followed by crop production

Table 5.17 Average expenditure pattern of the sample families

(Rupees)

Sr. No.	Particulars	Small farmers	Marginal farmers	Agril. labourers	Village artisans	Overall
1.	Crop production	8795	3692	-	-	3568
		(26.69)	(17.75)			(16.30)
2.	Livestock	3850	1017	376	153	1520
	maintenance	(11.68)	(4.89)	(2.54)	(0.95)	(6.95)
3.	Family	18611	15303	13570	12664	15376
	consumption	(56.48)	(75.55)	(91.58)	(78.87)	(70.25)
4.	Business expenditure	433	169	56	3100	631
		(1.31)	(0.81)	(0.38)	(19.31)	(2.88)
5.	Repayment of	1264	625	815	139	792
	loans	(3.84)	(3.00)	(5.50)	(0.87)	(3.62)
6.	Total expenditure	32953	20806	14817	16056	21887
		(100.00)	(100.00)	(100.00)	(100.00)	(100.00)
7.	Per capita	6125	4573	3677	3529	4117

(Figures in parentheses denote percentages to total expenditure)

expenditure (16.30 per cent) and livestock maintenance expenditure (6.95 per cent).

Almost in different categories of households the expenditure incurred on different items showed the dismal picture. In all the categories family consumption expenditure share was maximum. In case of small and marginal farmers, crop production expenditure and livestock maintenance expenditure was the highest as compared to other categories. In case of village artisans business expenditure ranks second after family expenditure and it was Rs. 3100 (19.31 per cent) of the total annual expenditure. The expenditure on repayment of loan was higher in case of agril. labourers i.e. 5.5 per cent than any other category.

The per capita total expenditure incurred at the overall level was worked out to Rs. 4117. The per capita expenditure was observed to be highest in small farmers and lowest in case of village artisans.

5.5 Average family consumption expenditure of sample families

The details regarding per family average annual consumption expenditure on different items according to different categories can be seen in Table 5.18. It is noted that the average total annual consumption expenditure on different items at the overall level was Rs. 15376. The average annual family consumption of the sample families ranged from Rs. 12664 in village artisan to Rs. 18611

Table 5.18 Average consumption expenditure of the sample families

(Rupees)

Sr. No.	Particulars	Small farmers	Marginal farmers	Agril. labourers	Village artisans	Overall
1.	Cereals	6846	5805	6293	5838	6246
		(36.78)	(37.92)	(46.37)	(46.11)	(40.62)
2.	Pulses	1483	1190	1142	1033	1238
		(7.97)	(7.78)	(8.42)	(8.16)	(8.05)
3.	Protective food	3698	2762	2286	2244	2819
		(19.87)	(18.05)	(16.84)	(17.72)	(18.34)
I.	Total food	12027	9755	9721	9115	10303
	(1+2+3)	(64.62)	(63.75)	(71.63)	(71.98)	(67.01)
4.	Clothing	2907	2540	1685	1486	2250
		(15.62)	(16.60)	(12.42)	(11.73)	(14.63)
5.	Fuel and light	1140	877	723	634	873
		(6.12)	(5.73)	(5.33)	(5.01)	(5.68)
6.	Medicine	366	353	290	317	333
		(1.97)	(2.31)	(2.14)	(2.50)	(2.17)
7.	Education	260	211	100	110	179
		(1.40)	(1.37)	(0.74)	(0.87)	(1.16)
8.	Travelling	575	525	289	272	436
		(3.09)	(3.43)	(2.13)	(2.15)	(2.84)
9.	Food ware	314	240	142	125	217
		(1.69)	(1.57)	(1.04)	(0.99)	(1.41)
10.	Home cess	154	127	92	85	119
		(0.83)	(0.83)	(0.68)	(0.67)	(0.77)
11.	Social functions	410	306	169	170	277
	and festivals	(2.20)	(2.00)	(1.24)	(1.34)	(1.80)
12.	Narcotics and	458	369	359	350	389
	beverages	(2.46)	(2.41)	(2.65)	(2.76)	(2.53)
II.	Total non food	6584	5548	3849	3549	5073
		(35.38)	(36.25)	(28.37)	(28.02)	(32.99)
III.	Total	18611	15303	13570	12664	15376
	expenditure	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)
13.	Per capita consumption expenditure	3459	3363	3367	2783	3314

(Figures in parentheses denote percentage to total expenditure)

in small farmers. It is also noted that the per family average annual family consumption was more in small farmers followed by marginal farmers, agril. labourers and village artisans. However, the average annual family consumption per capita was Rs. 3314 at overall level and its maximum in case of small farmers and minimum in case of village artisans.

At the overall level the expenditure on cereals such as jowar, bajara and wheat was Rs. 6246 shared 40.62 per cent of the total annual family consumption. It was observed that consumption of cereals was maximum in case of agril. labourers and village artisans i.e. 46.37 and 46.11 per cent. The expenditure on pulses was Rs. 1033 in village artisans which increased to Rs. 1483 in small farmers. At the overall level average of Rs. 1238 i.e. 8.05 per cent of the total annual family expenditure.

After cereals the next important item of food was the protective food which includes the vegetables, fruits, milk, meat, jaggery, sugar and spices which shared 18.34 per cent of the total consumption expenditure at the overall level. The proportion of expenditure on protective food was 16.84 per cent in agril. labourers to 19.87 per cent in small farmers. The expenditure on protective food on an average was Rs. 2819 (18.34 per cent) of the total family expenditure.

The expenditure on total food items on an average worked out to Rs. 10303 i.e. 67.01 per cent of the total family

consumption expenditure. The proportion of expenditure on total food varied from 63.75 per cent in the case of marginal farmers to 71.98 per cent in village artisans have more expenses on food items as compared to small and marginal farmers. It is also clear that quite a considerable part of total expenditure (67.01 per cent) is spent on food in case of an average families.

Among the other items, the expenditure on clothing at the overall level was Rs. 2250 (14.63 percent), which was the highest followed by fuel and light (5.68 per cent), travelling (2.84 per cent) consumption of narcotics and beverages (2.53 per cent), medicine (2.17) per cent and expenditure on social functions and festivals (1.80 per cent).

It is important to note that the expenditure on education was only Rs. 100 i.e. 0.74 per cent in agril. labourers which increased to Rs. 260 i.e. 1.40 per cent in small farmers. During the survey it is observed that the facility of primary education has been extended free of cost by Zilla Parishad in area under study. In some villages secondary education facilities were also available. It is because of these reasons that the expenditure on education was low. Proportion of higher education is not observed in village artisans and agril. labourers because of the expenditure on such education is very high.

It is noticed that the per family expenditure on narcotics and beverages varied from Rs. 350 in village artisan to Rs. 458 in small farmers. According to per cent expense, village artisans and

agril. labourers spend more amount on narcotics and beverages i.e. 2.76 and 2.65 per cent respectively. It is seen that both adult males and females were by and large, found to be habituated with chewing of tobacco. Smoking of tobacco and drinking of beverages, especially during the night hours. The extra-vagent expenditure is more in case of agril. labourers and village artisans. The share in percentage of different items in the total annual family expenditure of an average sample families is graphically presented in Fig. 5.

To conclude it can be said that the cereals was the major item of food followed by vegetables, sugar and jaggery, milk, pulses and eggs, fish and meat etc., in the daily food basket of sample families.

Functional analysis was undertaken to know the factors and their contribution in influencing the expenditure of sample families.

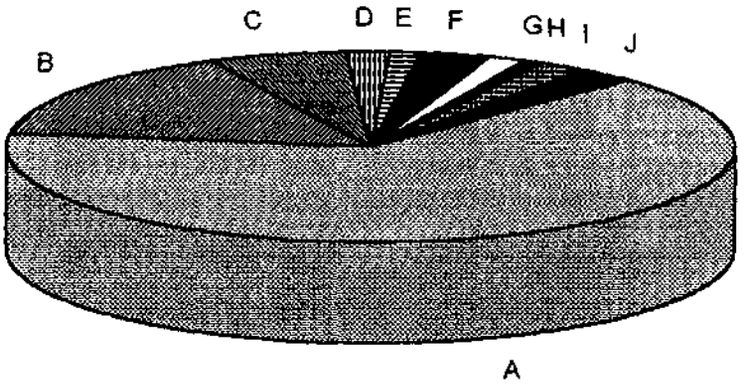
5.5.1 Expenditure function of the sample families

A. Expenditure function for small farmers

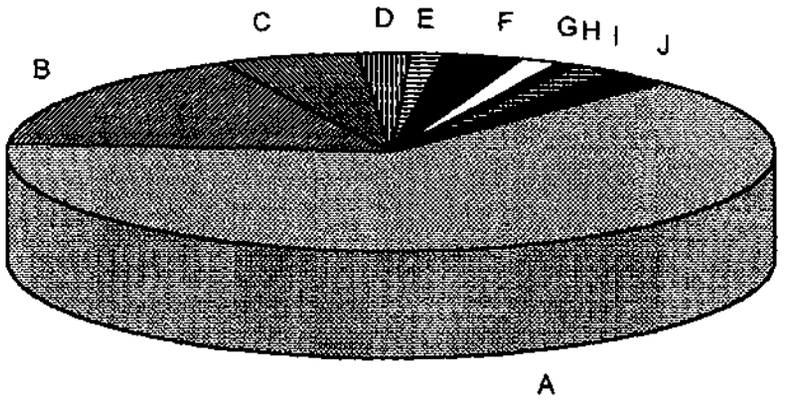
The results of functional analysis of expenditure function for small farmers are presented in Table 5.19.

The regression coefficient of variable X_2 and X_3 representing average family size and capital assets were found to be significant at 10 per cent level. The value of R^2 has explained 65 per cent variation in the dependent variable. It is concluded that if family size increases by one adult unit the annual expenditure of a family

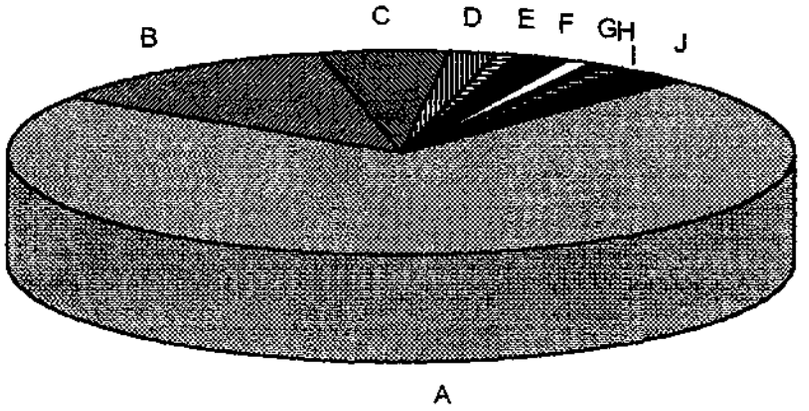
SMALL FARMERS



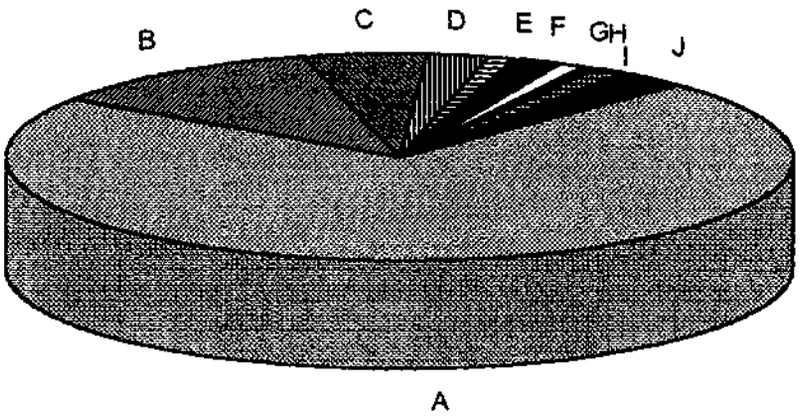
MARGINAL FARMERS



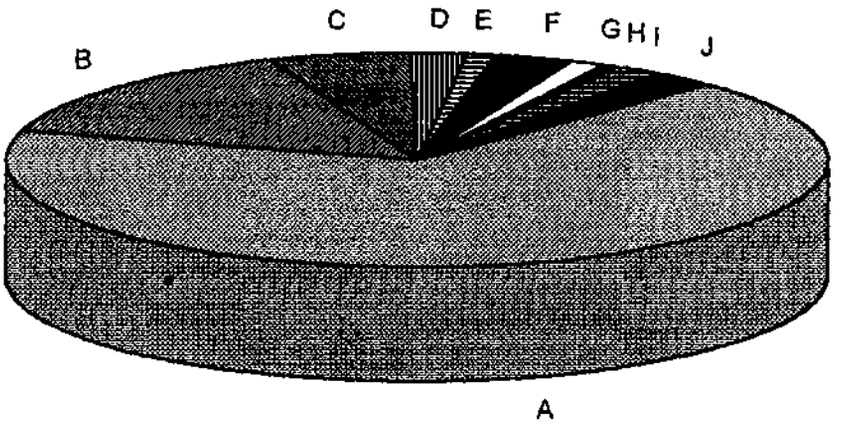
AGRIL. LABOURERS



VILLAGE ARTISANS



OVERALL



A. Total food B. Clothing C. Fuel and light D. Medicine
E. Education F. Travelling G. Foot-ware H. Home-cess
I. Social functional and festivals J. Narcotics and beverages

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

Table 5.19. Expenditure function - Regression coefficient and their test of significance - Small farmers

Sr. No.	Independent variables	Unit	Regression coefficients	Standard error	`t' value
1.	Gross income of family (X_1)	Rupees/ Family	0.18 NS	0.15	1.20
2.	Family size (X_2)	Adult units/ family	704.29*	370.52	1.90
3.	Capital assets (X_3)	Rupees	0.049*	0.028	1.78
4.	Gross cropped area (X_4)	Hectares	77.80 NS	2638.11	0.03

n = 36; a = 20977.69; R^2 = 0.65; `F' ratio = 14.73 ***

inclined by Rs. 704.29. The value of fixed capital assets has positive impact on the expenditure pattern of small farmers, as can be seen from the significance level of regression coefficients. However, factors viz., annual income (X_1) and gross cropped area (X_4) turned out to be non-significant.

The estimated `F' ratio was 14.73 and observed to be significant at one per cent level.

B. Expenditure function for marginal farmers

The results of functional analysis of expenditure function for marginal farmers are presented in Table 5.20.

The regression coefficient of variable annual income (X_1) is significant at 10 per cent level and it indicates that large proportion (0.100) of the increase in income would go for expenditure because of addition in family size by an adult unit is only Rs. 658.78 per annum. However, variables viz., fixed capital assets (X_3) and gross cropped area turned out to be non-significant. The regression coefficients of all the independent variables were positive indicating that they have positive influence on the expenditure of the marginal farmers.

The estimated `F' ratio is significant at 1 per cent level indicating the significance of the fitted equation.

C. Expenditure function for Agril. labourers

The results of functional analysis of expenditure function for agril. labourers are presented in Table 5.21.

Table 5.20. Expenditure function - Regression coefficient and their test of significance - Marginal farmers

Sr. No.	Independent variables	Unit	Regression coefficients	Standard error	`t' value
1.	Gross income of family (X_1)	Rupees/ Family	0.100*	0.051	1.96
2.	Family size (X_2)	Adult units/ family	658.78***	190.95	3.45
3.	Capital assets (X_3)	Rupees	0.005 NS	0.042	0.11
4.	Gross cropped area (X_4)	Hectares	19.92 NS	1488.14	0.013

n = 36; a = 15955.92; R^2 = 0.59; `F' ratio = 11.31 ***

Table 5.21. Expenditure function - Regression coefficient and their test of significance - Agril. labourers

Sr. No.	Independent variables	Unit	Regression coefficients	Standard error	`t' value
1.	Gross income of family (X_1)	Rupees/ Family	0.28 ***	0.05	5.68
2.	Family size (X_2)	Adult units/ family	921.81***	185.78	4.96
3.	Capital assets (X_3)	Rupees	0.070 NS	0.045	1.57

n = 36; a = 6565.86; R^2 = 0.79; `F' ratio = 43.83 ***

The value of R^2 is 0.79, indicating 79 per cent variation explained by the factors under consideration. The regression coefficient of variable X_1 and X_2 representing average annual gross family income and family size respectively were found to be significant at 1 per cent level. If income of family increases by Rs. 1, the expenditure would only Rs. 0.28. With regard to family size, if it increases by one adult unit the expenditure of a family inclined by Rs. 921.81. Very interestingly capital assets have no influence on the expenditure of agril. labourers.

The estimated `F' ratio is 43.83 and observed to be significant at 1 per cent level.

D. Expenditure function for village artisans

The results of functional analysis of expenditure function for village artisans are presented in Table 5.22.

It is seen that the coefficient of family income (X_1) is 0.45 found to be significant at 1 per cent level. This means, the other things being held constant, the increase of total annual family income by one rupee the expenditure of village artisans increases by Rs. 0.45 only. The coefficient of family size (X_2) and capital assets (X_3) have turned out to be non-significant. This indicates that, family size and capital assets have no significant influence on expenditure pattern of village artisans.

The coefficient of multiple determination (R^2) suggests that the selected three independent variables have jointly explained

Table 5.22. Expenditure function - Regression coefficient and their test of significance - Village artisans

Sr. No.	Independent variables	Unit	Regression coefficients	Standard error	`t' value
1.	Gross income of family (X_1)	Rupees/ Family	0.45***	0.10	4.36
2.	Family size (X_2)	Adult units/ family	472.85 NS	359.78	1.31
3.	Capital assets (X_3)	Rupees	-0.05 NS	0.102	-0.527

n = 18; a = 8816.32; R^2 = 0.82; `F' ratio = 22.75 ***

82 per cent of variation in the annual gross family expenditure. The estimated `F' ratio is also significant at 1 per cent level.

5.6 Indebtedness of sample families

The details of per family borrowing and repayment of the sample families are depicted in Table 5.23.

It was observed from the table that at overall level the 53.44 percentage of outstanding loan was more than the repayment of loan i.e. 46.56 per cent, indicating there by the low capacity of repayment. The highest percentage of outstanding loan was observed in case of agril. labourers to the extent of 59.25 per cent. The small farmers were more responsive towards the repayment of loan as compared with the other families. At overall level, the average per family loan received was Rs. 1701 and it was obvious that the small farmers could receive more amount of loan as the resources with them were more. The major portion of income were utilized for consumption purpose resulting into the indebtedness of the sample families.

5.7 Per family and per capita income expenditure of sample families

Per family and per capita net surplus or deficit was worked out by deducting per family and per capita expenditure from the per family and per capita income respectively. The details of the same are presented in Table 5.24.

Table 5.23 Average borrowings and repayment of loans by the sample families

(Rupees)

Sr. No.	Particulars	Small farmers	Marginal farmers	Agril. labourers	Village artisans	Overall
1.	Amount of loan taken	2309 (100.00)	1475 (100.00)	2000 (100.00)	340 (100.00)	1701 (100.00)
2.	Amount repaid during the year	1264 (54.74)	625 (42.37)	815 (40.75)	139 (39.71)	792 (46.56)
3.	Amount outstanding during the year	1045 (45.26)	850 (57.63)	1185 (59.25)	201 (59.12)	909 (53.44)

(Figures in the parentheses denote percentage to total loan)

Table 5.24 Average income and expenditure of the sample families

(Rupees/annum)

Sr. No.	Particulars	Small farmers	Marginal farmers	Agril. labourers	Village artisans	Overall
1.	Total Family income	32819	20464	14368	15199	21500
2.	Total family expenditure	32953	20806	14817	16056	21887
3.	Family surplus (+) or deficit (-) income	-134	-342	-449	-857	-387
4.	Per capita surplus (+) or deficit income	-25	-75	-111	-188	-83

It is observed from the table 5.24 that, family budget was in deficient in all the categories of the sample families. For instance, the deficit in the income in case of small farmers, marginal farmers, agril. labourers and village artisans was Rs. 134, 342, 449 and Rs. 857 respectively. The deficit in the family income in relation to expenditure at the overall level was Rs. 387.

It is noted that the family deficient income was maximum in village artisans followed by agril. labourers, marginal farmers and small farmers. The per capita deficit income ranged from Rs. 25 to Rs. 188 in case of small farmers to village artisans with an overall average Rs. 83 in sample families. This has clearly indicated that the sample families could not accommodate their expenditure with in the limits of their income. In other words, it seems that the sample families had to depend on some external assistance especially through borrowings from private as well as institutional agencies to some extent for maintaining their expenditure.

5.8 Testing of Hypothesis

It is observed that hypothesis formulated for the study are proved to be significant at some extent. The position of farm and non-farm employment of sample families is different. The non-farm employment is more in village artisans followed by agricultural labourers. The problem of unemployment is severe in all the families. Income of agril. labourers and village artisans are lower than small and marginal farmers. All the families of scarcity region are having problem of indebtedness

SUMMARY AND CONCLUSIONS

6. SUMMARY AND CONCLUSIONS

The basic objectives of the study were to examine the employment income and consumption pattern of the sample families. The study was undertaken in scarcity region of Satara district. Drought prone tahsils viz., Khatav, Man and Khandala were selected for the study. Total nine villages selected randomly, three from each tahsil having paisewari below 60 paise. From each village, four small farmers (1-2 ha), four marginal farmers (0-1 ha), four agricultural labourers and two village artisans selected were randomly. Thus the total number of 126 sample families including 36 small farmers, 36 marginal farmers, 36 agril. labourers and 18 village artisans formed the ultimate sampling unit. The data on relevant aspects were obtained personally with the help of a specially designed questionnaire for the agricultural year 1997-98. The data so collected from the sample families were analysed by adopting tabular and regression analysis techniques.

6.1 Summary

The important findings of the present investigation have been briefly summarised as below.

1. At the overall level, average size of family was 4.64 persons per family. While, it was 4.03 persons in case of agricultural labourers and 5.38 in case of small farmers. Out of 4.64 persons per family at overall level, there were 39.01 per cent men, 32.57 per cent women and 28.02 per cent children per family.

2. At the overall level, average earners of the family were to the extent of 48.70 per cent. Average earners percentage were maximum in case of agril. labourers and minimum in case of small farmers.
3. The average number of livestock was 1.61 per family at overall level, while it was maximum i.e. 2.61 in case of small farmers and minimum i.e. 0.72 in case of village artisans. The number of goats and sheep were higher in agril. labourers, while the number of milch animals were maximum in case of small farmers followed by marginal farmers.
4. The average size of holding, possessed by the small and marginal farmers was 1.42 hectares and 0.56 hectares, respectively. At the overall level, net sown area were to the extent of 80.81 per cent of the total holding. The gross cropped area at the overall level was 0.93 hectares. Dry land agriculture was the main feature of the sample families in the region.
5. Cropping pattern was dominated by cereals, ranging from 74.07 per cent in marginal farmers to 78.19 per cent in small farmers with an overall average of 77.42 per cent. Total food grains occupied 89.24 per cent of the gross cropped area. The area under oilseeds and vegetables was relatively low.
6. The values of the capital assets per family possessed by the sample families was Rs. 98682 at the overall level. Among the items of fixed investment land and residential buildings shared

maximum. In case of small and marginal farmers land was the main item of capital assets.

7. The total annual employment of a male worker ranged from 182.41 days in village artisans to 219.88 days in small farmers with an overall average of 208.77 days. Out of the total annual employment, non-farm employment shared 54.20 days. For an average male worker, own farm employment at the overall level, was 57.70 days (27.64 per cent). The employment from live stock activities was 28.42 days i.e. 11.83 per cent of the total employment in small farmers and declined to 5.59 days i.e. 3.06 per cent in case of village artisans. The period of non-farm employment was found to be highest (163.77 days) in village artisans followed by agril. labourers (52.62 days), marginal farmers (30.84 days) and small farmers (26.00 days).

8. The total annual employment for an average female worker was 162.44 days. It was highest (195.09 days) in agril. labourers followed by small farmers (161.61 days), village artisans (147.18 days) and marginal farmers (138.86 days). The duration of employment on other's farm ranged between 152.55 days in agril. labourers to 42.69 days in marginal farmers. The employment from own farm is only in case of small and marginal farmers in general and females in particular and it was 93.51 and 70.61 days respectively in case of females. At the overall level, the non-farm employment for females was 28.65

days. The employment from livestock was highest in case of small farmers (12.88 days) and lowest in case of village artisans (5.41 days) with an overall level of 9.10 days.

9. The multiple linear regression equation was estimated as employment function with the annual gross employment in man days as dependent variable (Y) and gross cropped area in hectares (X_1), percentage of earners per family (X_2), number of milch animals (X_3), wage rates in rupees (X_4) and capital assets in rupees (X_5) as the independent variables for small and marginal farmers. In case of small farmers, regression coefficient of grossed cropped area in hectares (X_1) and wage rate in rupees (X_4) were highly significant and positive, indicated that the increase in these variables would have positive influence on the annual gross employment of the sample families. Selected all five independent variables have joint explained 82 per cent of the variation in the gross family employment.

In case of marginal farmers, regression coefficient of percentage of earners per family (X_2) and wage rate in rupees (X_4) were significant and positive indicating the increase in these variables would positively influence the annual gross employment of the sample families. Selected all five independent variables have jointly explained 60 per cent of the variation in the gross family employment.

10. In the estimated employment function, the regression coefficient of percentage of earners per family (X_1), number of milch animals per family (X_2), wage rates in rupees (X_3) and capital assets (X_4) have selected for agril. labourers and village artisans. In case of agril. labourers, regression coefficient of percentage of earners per family (X_1) and wage rates in rupees (X_3) were significant and positive indicating that the increase in these variables would positively influences the annual gross employment of the sample families. Selected all four variables have jointly explained 64 per cent of the variation in the gross family employment.

In case of village artisans, regression coefficients of percentage earners per family (X_1) and wage rates in (X_3) were significantly and positive indicating that the increase of these variables would positively influence the annual gross employment of the sample families. Selected all four variables have jointly explained 62 per cent of the variation in the gross family employment.

11. The average annual income of sample families was highest in small farmers families (Rs. 32819) followed by marginal farmers (Rs. 20464), village artisans (Rs. 15199) and agril. labourers (Rs. 14368) with an overall average of Rs. 21500. The important sources of income were crop production only in case of farmers, wage earnings, business and services and livestock activities, which contribute to the extent of 44.23 per cent,

30.67 per cent, 13.37 per cent and 11.73 per cent respectively. Income per capita ranged from Rs. 6100 in small farmers to Rs. 3340 in case of village artisans with an overall average of Rs. 4634. It was observed that crop production and livestock income contributes major share in annual income of small and marginal farmers, while wage earnings in agril. labourers and business in case of village artisans.

12. The multiple linear regression equation estimated as income function with the total annual family income as dependent variable (Y) and gross cropped area in hectares (X_1), employment in man days (X_2), percentage of earners per family (X_3), percentage area of cash crops (X_4) as the independent variables for small and marginal farmers. In case of small farmers, the regression coefficients of GCA in ha (X_1), employment in man days (X_2), percentage area under cash crop (X_4), number of milch animals per family (X_5) were positive and significant indicating increase in these independent variables would result to boost the local annual family income of the sample families.

In case of marginal farmers, the regression coefficients of GCA in ha (X_1), employment in man days (X_2) only were positive and significant, indicating increase in these two independent variables would result to boost the total annual

family income. Selected all five variables have jointly explained 60 per cent variation in the total annual family income.

13. The multiple linear regression equation estimated as income function with the total annual family income as dependent variable (Y) and employment in man days (X_1), percentage of earners per family (X_2) and number of milch animals per family (X_3) as the independent variables for agril. labourers and village artisans. In case of agril. labourers, the regression coefficients of employment in man days (X_1) and number of milch animals (X_3) were positive and significant, indicating increase in these variables would result in increase of gross family income.

In case of village artisans, the regression coefficients of employment in man days (X_1) and number of milch animals (X_3) were positive and significant, indicating increase in these two independent variables would results to boost the gross family income. Selected all three variables have jointly explained 72 per cent variation in the gross family income.

14. The average annual total expenditure was the highest i.e. Rs. 32953 in case of small farmers followed by marginal farmers Rs. 20806, village artisans Rs. 16056 and agril. labourers Rs. 14817, with an overall of Rs. 21887. The consumption expenditure was the major item of expenditure. The proportion of family consumption expenditure varied from 56.48 per cent in small farmers to 91.58 per cent in agril. labourers. In small and

marginal farmers, the expenditure on crop production was 26.69 per cent and 17.75 per cent, respectively of the total expenditure.

15. The consumption expenditure of the family was highest Rs. 18611 in case of small farmers followed by marginal farmers Rs. 15303, agril. labourers Rs. 13570 and village artisans Rs. 12664 with an overall average of Rs. 15376. The proportion of expenditure on total food varied from 63.75 per cent in marginal farmers to 71.98 per cent in village artisans, with an overall average 67.01 per cent. Clothing, fuel and light were the next important items of expenditure. Average family consumption expenditure per capita ranged from Rs. 2783 in village artisans to Rs. 3459 in small farmers, with an overall average of Rs. 3314.

The consumption of cereals was highest i.e. 46.37 per cent in agril. labourers followed by village artisans 46.11 per cent, marginal farmers 37.92 and small farmers 36.78 with an overall average 40.62 per cent. The consumption of protective food i.e. sugar, jaggery, vegetables, milk, meat, etc. was varied from 16.84 per cent in agril. labourers to 19.87 per cent in small farmers, with an overall average 18.34 per cent.

16. The functional relationship was estimated by taking into account average annual total expenditure of the family and related factors viz., average total annual family income (X_1),

family size in adult units (X_2), capital assets (X_3) and gross cropped area in hectares (X_4) for small and marginal farmers. In case of small farmers the regression coefficients of family size in adult units (X_2) and capital assets in rupees (X_3) were positive and significant, indicating increase in these independent variables would result into increase in gross family expenditure.

In case of marginal farmers the regression coefficients of average total annual family income (X_1) and family size in adult units (X_2) were positive and significant, indicating that increase in these indepedent variables would result into increase in annual gross expenditure of family. The selected all four independent variables jointly explained 59 per cent variation in the annual gross expenditure.

17. The functional relationship was estimated by taking into account average annual gross expenditure of family and related factors viz., total annual income of family (X_1), family size in adult units (X_2) and family capital assets in rupees (X_3) for agril. labourers and village artisans. In case of agril. labourers the regression coefficients of total annual family income (X_1) and family size in adult units (X_2) were positive and significant would result to increase in gross expenditure of the family.

In case of village artisans the regression coefficient of local annual family income (X_1) was only positive and

significant indicating that increase in this independent variable would result into increase in gross expenditure. The selected all three independent variables jointly explained 82 per cent variation in the gross annual expenditure of the family.

18. Indebtedness observed in all the family groups. At the overall level, the average amount of loan taken by a family was Rs. 1701. However, the repayment was at the order of 46.56 per cent.

19. Per family deficit budget ranged from Rs. 134 in case of small farmers to Rs. 857 in village artisans with an overall deficit of Rs. 387. The per capita deficit at overall level was Rs. 83. These families depends on external assistance to the extent of deficit income for maintaining their livelihood.

6.2 Conclusions

Based on the findings of the study the following conclusions have been drawn.

1. The sample families had mostly the poor qualities of lands. The cropping pattern of farms was predominant with food grain crops indicating, that agriculture is mostly of subsistence nature.

2. The period of employment in respect of a sample male and female worked out to 208.77 days and 162.44 days in a year respectively. It is observed that, own farm employment was highest in small and medium farmers while "other's farm"

employment was highest in case of agril. labourers. The employment from non-farm activities was highest in village artisans.

3. From the results of regression analysis, it can be concluded that wage rates and percentage of earners per family have significant influence over the annual employment of the sample families.

4. The major sources of income of sample families were crop production activity, wage earnings, income from business and services and livestock activity. Per family income worked out to Rs. 21500 at the overall level. The total income was not enough to meet the gross annual expenditure of family which ultimately created a deficit in the family budget.

   In case of agril. labourers the major source of income were wage earnings while in case of village artisans it was business and services.

5. There existed a scope for increase in the average total annual family income with an increase in gross cropped area and gross employment in man days in case of small ad marginal farmers.

   In case of agril. labourers and village artisans the factors such as employment in man days and number of milch animals have significant influence on the family income.

6. The proportion of family consumption expenditure was to the extent of 70.25 per cent in case of sample families. In case of

small and marginal farmers the crop production and livestock expenditure contributed major share in expenditure.

7. In family consumption expenditure on food items was higher in all the families. The cereal consumption was higher in agril. labourers followed by village artisans, with an overall average of 40.62 per cent. Total non food expenditure was highest in case of small farmres.

8. The annual gross expenditure of the families was found to be significantly proportionate with family size and total annual income of family in marginal farmers. In case of small farmers it was family size and capital assets.

While in agril. labourers the factors such as family size and capital assets and in case of village artisans only annual family income have significant influence on the gross expenditure of the family. Thus family size in adult units have significant influence the gross expenditure of the families.

6.3 Policy implications

In scarcity zone, there exists a problem of unemployment, underemployment, low level of income and also the consumption. Besides this, low level of resource use results in low productivity. Under these circumstances it is essential to have a policy for upliftment of these weaker sections in the scarcity region and these are as below.

1. The era of micro-level planning should begin i.e. instead of planning at the macro level, the database regarding small area like tahsil should be created and on that basis strategies should be developed.

2. The emphasis should be given on dry land technology which can prove as an effective tool in scarcity region which is also cost saving device.

3. The water conservation methods and water resource development should be continued especially, in the villages, where drinking water is supplied through tankers during summer season.

4. The activities such as development of social forestry and plantation of horticultural crops may be undertaken considering the peculiar agro-ecological environment of the tract under study to generate additional employment opportunities.

5. The development of agro-based, cottage industries based on the locally available skills and raw materials will help to generate employment and income opportunities in scarcity zone.

6. Necessary arrangement for cheaper credit supply should be made to enable the sample families of weaker sanction to take up subsidiary occupation such as dairy, poultry, sheep and goat rearing etc. This will help to increase their employment and therefore the income to develop their economy.

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7. LITERATURE CITED

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APPENDIX

8. APPENDIX

EMPLOYMENT, INCOME AND EXPENDITURE PATTERN OF RURAL WEAKER SECTION IN SCARCITY REGION OF SATARA DISTRICT

Questionnaire

1. General information of the family :

A. Head of the family :

B. Village : C. Tahsil :

D. Age : E. Education :

F. Main occupation : G. Subsidiary occupation :

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		Crop and variety	Cultivated area (ha)		Production (Rs.)
				Dry	Irrigated	
1.	Kharif	i.				
		ii.				
2.	Rabi	i.				
		ii.				
3.	Summer	i.				
		ii.				
4.	Perinial	i.				
		ii.				
5.	Fruit crop	i.				
		ii.				
		iii.				

5. Information about capital assets

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

6. House hold assets

Sr. No.	Item	Year of purchase	Purchase price (Rs.)	Present value (Rs.)	Repairing charges (Rs.)	Remaining life (years)	Remarks
1.	T.V.						
2.	Radio						
3.	Watch						
4.	Cycle						
5.	Motor cycle						
6.	Sweing machine						
7.	Furniture						
8.	Others						
9.	Business material						
	i.						
	ii.						
	iii.						
	iv.						

7. 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					

8. 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						

9. Employment pattern

Sr. No.	Working members of family	Farm employment								Non farm employment				
		On own farm			On other farm			Livestock rearing		Business	EGS and other Govt. scheme	Service	Social and religious	Sickness
		Kharif	Rabi	Summer	Kharif	Rabi	Summer	Own	Others					
A.	Male													
1.														
2.														
3.														
B.	Female													
1.														
2.														
3.														
C.	Children													
1.														
2.														
3.														
D.	Bullocks													

10. Information about employment wage rate (Wage rate/days)

Sr. No.	Particulars	Kharif				Rabi				Summer			
		Male	Female	Bullock pair	Machinery	Male	Female	Bullock pair	Machinery	Male	Female	Bullock pair	Machinery
1.	On others farm												
2.	Employment guarantee scheme												
3.	Others work												

T-4514

11. Details about farm family income

Sr. No.	Source of income	Production					
		Home use		Safe		Total	
		Quantity	Price	Quantity	Price	Quantity	Price
A.	Crop production						
1.	Cereals						
2.	Pulses						
3.	Oilseeds						
4.	Vegetables						
5.	Fruits						
6.	Cash crops						
B.	Livestock production						
1.	Milk						
2.	Eggs						
3.	Wool						
4.	Manure						
5.	Sale of animal						
i.	Milch						
ii.	Draft						
iii.	Sheep and goats						
iv.	Poultry						
C.	Other sources						
1.	Wages						
2.	Business						
3.	Service						
4.	Implement hire						
5.	Loan interest						
6.	Middle man charges						
7.	Others						
i.							
ii.							
	Total (A + B + C)						

12. 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)						

13. 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 14. 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**										

15. 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							

16. Cost and returns from Business

1. Name of business :

2. Number of weekly off days :

A. Fixed capital for business

Sr. No.	Particulars	Year of purchase	Value (Rs.)
1.			
2.			
3.			
4.			

B. Running capital required for business (monthly)

Sr. No.	Month	Item	Quantity	Value (Rs.)	Value of products (Rs.)
1.	January				
2.	February				
3.	March				
4.	April				
5.	May				
6.	June				
7.	July				
8.	August				
9.	September				
10.	October				
11.	November				
12.	December				
	Total				

VITA

9. VITA

Vaibhav Machhindra Jadhav

A candidate for the degree

of

MASTER OF SCIENCE (AGRICULTURE)

in

AGRICULTURAL ECONOMICS

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