

**LIVELIHOOD SECURITY IN TRIBAL
AREA OF NASHIK DISTRICT WITH
RESPECT TO NUTRITION**

BY
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Dapoli - 415 712, Dist. Ratnagiri (M.S.)**

June, 2012

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A thesis submitted to the
DR. BALASAHEB SAWANT KONKAN KRISHI VIDYAPEETH, DAPOLI
(Agricultural University)
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in partial fulfillment of the requirements for the degree of

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*This is to certify that, the thesis entitled “ **LIVELIHOOD SECURITY IN TRIBAL AREA OF NASHIK DISTRICT WITH RESPECT TO NUTRITION** ” submitted to the Faculty of Agriculture, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Dist. Ratnagiri (Maharashtra State), in the partial fulfillment of the requirements for the degree of **MASTER OF SCIENCE (AGRICULTURE)** in **Agricultural Economics**, embodies the results of a piece of bona-fide research carried out by **Mr. RAJESH AWAJI PALVI** under my guidance and supervision and that no part of the thesis has been submitted for any other degree or diploma or published in other form. All the assistance and help received during the course of investigation and the sources of literature have been duly acknowledged by him.*

Place: Dapoli

Date: June, 2012.

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ACKNOWLEDGEMENT

“Coming together is beginning, carrying together is progress and keeping together is success”, this phrase comes to be true, while completing the post graduation. Therefore, at the outset, it is necessary to shape my feeling in words even though carrying of feelings in words are difficult, still a little effort is being done to access the never ending helping hands.

*No individual can travel without a signboard, a map or leading light to guide the way. For me, this leading light took the form of my Research Guide and Chairman of my Advisory Committee **Dr. V. A. Thorat**, Assistant Professor, Department of Agricultural Economics, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, whose valuable guidance, constant encouragement, profound interest in research, constructive suggestions, unfailing co-operation, hard work and helping mind throughout the course of my post graduation study, gave me this unique experience of planning, conducting and presenting the research.*

*It gives me great pleasure to express my profound gratitude and heartfelt respect to my Advisory Committee members, **Dr. S.R. Torane**, Dy. Director of Agricultural Economics, Dr. B.S.K.K.V., Dapoli. **Prof. P. G. Mehata**, Assistant Professor, Department of Extension Education, **Dr. A. C. Deorukhakar**, Associate Professor, Department of Agricultural Economics and **Dr. H. K. Patil**, Head, Department of Agricultural Economics, Dr. B. S. K. K. V., Dapoli for giving me valuable guidance and timely help during the course of my post graduation studies.*

*I gratefully acknowledge the co-operation and help extended **Dr. J. M. Talathi**, Professor, **Dr. V. G. Naik**, **Dr. S. S. Wadkar**, Associate Professors, **Dr. J. S. Dhekale**, **Dr. R. M. Joshi**, **Dr. P. J. Kshirsagar**, **Dr. D. B. Malve**, **Mrs. S. M. Kulkarni**, Assistant Professors, Department of Agricultural Economics, for their valuable guidance during the course of my study.*

I convey my thanks to all the staff members of my department who helped me regularly by making all the material available at hand, very promptly, whenever needed.

*I place on record my cordial thanks to **Dr. K.E. Lavande**, Hon. Vice-Chancellor, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, **Dr. C.V. Bhambure**, Associate Dean, College of Agriculture, Dapoli for providing all the necessary help during the course of my study.*

From hundreds of kilometers away, few people always wanted my success. I express my heartfelt gratitude and humble respect towards my beloved father **Mr. Awaji G. Palvi**, my beloved mother **Sou. Indubai A. Palvi**, and my brothers, **Dinkar** and **Ganesh**, for their love, support, encouragement and sacrifice made by them to shape my career and whose long cherished dreams are turning into reality in the form of dissertation. Their love and affection has been guiding path of my life.

My special thanks to my batchmates **Akshay, Motilal, Sanjay, Henry, Hamed, Poonam, Manisha**.

I express my heartfelt thanks to all my friends specially **Shriniwas, Pravin, Yogesh², Kailash, Dagadu, Aditya, Prashant, Taty, Nikhil, Govind, Amol, Vikas, Vijay**, and my best friends **Ravindra², Harish, Kiran, Prakash, Vinod, Dyaneshwar, Somraj, Mahesh, Sachin, Ujjwal, Deepak, Manoj, Nitin, Raju, Kishor, Pradeep, Nirmala, Priyanka, Lalita, Kavita, Manisha², Neelam, Rani, Bhagyashri**, and my all Seniors and juniors. I am conscious of my debt to them and equally to all my colleagues and friends who helped me directly or indirectly and offered their excellent company and warm affections throughout my stay in this Institute.

I would like to thank all the respondent of my study area for sparing their valuable time in providing me requisite information during collection of data. Without their cooperation this achievement was at stake.

I end my thanks to all those whom I am able to recall here, and also those whom might have left unknowingly.

Now as I carry this thesis in my hand, I carry with me memories that will enrich my nostalgia.

Place: **Dapoli**

Date: **June, 2012.**

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Title of thesis : Livelihood Security In Tribal Area of Nashik District With Respect To Nutrition.

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Year of award of degree : 2012

Thesis Abstract

The present study entitled, “Livelihood Security in Tribal Area of Nashik District With respect To Nutrition” was carried out in Nashik district purposively. From each tahsil ten villages and from each village seven respondents were randomly selected. Thus sample comprised of one hundred forty households.

The overall average age of head of family was 37.79 years. The overall education score was 5.60. The overall size of family was 5.95 members. The average working members in the family were 2.64. At an overall level area under rice was 56.97 per cent followed by vari 11.95 per cent. The overall average area under nagali was 11.12 per cent. The area under pulses in *kharif* season was meagre which accounted for only 0.30 of gross cropped area. The area under wheat and gram accounted for 3.74 and 1.0 per cent. The overall gross cropped area was 2.11 ha. At the overall level total employment generated through different activities was 404 man days. Out of the total employment, employment provided under MGNREGA accounted for 53.71 per cent followed by off farm 23.68 per cent.

At overall level productivity of rice was 23.75 quintals. Out of the total production of rice 62.78 per cent was used for home consumption and 37.22 per cent was sold. At the overall level total expenditure by the sample households was to the tune of the ₹ 48384 and gross income ₹ 93465 with positive gap of ₹ 45081. At overall level total per capita per day protein intake was 87.71 grams whereas, carbohydrate intake was 385.10 grams. At overall level per day per capita calorie intake was 2584 Kcal. The per day per capita calorie intake ranged between 2558 Kcal in medium income group to 2717 Kcal in high income group.

CHAPTER I

INTRODUCTION

The tribal population inhabit in almost all parts of the world. Tribals have been an under privileged class of population living in the most remote parts of inaccessible areas of mountains and forests.

In ancient time before arrival of *Aryans* in India, tribals were original resident of this old country. During those days tribals were residing in groups. When Aryans settled in India, many of these groups assimilated with Aryans, while some groups due to their strong desire to keep their original independent existence, took protection in deep forest, mountains and vallies. They are differently termed as '*Vanyajati*' (Forest caste), '*Vanvasi*' (Forest dwellers), '*Janjati*' (Old communities), Girijan and several such other names signifying either their ecological, economic, historical and cultural characteristics. Among these nomenclature, the most popular term is '*Adivasi*' while the constitutional name for them is 'Anusuchit Jan Jati' (Scheduled tribes) (Kokate, 1984). In all, there are 428 scheduled tribes in India though the total number of tribal communities are reported to be 642 and several of them have become extinct or merged with the other communities as the tendency for fusion and fission among tribal population is a continuous process (Shah, 1992).

The tribals constitute a small but an important element in India's population. According to 2011 census, the population of Schedule tribes is 8.25 crores. In India, there are States like Madhya Pradesh, Orissa, Bihar where the tribal population dominates. According to 2011 census, Maharashtra State ranks fourth in population of tribals (85.77 lakhs) which comes to 8.85 per cent of the total population of the state. The tribal population mainly concentrated in 14 districts mainly in the western hilly

districts of Nandurbar, Dhule, Jalgaon, Nashik and Thane (Sahyadri region) and eastern forest districts of Chandrapur, Gadchiroli, Bhandara, Gondiya, Nagpur and Yavatmal (Gondwan region). Highest population of tribals is found in Nandurbar districts and lowest in Sindhudurg districts. The major tribes in the state are Bhil, Mahadeo Koli, Gond, Warli, Thakar, Kokana and Kathidi/Katkari.

The tribes generally speaking may be said to have a mixed economy in the sense that they use many different means for their subsistence and sustenance. No particular means is completely adopted by the tribes or may be exclusively called the means of livelihood of them. The problem of development of tribal is primarily linked with general backwardness of these areas, exploitation by non-tribals and the absence of social and cultural integration of tribes and rest of the population. Many tribal habitants are in interior and forest area and isolated with lack of communication and marketing facilities.

1.1 Livelihood security of Tribals

Livelihood security, according to FAO is adequate and sustainable access to income and resources to meet basic needs (including adequate access to food, potable water, health facilities, educational opportunities, housing, time for community participation and social integration).

Livelihood can be derived from a range of on farm and non farm activities, which together provide variety of procurement strategies for food and cash. Thus, each household can have several possible sources of entitlement, which constitute its livelihood. These entitlements are based on the households endowments and its position in the legal, political and social fabric of society. The risk of livelihood failure determines the level of vulnerability of a household to income, food, health and nutritional

insecurity. Therefore, livelihood are secured when households have ownership of or access to recourses and income earning activities, including reserves and assets, to offset risks, ease shocks and meet contingencies.

Livelihood status is revealed through different aspects such as infrastructure, agriculture, nutrition, economy, health and sanitation and food availability.

In the process of development, some regions have been neglected and left far behind. The regional disparity in development process and livelihood status of people is common in India. In Maharashtra state some districts are identified as disadvantaged districts. While, some districts are known for habitation of tribal communities. Nashik district from Western region of Maharashtra is known for predominance of tribal population. Though the district is industrially developed some of the tahsils are dominated by tribal population and lack of industrial development. The State and Central Government as well as some Non-Government Organizations have made concerted efforts for rural development in this area.

So far no efforts have been made to assess the livelihood security in tribal area of Nashik district. The present investigation takes into account mainly agriculture, food availability and nutritional aspects of livelihood security.

1.2 Nutrition of tribals

Food is a basic need. All human beings have to consume food every day in order to maintain good health and live normally by providing proper nutrition. Good nutrition is the basis for good health, and healthy population is a prerequisite for all productive work. When enough food is not consumed to satisfy the nutritional requirement of an individual over a long

period of time, under nutrition results. On the other hand, consumption of food in excess causes over nutrition. Both manifestations are malnutrition. Nutritional deficiencies may occur for many reasons such as inadequate knowledge of proper nutrition, insufficient income, poor food preparations and food habits and other socio-economic traits.

According to Gopalan *et al.* (1982) malnutrition is a major problem in India. About 50 per cent of our people are so poor that they cannot afford a diet which meets their minimum energy needs and about 85 per cent of the children born, develop into people of sub-standard quality. He said “If current trends continue, this steady and relentless undermining of the most valuable of all our resources will pose a far greater threat than any threat of aggression from external agencies”.

The three factors that generally determine the nutritional situation of any country are population growth, food production and the distribution of foods. Apart from vastness of India’s population, the age structure of India’s population and consequently the dependency ratio are also unfavourable from the nutritional and economic stand points.

1.3 Present study

Nashik district which is one of the districts of Western Ghat region of Maharashtra is selected purposively for the present study. In view of the increased importance given to the economic upliftment of Schedule caste and Schedule tribes in the State, an economic analysis of livelihood security assumes special importance. Keeping this in view, the present study entitled, “Livelihood security in tribal area of Nashik district with respect to nutrition” is undertaken with following specific objectives:

1. To study demography of sample households.
2. To examine cropping pattern and agricultural productivity on sample farms.
3. To assess nutritional status of sample households.
4. To identify income earning activities of sample households.
5. To examine gap between income and consumption expenditure by sample households.

Scope and utility

Present study seeks to know the livelihood security in tribal area with respect to nutrition. The findings of the study would be useful to the planners for formulation of policies related to rural development in general and tribal development in particular. Similarly, the results of the study would be useful to Non-Government Organization (NGO's) for planning and implementation of rural development programmes. The detailed study of the relevant factors influencing cropping pattern, agricultural productivity, employment, income, consumption expenditure and nutritional status will throw light on various problems of tribal economy in the region under study. It is hoped that the results of the present study will be useful in suggesting some policy measures for the development of tribal economy in the area under study.

CHAPTER II

REVIEW OF LITERATURE

The present study is an attempt to know the livelihood security in tribal area of Nashik district with respect to nutrition. An attempt has been made to review the earlier work of some researchers on the related subject in order to have basic idea about the problems in different region in addition to region under investigation. Though an exhaustive review was made, only few relevant references are presented in the following order :

- 2.1. Cropping pattern and agricultural productivity on sample farms.
- 2.2. Nutritional status.
- 2.3. Income earning activities.
- 2.4. Gap between income and consumption expenditure.

2.1. Cropping pattern and agricultural productivity on sample farms.

Murty (2005) conducted a study on agrarian relations in tribal areas of Andhra Pradesh. The study of the economic conditions of tribals can impact on the forces and relations of production and, therefore, on land alienation. If incomes to tribals from the land and non-land resources under their control are extremely meagre, besides being uncertain, they may have a deterrent effect on the release of the forces of production. For instance, plots of poor quality may stifle tribals from using material inputs of adequate quantity, other than family labour, to effect substantial improvement in their yields. Low investment on the plots can perpetuate low yields. Tribals may be compelled to borrow from the credit agencies they have easy access to – the traders and moneylenders – for meeting their production and consumption needs.

Kumar and Upadhyay (2009) conducted a study on goat farmers coping strategy for sustainable livelihood security in Arid Rajasthan. The study is based on the primary data collected from randomly selected 60 goats-keeping households and 25 farm households without goats for the year 2004-2005 from the Nagpur district in arid Rajasthan. Instead of opting for transhumance system, the farmers have been found innovative in evolving a farming system that has allowed sustainable production of grains for family as well as feed and fodder for maintaining their small ruminants. Three farming systems, 1) Rain-fed goat- based farming system, 2) Partially irrigated goat-based farming system, 3) Rain-fed crop-based farming system, have been delineated. In response to the emerging resource and environmental conditions, goat farmers have utilized the potential synergy of linkages among different components of the farming system.

Prabha *et al.* (2009) studied impact of infrastructure and technology on agricultural productivity in Uttar Pradesh. The trend of composite infrastructure index has shown sharp fluctuations, while electrified villages and rural roads have indicated a rising trend. The agricultural productivity and fertilizer have shown increasing trend with marginal fluctuations, while HYVs have illustrated an increasing trend at a decreasing rate. The impact of composite infrastructure index, fertilizer and HYVs on agricultural productivity has been found positive and significant. Analysis of the impact of individual infrastructural indicators has revealed that the electrified villages along with fertilizer and HYVs have positive and significant impact, while rural roads have an insignificant impact.

Thorat *et al.* (2009) studied sustainable rural livelihood security in tribal districts of Konkan region in Thane district. The study revealed that cropping pattern of sample households, at an overall area under rice was 40.50 per cent followed by cashew 33.06 per cent. The area under

vegetables and pulses accounted for 2.48 and 0.41 per cent only. Among the different income groups proportion of rice was 31.58, 39.44, 48.39 and 49.70 per cent in group I, II, III and IV respectively. The area under pulses, vegetables and flowers was almost negligible, in group I and II. In group II and IV area under pulses was 5.16 and 4.85 per cent and that of flowers was 3.22 and 7.27 per cent respectively. The area under mango and cashew was relatively more in group I and II as compared to group III and IV. The overall cropping intensity was 101.12 per cent.

Kiresur *et al.* (2010) studied agricultural productivity, rural poverty and nutritional security: A micro evidence of inter-linkages from Karnataka state. The study revealed that agricultural productivity has negatively and significantly influenced rural poverty at the farm level. Low agricultural productivity is the root cause of rural poverty. Household size and number of dependents positively influenced rural poverty. Optimization of household size or increase in the number of earning members of the household would reduce poverty. Nutritional security is greatly influenced by the level of rural poverty. The study suggested that effective poverty alleviation programmes aimed at enhancing agricultural productivity through transfer of productive assets instead of consumer goods to the poor, should be launched and effectively monitored. Agricultural credit being an important aspect of productivity, appropriate steps should be taken to increase the access of rural households to financial institutions.

2.2. Nutritional status of sample households.

Golait and Pradhan (2006) studied changing food consumption pattern in rural India, implication on food and nutrition security. The study revealed that Indian's rapid population growth at that time was posed to

threat of national food security, which had reached a dangerous proportion in the mid-1960s, paving the way for introduction of 'Green Revolution' in the late sixties. The food availability and price stability had been considered as good measure of food security till 1970. Concerted effort with seed-fertilizer technology had led to growth of food grain production that exceeded population growth in the subsequent decades. The country has moved from chronic shortages to an era of surplus and export in most food items in recent years. Although physical access to food has been achieved, economic access at the micro level lagged behind indicating a distorting trend in the food and nutritional security front.

Nasurudeen *et al.* (2006) studied the dynamics and inequality of nutrient consumption in India. The study assess to food demands affordability, which depends upon the twin factors, income of the people and prices prevailing in the country. Slower growth in income than prices would undermine the purchasing power, resulting in inadequate access to food and calorie consumption. Food grains account for about four-fifth of the calorie intake of the poor and an increase in cereal prices could significantly reduce the calorie intake of the poor, as it is sensitive to cereal prices. The dietary changes that characterise the "nutrition transition" include both quantitative and qualitative changes in the diet. Income, prices, individual preferences and beliefs, cultural traditions as well as geographical, environmental, social and economic factors all interact in a complex manner to shape the dietary consumption pattern.

Bose and Dey (2007) studied food and nutritional security in Bangladesh. The study revealed that inequalities were very low for cereals and high for livestock and horticulture commodities and various type of fish species in both rural and urban areas. The analysis of food poverty, its depth and severity revealed a typical hidden poverty that could not be

brought up by analyzing economic poverty. The food poverty has been found high for pulses, horticulture and livestock commodities among both economically rich and poor households. Fish, livestock, horticulture and pulses sectors should be accorded high priority to diversify the dietary pattern towards high quality food and improve the nutritional food-security of households in Bangladesh.

Govindraj *et al.* (2008) studied impact of grain legume (Groundnut) on energy and nutritional levels of tribal farm households in Koraput (Orissa). The study observed a perceptible contribution of groundnut (grain legume) in meeting the protein and energy needs of the tribal farm households in the study area. Groundnut has been found as the cheapest source of protein and energy among different food items like fish, meat, egg, etc., consumed by the tribal households. This low- cost energy rich grain legume (groundnut) may be popularized to increase the frequency and quantity of intake to achieve nutritionally secured human resource (tribal people).

Sidhu *et al.* (2008) studied food and nutritional insecurity and its determinants in food surplus areas in Punjab. The study revealed that the food and nutritional insecurity prevails even in the food-surplus areas, with low-income households being more vulnerable to it. The access to food determined by the level of income and family-size has been found as the most important factor influencing food and nutritional security in food-surplus areas. Increase in production alone does not ensure food and nutritional security. The study has suggested that income and employment opportunities for more vulnerable sections of the society will have to be augmented to alleviate their food insecurity and malnutrition.

2.3. Income earning activities of sample households.

Masavi (1991) studied tribal agricultural labourers in Gujarat and found that agricultural labourer earned ₹2723 per family. The main source of income of the agricultural labourer was wages, out of total income of 2723, ₹1893 (69.5% per cent) came from labour alone. The income derived from agriculture and animal husbandry amounted to be ₹982 per family in case of marginal farmer. The income from all subsidiary occupation was ₹291 per family or about 10 per cent of the total income.

Atibudhi *et al.* (1992) studied income sources of tribal households of Mayurbhanj district of Orissa. They pointed out that average per capita income was ₹36. The sourcewise distribution of income indicated that 58.6 per cent of the income was obtained from wage earning and only 20.7 per cent was contributed by farming.

Bhati *et al.* (1992) studied tribal farming system of 135 tribal households of Kinnaur and Lahaul blocks of Himachal Pradesh. They pointed out that per household annual net income was ₹30,000 in Lahaul and ₹28,000 in Kinnaur.

Gauraha (1992) conducted a study to examine the pattern of income, employment, food and non-food consumption in a Kanayabakra tribal village of Pendra block in Bilaspur district of Madhya Pradesh. The study revealed that about 70 per cent of the total income came from settled agricultural cultivation and sale of minor forest products. The other sources of income were agricultural labour, livestock, poultry and private and Government work, but their proportion in total income was found to be less.

Oberoi *et al.* (1992) studied socio-economic status, constraints and prospects of Gaddi tribal economy in Himachal Pradesh. They found that the per capita annual income was ₹118 and the outstanding debt per farm was around ₹600. The sectorwise analysis of the farm income revealed that

sheep and goat together accounted for more than half of the total farm income. Crops, milch animals and fruits contributed 31, 11 and 5 per cent of total income, respectively.

Raut *et al.* (1992) studied the employment, income and expenditure pattern of tribals in Nashik district of Maharashtra. They observed that wage earning was the main source of income for the landless group contributing to the extent of 50 per cent of the income. Whereas, agriculture was the main source for land holder group accounting for 54 per cent in total income.

Sawant (1992) studied socio-economic occupational and cultural aspects of Katkari community of Ratnagiri district. He found that annual earning of the respondents was found to be maximum from non-farm labour (₹ 2751.9) and agricultural labour (₹ 1677.35) while these two occupations together contributed about 90.00 per cent to total annual income.

Suryawanshi (1992) conducted a study on employment, income and household economy of tribal in Western ghat zone of Maharashtra. He found that average annual income per family from all the sources was ₹ 3357 and ₹ 5542 for landless and land holder, respectively. Wage earning and sale of forest product were the main sources of income of landless family.

Rane and Khodaskar (1994) studied the economic condition of tribal farmers of Vengaon village of Raigad district. They observed that major source of income for tribal labourer was agricultural wages. Another source of income was income from subsidiary occupation such as selling fruits which were collected from forest, selling grasses and firewood. The per capita monthly income of tribal farmer and tribal was more or less similar.

Raut *et al.* (1995) studied employment income and expenditure of tribals in Igatpuri tahsils of Nashik district. They found that average annual income per family was found ₹ 7801. The largest share in the total income from agriculture was (38.67 per cent) followed by wages (24.80 per cent), service and business (13.91 per cent) and other miscellaneous source (1.36 per cent). The average annual per family income was worked out to be ₹ 3208, ₹ 7294, ₹ 7849 and ₹ 8689 for landless, small, medium and large size group, respectively. The wage (74.28 per cent) was main source of income to the landless worker, whereas agriculture was the major source for other three size groups.

Singh and Sinha (2006) studied sustainable livelihood through migration in Bihar. The study revealed that about 51 per cent of income was contributed by the agriculture sector, including agricultural wages by the migrant households. Non – farm income has also emerged as an important source of livelihood, contributing 49 per cent of income generated on the migrant households. While, analyzing the data on the use of remittances in supporting livelihood, more than one – third of remittances have been allocated to house maintenance (38%) , since the villages under study are flood – prone and it is necessary to repair the house atleast every flood – year.

Sinha (2006) studied farm sector – non farm employment and rural livelihood and observed that the development factors like modernization and commercialization of agriculture, increased demand for non – agricultural goods and services, growing literacy and urbanization, have tried to pull the labour force away from farm sector to more lucrative non – farm activities. At the same time, distress factors like poverty, unemployment, underemployment and natural calamities like droughts

and floods. have tried to push the rural workforce away from the farm sector to various non farm activities to supplement their income.

Gauraha *et al.* (2007) studied income and employment pattern in rural area of Chhattisgarh. Study revealed that major portion of household's income generated from *kharif* crops and a small portion by *rabi* crops due to prevalence of mono-cropped farming system in the state. A majority of households has been found to generate their employment through non-farm activities. The annual employment generated by non-farm household was considerably higher as compared to that by farm households. Within farm households, employment provided by service activities has shown a positive relationship with farm size, while there was inverse relationship with non-agricultural labour. Policies aimed at improving the income and employment level include diversification of agriculture and increasing crop productivity. To promote the rural non-farm sector, financial assistance may be provided to start new non-farm activities.

Vatta *et al.* (2008) studied rural employment and income: The inter-household variations in Punjab. They concluded that majority of the households have been found dependent on multiple sources of income, further confirming the distress nature of these income sources. The dependence on non-farm sector as a major source of income has revealed a negative relationship with the land-size. More than two-thirds (66.9%) of the non-cultivating household have non-farm sector as the major source of their income. The results have further revealed the inability of an average non-cultivating and marginal or small cultivating household to achieve the overall average income of a rural household. The rural household income has been found to follow a highly skewed distribution. The incomes from crops and dairying have been observed highly unequally distributed, perhaps due to their strong association with the size of landholding. On the other hand, rural non-farm income distribution seems to be least skewed.

Rama Rao *et al.* (2009) studied soil and water conservation works through National Rural Employment Guarantee Scheme (NREGS) in Andhra Pradesh and observed that soil and water conservation (SWC) works have accounted for over 80 per cent. The share of labour wages under the scheme has been 80 per cent with only 20 per cent for material, which is well within the prescribed norm of 40 per cent for the latter. The field study in the Ananthapur district had indicated that almost two-thirds of the beneficiaries are farmers. The scheme has brought down the migration levels from about 27 per cent to only 7 per cent in the study area. The linear regression function had brought out that the number of family members participating in the NREGS is significantly influenced by income from other sources, family size and landholding. The NREGS earnings are being used mainly for food, education and health security.

Venkatesh *et al.* (2009) conducted a study on socio- economic impact assessment of livelihood security in agriculture, animal husbandry and aquaculture on the Tsunami- hit Land of Andaman. The data were collected from 150 sample respondents and the survey was conducted for two periods, pre- tsunami and post- tsunami. The results indicated that tsunami has ravaged the households, standing crops, farm inputs such as seed, feed and implements, livestock and poultry population, their sheds and fish ponds, by there affecting the basic livelihood security of the people in Andaman. The rehabilitation measures taken by the government and NGOs have improved their livelihoods by reviving agriculture considerably in the subsequent years and by creating employment opportunities in various farm and non- farm activities. The study has suggested to creat profitable livelihood security to vulnerable sections of the society in the existing socio- economic penury with holistic intervention of the community, government and NGOs.

Kumar *et al.* (2011) studied employment, income and labour supply decision of rural households: An economic analysis of Mahatma Gandhi National Rural Employment Guarantee Agency (MGNREGA) in Tamil Nadu. The study revealed that the number of migrants in the family, number of livestock units owned, and number of person-days employed in agriculture, non-agriculture and MGNREGA are significantly influenced by the household income of the participants and non-participants of MGNREGA. The analysis of household food-security has shown that the expenditure for all commodities, viz. leisure, cereals, pulses, oils, fruits and vegetables, milk, chicken and fish are positive and significant in the case of MGNREGA participants, whereas the expenditure variable is significant only two commodities, viz. cereals and oils in case of MGNREGA non-participants. The labour supply decision of sample respondents has shown that the elasticity of labour supply with respect to wage rate is more than one in both participants and non-participants of MGNREGA, indicating that an one per cent increase in wage rate increases labour supply by 1.92 per cent and 2.36 per cent, respectively.

2.4. Gap between income and consumption expenditure.

Sar *et al.* (1992) studied consumption pattern of tribals in rural areas of Thane district. They observed that the intake of almost all the food stuff, except pulses, other vegetables and roots and tubers was inadequate among the tribals. At overall level calorie intake was inadequate, while protein intake was just adequate among the tribals of Thane district. Per day per capita cost of diet of the tribals was Rs.6.81 which was less than the cost of balanced diet (₹ 7.04). The diet of tribals with respect to 69 and 52.4 per cent households was deficit in calories and proteins, respectively. Among the various factors selected, family size and annual income seemed to have profound influence on calorie and protein intake of the tribals.

CHAPTER III

SOCIO-ECONOMIC BACKGROUND OF NASHIK DISTRICT

Agro-physical and socio-economic conditions have profound influence on the production of crops and livestock and in turn crop and livestock production influence the nutritional status. Therefore, in a scientific investigation concerning these enterprises, in a particular tract, the study of economic background is necessary to understand the economic implications of the physical conditions under which production is carried out. The various factors like topography, location, climate, rainfall, soils, irrigation, marketing and communication facilities etc. decide the suitability of a particular enterprise in the area. Therefore, a brief account of agro-physical and socio-economic conditions prevailing in the selected area is given so as to have better understanding of the region and of the interpretations of the findings of the study.

3.1 Location

Nashik district is situated on the North-East fringe of Maharashtra state and lies between $19^{\circ}. 33'$ and $20^{\circ}.53'$ North latitude and $73^{\circ}.16'$ and $75^{\circ}.16'$ East longitude. The average length of the district North-South and East-West is 120 Km, 200 Km, respectively.

3.2 Boundaries

Nashik district is surrounded by Aurangabad district on East-South side and Ahmednagar district on South side. Thane district is situated at West and West-South side. Dang and Ahwa districts of Gujarat state on

West-North side. Dhule district on North side and Jalgaon district on East-North side.

3.3 Topography

On the basis of its topography, the district is divided into three parts as under:

- i) The western portion having Sahyadri ranges, which comprises mainly forest area and paddy area.
- ii) The central region covering mainly horticultural crops, vegetable cultivation and agronomical crops.
- iii) The eastern region covering mainly cash crops, fodder production and vegetable cultivation being practiced.

3.4 Rivers

The major river flowing through this district are the Godavari and the Girna. The rivers Darna, Manyad and Kadva are the tributaries of the river Godavari which originates in the hills of Trimbakeshwar and flows through Nashik, Niphad and Sinnar tahsils of the district. The river Girna rises in the Kem hills. Its important tributary is Mosam.

3.5 Soils

Soils constitute the physical basis of an agricultural enterprise and play a very vital role in the agricultural economy of a region. The soils of Nashik district are conveniently divided into 3 categories *viz.*,

i) Black soil

This type of soil is present in Nashik, Chandwad, Nandgaon, Niphad, Yeola and Sinnar tahsils. These soils are fertile and suitable for paddy, vegetables, flowers and fruit cultivation.

ii) Red soils

This type of soil is found in western region mostly on the slopes of Igatpuri, Trimbakeshwar, Peth, Surgana and Kalwan tahsils. On these soils, hill millets like Nagali and Vari are cultivated.

iii) Red-black soils

This type of soil is present in eastern region of Dindori, Satana, Deola and Malegaon tahsils. On these soils, onion, cotton, sugarcane, vegetables, fruits and flowers are cultivated.

3.6 Climate and Rainfall

Climatic conditions in the district are strongly influenced by its geographical conditions. It is distinctly different on the western part it is humid and warm. On the other hand, the climate on the eastern part it is very warm. On an average, the temperature ranges from 38^o to 40^o centigrade.

The rainfall is not uniform in Nashik district. Igatpuri, Trimbakeshwar, Peth and Surgana tahsils receive average rainfall of 2000 mm, from the south-west monsoon during the months from June to September. Generally, the highest rainfall is recorded in the month of July. It is less towards the east than north. The average rainfall is 1107 mm.

3.7 Area and population

The total geographical area of the district is 15,530 sq.km. The population of the district as per 2011 census is 49,93,796. The rural population is 30,56,203 (61.20 per cent) and that of urban is 19,37,592 (38.80 per cent). The Scheduled tribe population is 11,94,000 which accounted to about (23.92 per cent) of total population of Nashik district. The Scheduled caste population is (8.54 per cent) of total population. The density of population per sq.km. is 322. The sex ratio (male to female) is 927. The percentage of literacy in this district is 74.15 per cent. The

percentage of literacy in rural areas is 67.79 per cent, while it is 83.98 per cent in urban areas.

3.8 Land utilization

The land utilization pattern of the district is given in table 3.1.

It is observed from the Table that the total geographical area of the district is 144900 ha. Of which, area under forests is 16.63 per cent. Uncultivable land constitutes 8.90 per cent of the total geographical area, while the proportion of cultivable waste land is 6.55 per cent. The net area sown is 55.28 per cent. Due to inadequate irrigation facilities area sown more than once is only 5.52 per cent. Therefore, the gross cropped area accounts for only 60.80 per cent of the total geographical area.

Table 3.1 Land utilization pattern in Nashik district (2008-2009)

Sr. No.	Land use category	Area ('00' ha.)	Percentage to geographical area
1.	Total geographical area	1449	100
2.	Area under forest	241	16.63
3.	Land put to non-Agricultural uses	15	1.03
4.	Barren land and land unsuitable for cultivation	129	8.90
5.	Permanent pasture and other grazing land	21	1.45
6.	Land under miscellaneous trees, crops and grooves	29	2.00
7.	Cultural waste	95	6.55
8.	Current fallows	70	4.83
9.	Other fallows	48	3.31
10.	Net area sown	801	55.28
11.	Area sown more than once	80	5.52
12.	Gross cropped area	881	60.80

Source: Socio-economic Review and District Statistical Abstract of Nashik district, 2008-2009.

3.9 Irrigation

The gross cropped area in Nashik district is 881 thousand ha., out of which gross irrigated area is 2353.09 ha. The percentage of gross irrigated area to the gross cropped area is only 37.44 per cent.

3.10 Cropping pattern

The cropping pattern followed in Nashik district is presented in Table 3.2.

Table 3.2 : Cropping pattern of Nashik district (2008-2009)

Sr. No.	Crops	Area (ha)	Percentage to gross cropped area
1	Cereals		
	a) Paddy	65897	8.61
	b) Other cereals (Nagali, Vari etc.)	100568	13.14
	Total cereals	166465	21.75
2	Pulses		
	a) Udid	10923	1.43
	b) Tur	5656	0.74
	c) Mung	6311	0.82
	d) Gram	21037	2.75
	e) Other pulses	3667	0.48
	Total pulses	47594	6.22
3	Total food grain crops (cereals and pulses)	214059	27.97
4	Sugarcane	25255	3.30
5	Condiments and spices	6893	0.90
6	Fruits and vegetables	130762	17.08
7	Total food crops	541638	70.75
8	Total fibre crops	206	0.03
9	Total oil seeds	26461	3.46
10	Total medicinal and drug plant	0	0
11	Grasses	28750	3.76
12	Total non food crops	34317	4.48
13	Total net cropped area	685951	90.00
14	Area sown more than once	79581	10.40

15	Gross cropped area	765532	100
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Source: Socio-economic Review and District Statistical Abstract of Nashik district, 2008-2009.

From the Table 3.2, it is seen that the percentage of total area under cereals to total area under crop is 21.75 per cent, while the area under pulses is 6.22 per cent. Thus, the total area under food grain crops (cereals and pulses) is 27.97 per cent. The area under fruits and vegetable is 17.08 per cent. The total food crops occupy an area of 70.75 per cent, while the remaining 4.48 per cent area is under non-food crops. Among the cereals, paddy occupies largest area (8.61), while among the pulses, Gram occupies largest area (2.75) of the total area under crops. Thus, it can be concluded that cropping pattern of the district is dominated by the cereals.

3.11 Horticulture

Horticulture is the hope of this district. The quality of soil is good for cultivation of field crops as well as it offers good scope for development of horticultural crops particularly grapes, pomegranate and guava. In fact, a good beginning has been made by some of the cultivators by taking large scale plantation of grapes and pomegranate.

3.12 Livestock

Livestock is an integral part of agriculture and consists of cattles, buffaloes, sheeps, goats, poultry and ducks. Together, they contribute to a considerable extent to the agricultural economy. As per 2003 livestock census, the livestock population in Nashik district was 4585 thousands. The specieswise distribution of livestock is given in Table 3.3.

It is seen from the table that in the total livestock population of Nashik district, cattle, buffalo, sheep and goat species form 3.32 per

cent, 1.48 per cent and 22.36 per cent, respectively. The total poultry and ducks population was 3214 birds.

3.13 Fisheries

In Nashik district total river length is about 687 km. long. Total area of fish production was 23,271 ha. Total inland fish production in 2010-2011 was 4,022 metric tonnes valued to 804.4 lakhs. About 86 fish co-operation are working in the district with 7066 members.

Table 3.3 : Livestock population in Nashik district (2003).

Sr. No	Category of livestock	Number (thousand)	Percentage to total livestock
1	Cattle	152	3.32
2	Buffaloes	68	1.48
	Total bovine	220	4.80
3	Sheep and goat	1025	22.36
4	Poultry and ducks	3214	70.16
5	Other livestock	126	2.75
	Total livestock	4585	100

Source: Socio-economic Review and District Statistical Abstract of Nashik district (2003).

3.14 Transport and communication

Nashik city is on the main central railway route Mumbai-Kolkata and Mumbai-Delhi. Another railway route is Manmad-Pune. The total length of central railway route is about 287 km. passing through in Igatpuri, Nashik, Niphad, Nandgaon and Yeola tahsils. The national highway Mumbai-Agra is running through the district. This serves as an important means of quick transport and communication.

3.15 Banking facilities

During 2011 there were 39 scheduled banks in the district having 290 bank branches. The loans advanced by scheduled banks amounted to 27,759 lakhs and deposits with the scheduled banks amounted to 11, 10,108 lakhs.

CHAPTER IV

METHODOLOGY

4.1 General

The specific research requires to adopt an appropriate method and procedure for conducting investigation, analysis and interpretation. The economic investigation starts with selection of the study area, villages and households, collection of data and finally method and techniques of analysis used to arrive at the conclusions for the objectives specified. The methodology adopted in the present study is outlined in this chapter.

4.2 Sampling design

The sampling method used in present study consisted of three stage random sampling, *viz.*, selection of tahsils, villages and tribal households. As per population census 2011, in Nashik district tribal population accounts for about 23.92 per cent of total population. Hence, Nashik district was selected purposively, as it is one of the important tribal district.

4.2.1 Selection of tahsils

Nashik district consists of fifteen tahsils. The tribal population is mainly centred in six tahsils *viz.*; Igatpuri, Trimbakeshwar, Peth, Surgana, Kalwan and Satana. Out of these two tribal tahsils *viz.*; Surgana and Peth were selected randomly for the present study.

4.2.2 Selection of villages

The lists of total number of villages in Surgana and Peth tahsils were obtained from revenue department and ten villages from each of tahsils were selected randomly.

Table 4.1 : Tahsilwise distribution of villages and tribal households.

Sr.No.	Tahsil	Name of villages	Number of tribal households
1.	Surgana	i) Karanjul (Pe.)	7
		ii) Vangan (K)	7
		iii) Dudhval	7
		iv) Pilukpada	7
		v) Vangan (Su.)	7
		vi) Karanjul (Su.)	7
		vii) Vanganpada	7
		viii) Gahale	7
		ix) Umbarvahir	7
		x) Thangaon	7
2.	Peth	i) Karanjkhed	7
		ii) Kapurne	7
		iii) Aambe	7
		iv) Ranvahir	7
		v) Bhuvan	7
		vi) Usthale	7
		vii) Harangaon	7
		viii) Khirkade	7
		ix) Aasarbari	7
		x) Kopurli (Khu.)	7
	Total		140

4.2.3 Selection of households

From each selected village, the information about the structure of population, occupation was obtained from the village revenue record available with Talathi and Gram sevak. From each village 7 households were selected randomly. Thus, the final sample consisted of two tahsils, ten villages from each tahsil and 140 households. The sample households were classified into three groups viz; low, medium and high on the basis of per capita income.

4.3 Collection of data

The data were collected by survey method. The selected households in the respective villages were interviewed personally with the help of pretested questionnaire specially designed for the purpose. The questionnaire was prepared keeping in view the objectives of the study. The detailed information on the following aspects was obtained.

General information about households and his family members, land holding and land utilization, cropping pattern, information about capital assets, milch animals and other livestock, inventory of implements, machinery and household articles, crop and livestock expenses, farm production during the year (including livestock production), on farm, off farm, MGNREGA employment, sources of income and consumption.

4.4 Reference period

The information and data for the present study pertained to the agricultural year 2010-2011. The selected households in the respective village were interviewed in the month of January, 2012.

4.5 Analysis of data

The data were analysed separately for each group to draw separate conclusions. The data have been pooled for the whole sample to draw overall conclusions for the study area. The data were arranged in suitable tables and cross tables. Simple statistical tools such as mean, average, percentage were used.

A simple tabular analysis was done to know the average annual employment, per family annual total income from different sources, per family annual consumption expenditure and per capita intake of calories and proteins.

The farm income was worked out for different crop and livestock enterprises at working cost. The expenditure pattern of the sample households was examined to know the proportion of total expenditure incurred on different consumption items. The actual per capita consumption of different food items was estimated to assess nutritional pattern.

The quantities of food items consumed were converted into calories and proteins by multiplying the quantities consumed by the respective calories and proteins coefficient as reported by ICMR. These values were added for overall food items to get the total intake of calories and proteins by the households. Per capita figures for each households were obtained by dividing the total intake of a households by the number of adult units in the households.

4.6 Functional analysis

A functional analysis was carried out to determine the factors influencing calorie intake by the respondents. For the purpose multiple regression model of the following form was adopted.

$$\mathbf{N} = \mathbf{b}_0 + \sum \mathbf{b}_i \mathbf{X}_i + \mathbf{e}_i$$

Where, N = Consumption per capita (Kcal/day)

X_1 = Total cultivable land (acres)

X_2 = On farm income (₹/month)

X_3 = Off farm income (₹/month)

X_4 = Family size (No.)

b_i = Coefficients

e_i = Error-term

CHAPTER V

RESULTS AND DISCUSSION

The way in which rural households earn their livelihood is becoming complex. Understanding changes in livelihoods, the diversity of livelihood portfolios and new opportunities is equally complex. Yet policies to assist the rural poor need to be informed by an understanding of their livelihoods and strategies. In this respect the major findings of the study are presented and discussed here below.

5.1 Classification of sample households

The sample households were classified into different groups on the basis of per capita income as follows

Table 5.1 : Classification of sample households

Sr. No.	Income Group	Per capita income (₹)	No. of Respondents
1	Low	Below 10980	13
2	Medium	10981-16489	107
3	High	16490 & above	20
	Total		140

5.2 General information

The classic tool for understanding livelihood is the households economic model. A household is made up of several members, all of whom have consumption needs and some of whom provide the household labour force. The household survives by drawing on its range of assets and engaging in a variety of activities, thus generating income and other consumption goods to meet the needs of the household.

Table 5.2 : General information of sample households

Sr. No.	Particulars	Income Groups			Overall
		Low	Medium	High	
1	Average age (years)	34.38	37.65	40.77	37.79
2	Average education level (Score.)	5.34	5.55	6.08	5.60
3	Average family size (No.)	5.36	6.00	6.10	5.95
4	Average working members (No.)	2.23	2.60	3.14	2.64

It is observed from Table 5.2 that, the overall average age of head of family was 37.79 years. The groupwise average age was 34.38, 37.65 and 40.77 years in low, medium and high group, respectively. This indicated that sample households were of young age. The level of education was comparatively more (6.08) in high group. The educational score of other groups was at par. The overall education level was 5.60 scores. The low educational score could be attributed to poor educational facilities and distance of school from 'Padas'. The average size of family was maximum (6.10 members) in high income group and minimum (5.36 members) in low income group. The overall size of family was 5.95 members per family. The average number of working members was highest (3.14) in high group, with overall average of 2.64 working members per family.

5.3 Land use pattern

Land is key asset of the sample households, which is likely to affect the economic activities undertaken. The land use pattern of sample household is presented in Table 5.3.

Table 5.3 elicit that, the total cultivated area in low, medium and high group was 1.92, 2.11 and 2.30 hectares, respectively. The overall average cultivated area was 2.11 hectares. The percentage of un-irrigated area was 90.75 per cent, at overall level whereas, irrigated area accounted for 4.52 per cent only. The average fallow land was 2.87 per cent. The average grazing land was 1.0 per cent and land not suitable for cultivation was 1.01

per cent. Among the different income groups irrigated area was the maximum in high income (4.88%) and minimum in group low (4.02%). The low percentage of irrigated area limits the cropping pattern followed by the sample households.

Table 5.3 : Land use pattern of sample households

(Area in ha.)

Sr. No.	Particulars	Income Groups			overall
		Low	Medium	High	
1	Cultivated area				
	a) Irrigated	0.08 (4.02)	0.10 (4.52)	0.12 (4.88)	0.10 (4.52)
	b) Unirrigated	1.84 (92.46)	2.01 (90.95)	2.18 (88.62)	2.01 (90.75)
2	Fallow				
	a)Current	0.03 (1.51)	0.04 (1.81)	0.06 (2.44)	0.04 (1.87)
	b)Permanent	0.01 (0.50)	0.02 (0.90)	0.03 (1.22)	0.02 (1.0)
3	Grazing land	0.01 (0.50)	0.02 (0.90)	0.03 (1.22)	0.02 (1.0)
4	Land not suitable for cultivation	0.02 (1.01)	0.02 (0.90)	0.04 (1.63)	0.02 (1.01)
	Total	1.99 (100)	2.21 (100)	2.46 (100)	2.22 (100)

(Figures in parentheses are percentages to total)

5.4 Cropping pattern of sample households

Cropping pattern is the important factor influencing the farm income. The cropping pattern of sample households is shown in Table 5.4.

Table 5.4 reveals that the cropping pattern of sample households was dominated by rice crop followed by *vari* and *nagali* crops. At an overall level area under rice crop was 56.97 per cent followed by *vari* 11.95 per cent. The overall average area under *nagali* was 11.12 per cent, The area under pulses in kharif season was meagre which accounted for only 0.30 per cent of gross cropped area. The area under wheat and gram accounted for 3.74 and 1.0 per cent of gross cropped area. Among the different income groups proportion of area under rice was 57.29, 57.35 and 54.78 per cent in low, medium and high income groups, respectively. The area under wheat was

3.13 per cent, 3.79 per cent and 3.91 per cent in low, medium and high income groups, respectively. The area allocated to gram was 1.04 per cent, 0.95 per cent and 1.30 per cent in low, medium and high income groups, respectively. The area under wheat and gram was relatively more in high group as compared to low and medium income group. The overall gross cropped area was 2.11 ha. The cropping pattern of sample households indicated that the household has a diverse livelihood, means they rely on different multiple agricultural economic activities. Diversification is the process by which economics become more diversified. At household level, this tends to mean adding of new activities. These may be the growing of new varieties of high value crops, etc.

Table 5.4 : Cropping pattern of sample households

(Area in ha.)

Sr. No.	Cropping pattern	Income Groups			Overall
		Low	Medium	High	
1	Kharif				
	a)Rice	1.1 (57.29)	1.21 (57.35)	1.26 (54.78)	1.20 (56.97)
	b)Nagali	0.23 (11.98)	0.23 (10.90)	0.27 (11.74)	0.23 (11.12)
	c)Vari	0.24 (12.50)	0.25 (11.85)	0.28 (12.17)	0.27 (11.95)
	d)Udid	0.1 (5.21)	0.11 (5.21)	0.14 (6.09)	0.11 (5.33)
	e)Tur	0.1 (5.21)	0.12 (5.69)	0.13 (5.65)	0.11 (5.63)
	f)Mung	0.07 (3.65)	0.09 (4.27)	0.1 (4.35)	0.08 (4.22)
2	Rabi				
	a)Wheat	0.06 (3.13)	0.08 (3.79)	0.09 (3.91)	0.07 (3.74)
	b)Gram	0.02 (1.04)	0.02 (0.95)	0.03 (1.30)	0.02 (1.0)
3	Gross cropped area	1.92 (100)	2.11 (100)	2.3 (100)	2.11 (100)

(Figures in parentheses are percentages to GCA)

5.5 Asset position of sample households

To understand the basics of household economics and explore reasons for diversification, household assets are most useful. The asset position of sample households is presented in Table 5.5 which revealed that, among the assets of households, livestock accounted for 66.47 per cent followed by buildings (21.81 per cent). Whereas, other productive assets like tools and implements and home appliances accounted for 7.03 and 4.67 per cent, respectively. This revealed that the productive assets of the sample households were meagre which was one of the reason for limited diversification of livelihood portfolio. The income of the household is determined by the way in which these assets are transformed into livelihood activities, given the legal and market context e.g. option to use land for cropping. The greater the assets of household greater the chance of upward mobility. The poor asset position is a limiting factor for upward mobility of sample households.

Table 5.5 : Asset position of sample households

(₹/household)

Sr. No.	Particulars	Income Groups			Overall
		Low	Medium	High	
1	Buildings				
	a)Residential	21517 (19.70)	22625 (19.78)	23301 (15.69)	22619 (19.18)
	b)Other farm buildings	2824 (2.59)	3073 (2.69)	3517 (2.37)	3113 (2.63)
2	Livestock	71628 (65.57)	74926 (65.50)	107357 (72.27)	79253 (66.47)
3	Tools and implements	8266 (7.57)	8285 (7.24)	8287 (5.58)	8284 (7.03)
4	Home appliances	5007 (4.58)	5483 (4.79)	6093 (4.10)	5526 (4.67)
	Total	109242 (100)	114392 (100)	148555 (100)	118794 (100)

(Figures in parentheses are percentages to total)

The total value of assets ranged from ₹ 109242 in low income group to ₹ 148555 in high income group. The assets of all the income group dominated by livestock component, which was a subsidiary occupation of

the respondents. The large proportion of livestock component in high income group might be the reason for upward mobility of this group.

5.6 Borrowing by the sample households

The sample households have poor resource base. As such they borrow the funds from outside. The information on borrowings by sample households is presented in Table 5.6. It was observed that the sample household had borrowed the funds from institutional as well as non institutional agencies. The overall average borrowing was ₹ 2494. The foregoing analysis revealed that the amount of borrowing decreased with increase in income group. The overall institutional borrowing was ₹ 1219. The average institutional borrowing ranged from ₹ 1100 in low to ₹ 1647 in high income group. The non-institutional overall average borrowing was ₹ 1275. The average non-institutional borrowing ranged from ₹ 1100 in low to ₹1384 in high income group. These indicated that access to institutional credit has a positive relation with per capita income of the households. The proportion of non-institutional borrowing was high in general and in particular in low and medium groups. This indicated that households still depends on non-institutional credit particularly to meet their consumption expenditure.

Table 5.6 : Average borrowing per households

Sr. No.	Particulars	Income Groups			Overall
		Low	Medium	High	
1	Institutional				
	a) Amount	1100 (50.00)	1153 (47.47)	1647 (54.34)	1219 (48.88)
	b) Repayment	950	999	1399	1052
	c) Balance	150	154	248	167
2	Non-institutional				
	a) Amount	1100 (50.00)	1276 (52.53)	1384 (45.66)	1275 (51.12)
	Total	2200 (100)	2429 (100)	3031 (100)	2494 (100)

(Figures in parentheses are percentages to total)

5.7 Employment

The sourcewise employment of sample households is shown in Table 5.7. The sources of employment included on farm employment, off farm employment and MGNREGA. At the overall level per family total employment generated through different activities was 404 man days. Out of the total employment, employment provided under (Mahatma Gandhi National Rural Employment Guarantee Agency) MGNREGA accounted for 53.71 per cent followed by off farm 23.38 per cent. Among the different income groups, on farm employment ranged from 16.95 per cent in low group to 60.95 per cent in high income group whereas, off farm employment was the highest (39.05%) in high income group. This indicated that on farm employment has positive with income levels of sample households.

Among the income groups employment under MGNREGA ranged from 59.32 per cent in low income group and 0.00 per cent in high income group. The overall average of MGNREGA employment was 53.71 per cent. This highlights the importance of MGNREGA in providing employment and livelihood security to the rural poors.

Table 5.7 : Average annual employment of sample households

(Man days/household)

Sr. No.	Particulars	Income Groups			Overall
		Low	Medium	High	
1	On farm	30 (16.95)	72 (16.51)	231 (60.95)	91 (22.89)
2	Off farm	42 (23.73)	89 (20.41)	148 (39.05)	93 (23.38)
3	MGNREGA	105 (59.32)	275 (63.07)	0 (0.00)	220 (53.71)
	Total	177 (100)	436 (100)	379 (100)	404 (100)

(Figures in parentheses are percentages to total)

5.8 Annual family expenditure of sample households

The expenditure side of the respondents reflects the various calls on income or entitlement comprising.

1. The immediate consumption needs of the households
2. Education and
3. Social expenditure

The annual family expenditure of sample households is presented in Table 5.8. It is observed from the Table 5.8 that, the proportion of expenditure on food items varied from 37.39 per cent in high income group to 42.47 per cent in low income group. The total annual family expenditure ranged between ₹ 11516 in low income group to ₹ 14423 in high income group. This revealed that, there is positive relation between per capita income and annual family expenditure of sample households.

Table 5.8 : Annual family expenditure of sample households

(₹/household)

Sr. No.	Particulars	Income Groups			Overall
		Low	Medium	High	
1	Food items	4891 (42.47)	5176 (40.12)	5393 (37.39)	5181 (39.88)
2	Non-food items				
	i) Health care	981 (8.52)	1143 (8.86)	1322 (9.17)	1154 (8.88)
	ii) Clothing	1923 (16.70)	2136 (16.56)	2417 (16.76)	2156 (16.60)
	iii) Education	842 (7.31)	962 (7.46)	1186 (8.22)	983 (7.57)
	iv) Entertainment	368 (3.20)	436 (3.38)	572 (3.97)	449 (3.46)
	v) Travelling	763 (6.63)	944 (7.32)	1062 (7.36)	944 (7.27)
	vi) Religious functions	1028 (8.93)	1223 (9.48)	1448 (10.04)	1237 (9.52)
	vii) Other	720 (6.25)	880 (6.82)	1023 (7.09)	886 (6.82)
	Total	11516 (100)	12900 (100)	14423 (100)	12990 (100)

(Figures in parentheses are percentages to total)

At the overall level annual family expenditure was the highest (39.88%) on food items followed by clothing (16.60%). The expenditure on health, education, entertainment, travelling, religious functions and other was 8.88, 7.57, 3.46, 7.27, 9.52 and 6.82 per cent, respectively. The family

expenditure of sample household is in accordance with Engel's law of family expenditure.

5.9 Sourcewise annual income of sample households

Household income is usually measured as cash earnings plus subsistence production. A broader term is sources of entitlement which captures household access to and claims on resources and their value to the household, rather than just direct earnings and output. A household's entitlement depends on what it is – such as land or jewellery, what it can produce or earn by working, what it can obtain by trading goods produced, etc. An attempt has also been made in present investigation to work out sourcewise annual income of sample households and same is presented in Table 5.9. The income side of the respondent was determined by three factors

1. The available assets, such as land, labour and capital.
2. The way in which these assets can be transformed into livelihood activities and
3. The returns to these activities e.g. crop prices, wage rates etc.

At the overall level total income from different sources was ₹ 93465. Out of the total annual income share of crop production was 42.37 per cent followed by wages 42.03 per cent and livestock 15.60 per cent.

Among the various income groups total annual family income varied between ₹ 56425 in low income group to ₹ 145980 in high income group the proportion of income from crop production was 64.60 per cent in low and 29.36 per cent in high income group. The contribution of wage income was the highest 50.41 per cent in medium group. The foregoing analysis revealed that crop production, wage earnings and livestock was the major sources of income of low, medium and high income group respectively.

Table 5.9 : Sourcewise annual income of sample household

(₹/household)

Sr. No.	Particulars	Income Groups			Overall
		Low	Medium	High	
1	Crop production	36451 (64.60)	39378 (44.67)	42864 (29.36)	39604 (42.37)
2	Livestock	2214 (3.92)	4332 (4.91)	77416 (53.03)	14576 (15.60)
3	Wages	17760 (31.48)	44440 (50.41)	25700 (17.61)	39285 (42.03)
	Total	56425 (100)	88150 (100)	145980 (100)	93465 (100)

(Figures in parentheses are percentages to total)

5.10 Disposal pattern for farm produce

Cultivation of rice, nagali, vari, udid, tur, mung, wheat and gram were the eight important crop activities noticed on sample farms. The average production of these crops and the disposal pattern is depicted in Table 5.10.

It is seen from the table that at overall level production of rice was 23.75 qtl. Out of total production of rice 62.78 per cent was used for home consumption and 37.22 per cent was sold. The consumption percentage of rice increase from 60.43 per cent to 63.39 per cent in low to high income group, respectively. Per household percentage of rice sold was the highest 39.57 per cent in low income group.

Table 5.10 : Disposal pattern for farm produce on sample farms

Sr. No.	Particulars	Income Groups (q./farm)			Overall
		Low	Medium	High	
1	Rice				
	a)Total production (q.)	21.76 (100)	24.12 (100)	23.08 (100)	23.75 (100)
	b)Home consumption (q.)	13.15 (60.43)	15.18 (62.94)	14.63 (63.39)	14.91 (62.78)
	c)Marketed surplus (q.)	8.61 (39.57)	8.94 (37.06)	8.45 (36.61)	8.84 (37.22)
2	Nagali				
	a)Total production (q.)	2.53 (100)	2.41 (100)	2.97 (100)	2.50 (100)
	b)Home consumption (q.)	1.47 (58.10)	1.32 (54.77)	1.53 (51.52)	1.36 (54.61)
	c)Marketed surplus (q.)	1.06	1.09	1.44	1.33

		(41.90)	(45.23)	(48.48)	(45.38)
3	Vari				
	a)Total production (q.)	2.16 (100)	2.32 (100)	2.58 (100)	2.34 (100)
	b)Home consumption (q.)	2.16 (100)	2.32 (100)	2.58 (100)	2.34 (100)
	c)Marketed surplus (q.)	0.00	0.00	0.00	0.00
4	Udid				
	a)Total production (q.)	0.72 (100)	0.84 (100)	1.11 (100)	0.86 (100)
	b)Home consumption (q.)	0.54 (75)	0.57 (67.86)	0.63 (56.76)	0.57 (66.93)
	c)Marketed surplus (q.)	0.18 (25)	0.27 (32.14)	0.48 (43.24)	0.29 (33.06)
5	Tur				
	a)Total production (q.)	0.81 (100)	1.04 (100)	1.13 (100)	1.03 (100)
	b)Home consumption (q.)	0.58 (71.60)	0.62 (59.62)	0.68 (60.18)	0.62 (60.81)
	c)Marketed surplus (q.)	0.23 (28.40)	0.42 (40.38)	0.45 (39.82)	0.40 (39.18)
6	Mung				
	a)Total production (q.)	0.63 (100)	0.76 (100)	0.95 (100)	0.77 (100)
	b)Home consumption (q.)	0.45 (71.43)	0.48 (63.16)	0.63 (66.32)	0.49 (64.37)
	c)Marketed surplus (q.)	0.18 (28.57)	0.28 (36.84)	0.32 (33.68)	0.27 (35.62)
7	Wheat				
	a)Total production (q.)	1.20 (100)	1.76 (100)	1.71 (100)	1.70 (100)
	b)Home consumption (q.)	1.20 (100)	1.76 (100)	1.71 (100)	1.70 (100)
	c)Marketed surplus (q.)	0.00	0.00	0.00	0.00
8	Gram				
	a)Total production (q.)	0.23 (100)	0.27 (100)	0.42 (100)	0.28 (100)
	b)Home consumption (q.)	0.14 (60.87)	0.16 (59.26)	0.23 (54.76)	0.16 (58.76)
	c)Marketed surplus (q.)	0.09 (39.13)	0.11 (40.74)	0.19 (45.24)	0.11 (41.23)

(Figures in parentheses are percentages to total)

At the overall level total production of nagali, vari, udid, tur and mung was 2.50 qtl., 2.34 qtl., 0.86 qtl., 1.03 qtl. And 0.77 qtl., respectively of which 54.61, 100, 66.93, 60.81 and 64.37 per cent were used for home consumption and 45.38, 0.00, 33.06, 39.18 and 35.62 per cent were sold respectively.

In case of wheat at overall level total production was 1.70 qtl. Among the different income groups production of wheat was maximum (1.76 qtl.) in medium group followed by high income group (1.71 qtl.)

At the overall level of total production of gram was 0.28 qtl. of which 58.76 per cent and 41.23 per cent were used for home consumption and sold, respectively.

5.11 Per hectare input cost incurred on different crops by sample households

Per hectare input cost includes expenses on seed, fertilizers, FYM and hired labour etc. The family labour charges are not included in input cost.

Table 5.11 : Per hectare input cost incurred on different crops by sample households

Sr. No.	Particulars	Income Groups			Overall
		Low	Medium	High	
1	Rice	18576 (15.04)	18622 (14.70)	18641 (14.71)	18620 (14.73)
2	Nagali	11790 (9.54)	12604 (9.95)	12685 (10.01)	12540 (9.92)
3	Vari	10846 (8.78)	10875 (8.59)	10906 (8.60)	10877 (8.60)
4	Udid	14035 (11.36)	14070 (11.11)	14124 (11.14)	14074 (11.13)
5	Tur	18663 (15.11)	18889 (14.91)	18704 (14.75)	18842 (14.90)
6	Mung	16500 (13.36)	17414 (13.75)	17470 (13.78)	17337 (13.71)
7	Wheat	17467 (14.14)	18531 (14.63)	18569 (14.65)	18438 (14.58)
8	Gram	15658 (12.67)	15662 (12.36)	15665 (12.36)	15662 (12.38)
	Total	123535 (100)	126667 (100)	126764 (100)	126390 (100)

(Figures in parentheses are percentages to total)

The cropwise input cost incurred by the household is given in Table 5.11. The total input cost ranged between ₹ 123535 in low income group to ₹ 126764 in high income group. The input cost increased with increase in income group.

At the overall level total input cost incurred by the respondent was ₹ 126390. The proportion of input cost incurred on various crops ranged between 8.60 per cent on vari crop to 14.73 per cent on rice crop. The per

hectare total input cost incurred was at par among the different income groups. In low income group highest (15.11 per cent) input cost was incurred on tur cultivation and the lowest (8.78 per cent) on vari crop. Similar trend was observed in medium and high income group.

5.12 Gap between income and expenditure

An attempt has been made to estimate the gap between income and expenditure by the households and same is given in Table 5.12. It is observed from Table 5.12 that in low and medium income group the expenditure incurred by the sample households on consumption and input cost was lower than their gross income from various sources. The gap between income and expenditure was found to be ₹ 13375 and ₹ 39923 in low and medium income group, respectively. Whereas, in high income group the gross income of respondent was more than the total expenditure resulting in saving of ₹ 93293.

Table 5.12 : Gap between income and expenditure

(₹/household)

Sr. No.	Particulars	Income Groups			Overall
		Low	Medium	High	
1	Gross income	56425	88150	145980	93465
2	Consumption expenditure	11516	12900	14423	12990
3	Input cost	31534	35327	38264	35394
4	Total expenditure	43050	48227	52687	48384
5	Gap between income and expenditure	13375	39923	93293	45081

At the overall level total expenditure incurred by the sample household was to the tune of ₹ 48384 and gross income was ₹ 93465 with positive gap of ₹ 45081. This revealed that the gross income of the sample household was sufficient enough to meet consumption and production expenditure. This could be attributed to the wage earnings under

MGNREGA, in case of low and medium income group and livestock production in high income group.

5.13 Per capita protein intake

Per day per capita protein intake is given in Table 5.13. It is observed from Table 5.13, that the per day per capita protein intake through cereals, pulses, fruits and vegetables, milk products, meat and eggs, fats, nuts and oilseeds, sugar etc. was the highest in medium income group.

Table 5.13 : Per day per capita protein intake by sample households
(g/day per capita)

Sr. No.	Particulars	Income Groups			Overall
		Low	Medium	High	
1	Cereals	15.46 (19.00)	17.92 (19.93)	15.95 (19.94)	17.41 (19.84)
2	Pulses	36.97 (45.44)	40.33 (44.85)	36.20 (45.25)	39.42 (44.96)
3	Fruits and vegetables	7.58 (9.32)	7.79 (8.66)	6.56 (8.20)	7.59 (8.65)
4	Milk products, meat and eggs	10.76 (13.23)	12.39 (13.78)	11.08 (13.85)	12.05 (13.73)
5	Fats, nuts and oilseeds	3.91 (4.81)	3.94 (4.38)	3.45 (4.31)	3.86 (4.40)
6	Sugar	0.08 (0.10)	0.09 (0.10)	0.08 (0.1)	0.08 (0.1)
7	Others	6.60 (8.11)	7.47 (8.31)	6.68 (8.35)	7.27 (8.29)
	Total	81.36 (100)	89.93 (100)	80 (100)	87.71 (100)

(Figures in parentheses are percentages to total)

At an overall level total per capita per day protein intake was 87.71 grams. The pulses constituted the major source (44.96 per cent) of protein followed by cereals (19.84 per cent). The protein intake from animal origin was relatively less than plant origin. Among the various income groups total protein intake varied between 80.00 grams in high income group to 89.93 grams in medium income group. The proportion of protein intake from cereals and pulses was at par in different income groups. The foregoing

analysis revealed that dietary pattern of sample households was more or less similar irrespective of income group.

5.14 Per capita carbohydrate intake

Per day per capita carbohydrate intake is shown in Table 5.14. It is observed from Table 5.14, that at the overall level per day per capita carbohydrate intake was 385.10 grams. Among the different items included in the food basket of respondents, 37.92 per cent carbohydrate was derived from cereals followed by pulses (25.70 per cent). This could be attributed to the fact that rice is the staple food of the respondents.

Table 5.14 : Per day per capita carbohydrate intake by sample households

(g/day per capita)

Sr. No.	Particulars	Income Groups			Overall
		Low	Medium	High	
1	Cereals	130.61 (36.47)	150.35 (38.07)	133.10 (38.06)	146.05 (37.92)
2	Pulses	92.85 (25.93)	101.20 (25.62)	90.89 (25.99)	98.95 (25.70)
3	Fruits and vegetables	48.04 (13.41)	50.2 (12.71)	42.36 (12.11)	48.87 (12.68)
4	Milk products, meat and eggs	5.91 (1.65)	7.51 (1.90)	6.61 (1.89)	7.23 (1.87)
5	Fats, nuts and oilseeds	4.46 (1.25)	4.41 (1.12)	3.9 (1.12)	4.34 (1.13)
6	Sugar	44.79 (12.51)	47.63 (12.06)	43.29 (12.38)	46.74 (12.14)
7	Others	31.46 (8.78)	33.65 (8.52)	29.52 (8.44)	32.85 (8.53)
	Total	358.12 (100)	395 (100)	349.7 (100)	385.10 (100)

(Figures in parentheses are percentages to total)

Among the different income groups carbohydrate intake varied from 349.7 grams in high income group to 395.0 grams in medium income group. Cereals constituted as the major source of carbohydrate followed by pulses in all the income groups.

5.15 Per capita calorie intake

It is observed from the Table 5.15 that calorie intake varied directly with the income groups. Among the different income group calorie intake was observed to be more than the definition of (2400 Kcal/day) poverty line in rural area. The per day per capita calorie intake ranged between 2558 Kcal in medium income group to 2717 Kcal in high income group. The high level of calorie intake could be attributed to consumption of rice in the study area. At the overall level per day per capita calorie intake was 2584 Kcal.

The foregoing analysis revealed that though the per day calorie intake is at higher side, the diet of the respondent was not balanced. The consumption of fruits, vegetables and milk, meat and eggs seems to be at low level.

Table 5.15 : Per day per capita calorie intake by sample households
(Kcal/day per capita)

Sr. No.	Particulars	Income Groups			Overall
		Low	Medium	High	
1	Cereals	654.25 (25.15)	746.50 (29.18)	667.48 (24.57)	726.64 (28.14)
2	Pulses	594.63 (22.86)	643.36 (25.15)	582.97 (21.46)	630.20 (24.41)
3	Fruits and vegetables	275.95 (10.61)	288.83 (11.29)	253 (9.31)	282.51 (10.94)
4	Milk products, meat and eggs	148.46 (5.71)	164.41 (6.43)	152.67 (5.62)	161.25 (6.24)
5	Fats, nuts and oilseeds	140.85 (5.42)	143.58 (5.61)	131.58 (4.84)	141.61 (5.48)
6	Sugar	229.66 (8.83)	241.02 (9.42)	223.61 (8.23)	237.47 (9.19)
7	Others	557.20 (21.42)	330.74 (12.93)	705.69 (25.97)	405.33 (31.71)
	Total	2601 (100)	2558 (100)	2717 (100)	2584 (100)

(Figures in parentheses are percentages to total)

5.16 Parameter estimates of regression analysis for calorie intake

An attempt was made to identify the determinants of per capita calorie intake by employing multiple regression analysis. The estimates of parameters are presented in Table 5.16. The signs and size of the parameter estimates are as per the a priori expectations.

It is seen from Table 5.16 that at an overall level variables off farm income and family size had significant influence on per capita calorie intake. The coefficient for off farm income indicates that with one unit increase in off farm income per capita calorie intake increased by 0.04 units. The coefficient for family size turned out to be negative as per a priory expectation indicating that as the family size increases by one unit per capita calorie intake decreases by 376.72 units. The R² value revealed that 69 per cent variation in per capita calorie intake was due to changes in variables included in the model.

Among the different income groups variables viz; off farm income and family size were significant in low and medium income groups, whereas, variables on farm income and family size were significant in case of high income group.

The coefficient for off farm income and family size in case of low income group depicted that as the off farm income and family size increases by one unit per capita calorie intake increases by 0.1 unit and decreases by 385.42 units, respectively. The R² value for low income group revealed that 83 per cent variation in dependent variable was attributed to the change in variables included in the model.

In case of medium income group regression coefficient for off farm income indicated that with one unit increase in off farm income per capita calorie intake increased by 0.16 units. While, one unit increase in family size results in decrease in per capita calorie intake by 420.26 units. The changes in the variables included in the model explained 69 per cent variation in per capita calorie intake.

Table 5.16 : Parameter estimates of regression analysis for calorie intake

Sr.	Particulars	Income Groups	Overall
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No.		Low	Medium	High	
1	Intercept	4311.30 (637.83)	3827.81 (180.38)	3033.63 (262.57)	3695.23 (153.46)
2	Cultivable land (Acre)	18.56 (275.80)	128.11 (78.61)	63.23 (111.01)	94.00 (66.19)
3	On farm income (₹)	0.001 (0.003)	0.01 (0.003)	0.21** (0.07)	0.03 (0.01)
4	Off farm income (₹)	0.10** (0.07)	0.16** (0.04)	0.06 (0.04)	0.04** (0.01)
5	Family size (No.)	-385.42** (71.50)	-420.26** (29.00)	-201.04** (36.53)	-376.72** (22.12)
6	R square	0.83	0.69	0.85	0.69

(Figures in parentheses are standard errors)
(** Significant at 1 percent significance level)

The regression coefficients for high income group revealed that with one unit increase in on farm income per capita calorie intake increased by 0.21 units. Whereas, one unit increase in family size, decreases per capita calorie intake by 201.04 units. The variables included in the model explained 85 per cent variation in the dependent variable, per capita calorie intake.

CHAPTER VI

SUMMARY AND CONCLUSIONS

The tribal population inhabit in almost all parts of the world. India ranks second next to Africa with respect to tribal population in the world. In all, there are 428 scheduled tribes in India. According to 2011 census, the scheduled tribe population is 8.85 per cent of the total population. The tribal population is concentrated mainly in the State of Madhya Pradesh, Orissa, Bihar and Maharashtra. In the Maharashtra State, tribal population mainly concentrated in the western hilly districts of Dhule, Jalgaon, Nashik and Thane (Sahyadri region) and eastern forest districts of Chandapur, Gadchiroli, Bhandara, Gondiya, Nagpur and Yavatmal (Gondwan region). Highest population of tribals is found in Nandurbar district and lowest in Sindhudurg district.

Livelihood can be derived from a range of on-farm and non-farm activities, which together provide variety of procurement strategies for food and cash. The risk of livelihood failure determines the level of vulnerability of a household to income, food, health and nutritional insecurity. Therefore, livelihood are secured when households have ownership of or access to recourses and income earning activities, including reserves and assets, to offset risks, ease shocks and meet contingencies.

Livelihood status is revealed through different aspects such as infrastructure, agriculture, nutrition, economy, health and sanitation and food availability. In Maharashtra state some districts are identified as disadvantaged districts. While, some districts are known for habitation of tribal communities. Nashik district from Western region of Maharashtra is known for predominance of tribal population. Though the district is

industrially developed some of the tahsils are dominated by tribal population and lack of industrial development.

Good nutrition is the basis for good health, and healthy population is a prerequisite for all productive work. When enough food is not consumed to satisfy the nutritional requirement of an individual over a long period of time, under nutrition results. On the other hand, consumption of food in excess causes over nutrition. The three factors that generally determine the nutritional situation of any country are population growth, food production and the distribution of foods.

Nashik district which is one of the districts of Western Ghat region of Maharashtra is selected purposively for the present study. In view of the increased importance given to the economic upliftment of Schedule caste and Schedule tribes in the State, an economic analysis of livelihood security assumes special importance. The specific objectives of the study are :

1. To study demography of sample households.
2. To examine cropping pattern and agricultural productivity on sample farms.
3. To assess nutritional status of sample households.
4. To identify income earning activities of sample households.
5. To examine gap between income and consumption expenditure by sample households.

Two tahsils namely, Surgana and Peth from Nashik district were selected randomly for the study. From each tahsil, ten villages were selected randomly. From each village 7 households were selected randomly. The final sample consisted of two tahsils, ten villages from each tahsil and 140 households. The sample households were classified into three income groups *viz*; low, medium and high on the basis of per capita income. Out of this 140 households, 13 belongs to low, 107 belongs to medium and 20

belongs to high income group of tribals from the Nashik district. The data were collected by survey method by personal interviews with the help of specially designed schedule for the agricultural year 2010-2011. A simple tabular analysis was used to know the average annual employment, per family annual total income from different sources, per family annual consumption expenditure and per capita intake of calories and proteins. The expenditure pattern of the sample households was examined to know the proportion of total expenditure incurred on different consumption items.

Regarding the social characteristics of households, it was observed that the overall average age of head of families was 37.79 years with an average education score of 5.60. The overall size of family was 5.95 members per family with overall average of 2.64 working members per family.

The overall average cultivated area was 2.11 ha. The percentage of un-irrigated area was 90.75 per cent and irrigated area accounted for 4.52 per cent. The average fallow land was 2.87 per cent. The average grazing land was 1.0 per cent and land not suitable for cultivation was 1.01 per cent.

Rice was the main kharif crop and the percentage of area under rice crop was 56.97 per cent. The percentage area under rice was the highest (57.35 per cent) in medium income group, while lowest in high income group (i.e. 54.29 per cent). Among other cereals in kharif season, nagali occupied 11.12 per cent area, while, vari occupied 11.95 per cent area. In case of pulses in kharif season, tur occupied maximum area (5.63 per cent) in all income groups followed by udid (5.33 per cent), mung (4.22 per cent). In rabi season, wheat occupied maximum area (3.74 per cent) from all income groups.

The total assets were worth of ₹ 118794 at overall level. Residential and other farm buildings accounted for about (21.81 per cent) of the total assets at overall level. Its percentage was maximum (22.47 per cent) in

medium income group. Livestock accounted for 66.47 per cent, tools and implements and home appliances accounted for 7.03 and 4.67 per cent.

The overall average borrowing was ₹ 2494. The overall institutional borrowing was ₹ 1219. The average institutional borrowing ranged from ₹ 1100 in low to ₹ 1647 in high income group. The non-institutional overall average borrowing was ₹ 1275. The average non-institutional borrowing ranged from ₹ 1100 in low to ₹ 1384 in high income group.

At overall level per family total employment generated through different activities was 404 man days. MGNREGA accounted for 53.71 per cent followed by off farm 23.38 per cent. On farm employment ranged from 16.95 per cent in low group to 60.95 per cent in high income group. Among the income groups employment under MGNREGA ranged from 59.32 per cent in low income group and 0.00 per cent in high income group.

The proportion of expenditure on food items varied from 37.39 per cent in high income group to 42.47 per cent in low income group. At the overall level annual family expenditure was the highest (39.88 per cent) on food items followed by clothing (16.60 per cent). The expenditure on health, education, entertainment, travelling, religious functions and other was 8.88, 7.57, 3.46, 7.27, 9.52 and 6.82 per cent, respectively. The consumption expenditure of sample households follows Engles law of family expenditure.

At the overall level total income from different sources was ₹93465. In total annual income share of crop production was 42.37 per cent followed by wages 42.03 per cent and livestock 15.60 per cent. The proportion of income from crop production was 64.60 per cent in low and 29.36 per cent in high income group. The contribution of wage income was the highest 50.41 per cent in medium group.

At an overall level out of total production of rice (23.75 qtl.) 37.22 per cent were sold in the market. The marketed surplus of other crops was negligible.

At overall level total input cost incurred by the respondents was ₹ 126390. The total input cost ranged between ₹ 3535 in low income group to ₹ 12676 in high income group. The proportion of input cost incurred on various crops ranged between 8.60 per cent on vari crop to 14.73 per cent on rice crop. The per hectare total input cost incurred was at par among the different income groups. In low income group highest (15.11 per cent) input cost was incurred on tur cultivation and the lowest (8.78 per cent) on vari crop.

At overall level total family expenditure incurred by the sample households was to the tune of ₹ 48384 and gross income ₹ 93465 with positive gap of ₹ 45081. The gap between income and expenditure was found to be ₹ 13375 and ₹ 39923 in low and medium income group, respectively. Whereas, in high income group the gross income of respondent was more than the total expenditure resulting in saving of ₹ 93293.

At overall level variables off farm income and family size had significant influence on per capita calorie intake. The coefficient for off farm income indicates that by one unit increase in off farm income per capita calorie intake increased by 0.04 units. The coefficient for family size turned out to be negative as per a priory expectation indicating that as the family size increases by one unit per capita calorie intake decreases by 376.72 units. The R^2 value revealed that 69 per cent variation in per capita calorie intake was due to changes in variables included in the model.

The overall level total per capita per day protein intake was 87.71 grams. The pulses constituted the major source (44.96 per cent) of protein followed by cereals (19.84 per cent). The protein intake from animal origin is

relatively less than plant origin. Among the various income groups total protein intake varied between 80.00 grams in high income group to 89.93 grams in medium income group. The proportion of protein intake from cereals and pulses was at par in different income groups. Per day per capita protein intake was the highest in medium income group.

The overall level per day per capita carbohydrate intake was 385.10 grams. Among the different items included in the food basket of respondents, 37.92 per cent carbohydrate was derived from cereals followed by pulses (25.70 per cent). This could be attributed to the fact that rice is the staple food of the respondents. Among the different income groups carbohydrate intake varied from 349.7 grams in high income group to 395.0 grams in medium income group. Cereals constituted as the major source of carbohydrate followed by pulses in all the income groups.

The overall level per day per capita calorie intake was 2584 Kcal. Among the different income group calorie intake was observed to be more than the definition of (2400 Kcal/day) poverty line in rural area. The per day per capita calorie intake ranged between 2558 Kcal in medium income group to 2717 Kcal in high income group. Though the per day calorie intake is at higher side, the diet of the respondents is not balanced the consumption of fruits, vegetables and milk, meat and eggs seems to be at low level.

Conclusions :

The following broad conclusions are drawn from the present investigation :

1. The sample household was of young age, with average educational level of 5.60.
2. The lack of irrigation facilities limits the cropping pattern followed by the sample households.

3. The cropping pattern was dominated by rice crop.
4. The overall productivity of crops on sample farm was at par with average productivity of crops.
5. The consumption expenditure of sample household followed the Engle's law of family expenditure.
6. Rice is the predominant food item among the different food items included in food basket of the respondent.
7. The per day intake of protein, carbohydrate and energy was more than the recommended level.
8. The MGNREGA was the major source of employment, which could highlight the importance of the program in rural area.
9. Though the calorie intake of the respondents was more than poverty line definition, diet was not balanced.

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* Original not seen.

Paddy					
Bagayat					
Varkas					
Total					

(B) Land leased-in/leased out :

Type of land	Area leased-in/leasedout (ha)	Total rent paid/received (₹)	Since when leased-in/ leased out	Remarks
Paddy				
Bagayat				
Varkas				
Total				

4. Land utilization :

1) Total cultivated area :		
(i) Irrigated	:	ha
(ii) Unirrigated	:	ha
2) Fallow land :		
(i) Current fallow	:	ha
(ii) Permanent fallow	:	ha
3) Grazing land	:	ha
4) Land not suitable for cultivation	:	ha
5) Total operated area	:	ha

5. Cropping pattern:

Sr. No	Season	Crop	Variety	Area(ha)	Production (Qtl.)
1.	Kharif	(a) (b) (c)			
2.	Rabi	(a) (b) (c)			

3.	Summer	(a) (b) (c)			
4.	Annual/Perennial	(a) (b) (c)			
	Total				

6. Information about capital assets :

Sr. No.	Name of asset	Year of construction	Expected remaining life (year)	Construction cost/purchase price (₹)	Present value (₹)	Expenditure on repair during the year (₹)

1.	Residential building (i) (ii)					
2.	Farm building (i) (ii) (a)Implement shed (b)Cattle shed (c) Engine house (d)Others					

7. Information about livestock :

Sr. No.	Type of livestock	BREED					
		Local		Improved/ Crossbreed		Total	
		No.	Value (₹)	No.	Value (₹)	No.	Value (₹)
1.	Bullock (i)Draft (ii)Breeding bull						
2.	Cow (i)Milch (ii)Dry (iii)Calves						
3.	He-buffaloes (i)Draft (ii)Breeding he- buffaloes						
4.	She-buffaloes (i)Milch (ii)Heifers						
5.	Goats						
6.	Sheeps						
7.	Hens						
8.	Others						

<p>A) Implements and machinery</p> <ol style="list-style-type: none"> 1. Tractor 2. Oil Engine 3. Electric motor 4. Thresher 5. Plough <ol style="list-style-type: none"> (a)Wooden (b)Iron 6. Seed drill <ol style="list-style-type: none"> (a)Improved (b)Local 7. Harrow 8. Hoe <ol style="list-style-type: none"> (a)Improved (b)Local 9. Bullock cart 10. Spray pump 11. Duster 12. Others <ol style="list-style-type: none"> (i)Spade (ii)Pickaxe (iii)Kudali (iv)Ghameli (v)Chaff cutter (vi)Others <p>B) Household articles</p> <ol style="list-style-type: none"> 1. Television 2. Radio 3. Transister 4. Wrist watch 5. Alarm watch 6. Sewing machine 7. Cycle 8. Motorcycle 9. Freeze 										
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10.	Furniture (i)Table (ii)Chairs (iii)Cot (iv)Cupboard (v)Racks										
11.	Lighting : (i)Gas light petromax (ii)Lantern (iii)Electricity (iv)Gobargas										
12.	Utensils : (i)Big size (ii)medium size (iii)Small size										
13.	Ornaments : (a)Silver (b)Gold										
14.	Other (specify)										

9. Financial assets of the farmers :

Sr. No.	Particulars	Amount (₹)
1.	Cash in hand	
2.	Bank balance	
3.	Saving in post office	
4.	Shares /bonds	
5.	Amount invested in insurance policy	
6.	National Saving Certificates	
7.	Indira Vikas Patra/Kisan Vikas Patra	
8.	Amount given out as loan	
9.	Other :	
	Total	

10. Borrowing and repayment of loan :

Sr. No.	Agency	Date of borrowing	Amount (₹)	Types of loan LT/MT/ST.	Purpose	Rate of interest (%)	Repayment (₹)		Outstanding amount (₹)	Reason for outstandings
							Principal	Interest		
1.	Co.op. society									
2.	Bank for Rural & Agricultural Development/RRB									
3.	Nationalised Bank									
4.	Dairy co.op.Society									
5.	Development Department									
6.	Private Agency									
7.	Friends/neighbours/relatives									
8.	Other (Specify)									
	Total :									

11. Expenses on crop production during last year :

Name of the crop :

Variety:

Area (ha):

Sr.No.	Particulars	Quantity (kg)		Rate (₹)	Amount (₹)
		Home grown	Purchased		
1.	Seed				
	(i)Local				
	(ii)H.Y.V.				
2.	F.Y.M.				
3.	Fertilizer				
	(i)				
	(ii)				
4.	Insecticides/Pesticides				
5.	Labour required				
	(i)Male				
	(ii)Female				

6.	(iii)bullock				
7.	(iv)Machine Irrigation Any other : Land revenue & cess				

12. Expenses on livestock during last year :

Sr. No.	Item of cost	Quantity		Rate Per Unit	Amount (₹)
		Home grown	Purchased		
1.	Fodder used :(Kg) (i)Dry grass (ii)Paddy straw (iii)Green fodder				
2.	Feeds (concentrates) :(Kg) (i) (ii)				
3.	Purchase of ropes,chain etc. (₹)				
4.	Veterinary aids : (₹) (i)Doctor's fee (₹) (ii)Medicines (₹)				
5.	Labour required : (Man days) (a)Male (b)Female (c)Child				

(C) Sources of employment before MGNREGA :

Sr. No.	Sources of employment	No. of days		Wage/day	
		Male	Female	Kind	Cash (₹)
1)	On farm				
2)	Off farm				
3)	Any other				

(D) Sources of employment after MGNREGA :

Sr. No.	Sources of employment	No. of days		Wage/Day	
		Male	Female	Kind	Cash (₹)
1)	On farm				
2)	Off farm				
3)	MGNREGA				
4)	Any other				

(E) Wages received during last year :

Sr. No.	Particulars of hired out labour	Hired out labour days /hrs.	Wage rate (₹)	Total wages received (₹)
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1.	Male			
2.	Female			
3.	Bullock			
4.	Hiring of machinery/implements			

(F) Details of family income :

Sr. No.	Source of income	Amount (₹)
(A)	Crop production : (i) Kharif (ii) Rabi (iii) Summer	
(B)	Livestock production	
(C)	Wages	
(D)	Sale of fuel wood	
(E)	Service	
(F)	Business	
(G)	Sale of MFP's	
(H)	Other	

14. Food consumption :

Food items 1	Quantity 2	Rate/unit (₹) 3	Amount (₹) 4
(A)Cereals : (i) Rice (ii) Wheat (iii) Vari (iv) Bajara (v) Jawar (vi) Nagali (vii) Others			
(B)Pulses : (i) Tur (ii) Mung (iii) Udid (iv) Gram (v) Masoor (vi) Cowpea (vii) Kulthi			

<p>(viii) Mathki (ix) Wal (x) Others (C) Leafy vegetables: (i) Palak (ii) Methi (iii) Math (iv) Chakwat (v) Chavali (vi) Drumstick leaves (vii) Raddish leaves (viii) Rajgira (ix) Others (D)Other vegetables: (i) Tomato (ii) Brinjal (iii) Chilli (iv) Bhendi (v) Cabbage (vi) Cauliflower (vii) Pumpkin (viii) Bottle gourd (ix) Bitter gourd (x) Snake gourd (xi) Ridge gourd (xii) French bean (xiii) Cucumber (xiv) Drumstik (xv) Guar (xvi) Knolkhol (xvii) Others (E)Roots and tubers: (i) Potato (ii) Sweet potato (iii) Raddish (iv) Carrot (v) Suran (vi) Colocasia (vii) Others (F)Fruits : (i) Mango (ii) Jackfruit (iii) Papaya (iv) Orange (v) Lemon</p>			
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<p>(vi) Chiku (vii) Guava (viii) Custard apple (ix) Alma (x) Banana (xi) Grapes (xii) Pineapple (xiii) Apple (xiv) Others</p> <p>(G)Milk and milk products : (i) Milk</p> <p>Milk products : (i) Khoa (ii) Butter (iii) Butter milk (iv) Curd (v) Shrikhand (vi) Others</p> <p>(H)Fats and Oils : (i) Groundnut oil (ii) Seasamum oil (iii) Sunflower oil (iv) Safflower oil (v) Caster oil (vi) Niger oil (vii) Palm oil (viii) Vegetables oil (ix) Others</p> <p>(I)Meat and eggs : (i) Meat (ii) Chicken (iii) Eggs (iv) Fish (v) Crabs (vi) Others</p> <p>(J)Nuts and oilseeds : (i) Coconut (ii) Ground nut (iii) Cashew nut (iv) Others</p> <p>(K)Spices and condiments : (i) Turmeric (ii) Ginger (iii) Chillies (iv) Nutmeg (v) Blackpaper</p>			
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(vi) Kokum (vii) Onion (viii) Garlic (ix) Hing (x) Tamarind (xi) Coriender seed (xii) Mustard seeds (xiii) Cumin seed (L)Miscellaneous : (i) Suger (ii) Jaggery (iii) Khandsari (M)Commerical product : (i) Tea powder (ii) Coffee Powder (iii) Others			
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15. Expenditure putter for the year 2010 -2011 :

Item of expenditure	Amount (₹)
1) Health care 2) Clothing 3) Education 4) Entertainment 5) Travelling 6) Religious functions 7) Other (If any) (i) (ii) (iii)	

16. Employment provided under MGNREGA is sufficient to meet Family expenditure. Yes/ No.

**17. Employment provided under MGNREGA is in village or near by Village. Yes/ No.
If NO – Distance of work place from village _____ Km.**

18. Facilities provided at work place of MGNREGA.

- (i)
- (ii)
- (iii)

