CHAPTER-4
REVIEW OF LITERATURE

A number of studies have been conducted so far both by government and private agencies as well as by the individual research scholars related directly or indirectly to food insecurity and vulnerability of agrarian population in the agricultural sector. In this context, a few related studies have been reviewed to have an idea about the extent and nature of food insecurity among farmers with small, marginal and large farm holdings in Himachal Pradesh. The present chapter is concerned itself with the existing studies on food insecurity, vulnerability and other related topics. The main objective behind reviewing the already existing research work or studies is to evaluate these studies in the light of sampling design, methodology followed and suggestions made their in. So it is done for the reasons that the present study could be designed in such a manner that the outstanding points could be incorporated in the present study and any type of duplication in the work is avoided. This will help in designing the present study with the objectives of the study. Therefore, it provides invaluable inputs for finalizing techniques of the study and clarifying various concepts used their in. In order to formulate the present study and to adopt an appropriate and suitable methodology, some of the important existing research works have been thoroughly scrutinized. A brief review of some of the significant studies, and used tool and techniques in this particular field, has been grouped under these broad heads:

1. Food and Nutritional Security;
2. Agricultural Diversification;
3. Dependence and Access to Public, Private Resources;
4. Policy Initiatives or Coping Mechanisms and Sustainable Agricultural Development.
5. Other related works.
4.1 FOOD AND NUTRITIONAL SECURITY

In the modern age, food security concerns are much more than just physical availability of food stock as well as economic and physical access to food stocks but it also includes biological utilization of food consumed. Moreover, nutritional security is a broader term than food security, and later is just an indicator among many others. In this section, we have reviewed various studies and research works to address most complex problems of modern age in a right perspective at all spheres.

Jena (2008) has studied food insecurity among tribal communities of Rayagada district in Orissa where periodic outbreaks of disease brought on by food scarcity, unemployment, and lack of health care services. The study shows that this backward district has no say or voice in the policy matters as about 55.75 percent people belong to scheduled tribes and 13.92 percent to scheduled cast with the lowest literacy rate 36.15 percent. The grain banks established in early 1980’s were almost defunct due to widespread default of grain loans, and shifting of women from grain bank management and operation, to towards self help group activities. No doubt, tribe’s staple food gruel prepared from ragi or finger millet was richer in nutritional value as compared to rice, but frequent recurrence of malaria and diarrhea caused malnutrition in tribal area. Author also quoted the constitution provision under schedule V that tribal land cannot be taken away without their informed consent, but it has happened in Orissa under some other rule or principles. About 80 percent land was reported state owned and tribal have least ownership, left no option rather than shifting cultivation on government land in absence of ownership. Consequently, tribal’s primary source of food became more insecure.

Rajivlochan (2008) has carried out a study to investigate into the real causes for the distress among small and marginal farmers in the era of economic liberalization and of integration of Indian economy with the world economy. The researcher has listed the common causes for the distress of farmer in India namely (i) Globalization, resultant competition and exploitation by big capitalist and its milliners; (ii) non-availability of farm loans from formal sources (iii) Social and cultural distress (iv) Fragmentation of holdings of an unviable economic size (v) Inadequate farm research to cope with contemporary circumstances (vi) In-efficient
administrative machinery to impart farm technical know-how and extension services at grass root level. The study shows that currently proposed solution viz. to write off loans and to increase irrigation potential could do only little to improve farmers earning capacity in prevailing circumstances, especially in case of farmers of Maharashtra and Andhra Pradesh. The study suggested that it all depends up on the policy makers of India to provide small farms with the requisite knowledge input which could only be the key to economic up-turn in the fortunes of farmers.

Ray (2008) presented a comparative analysis of India and Vietnam in dietary diversity and undernourishment during the phase of rapid economic growth. The study revealed that both the countries have experienced high economic growth accompanied with poverty reduction, particularly Vietnam recorded large reductions on undernourishment front while it was not true in Indian context. The dietary diversifications towards animal products have greater potential in Vietnam as compare to India. Author concluded that poverty reduction could not automatically associate with reduction in undernourishment in India, through Vietnam has experienced so. Further, Vietnam has already met one of the principal targets of Millennium Development Goal; numbers of private and public initiatives were on the field to enhance food security in the 1990’s.

Chand (2007) made an attempt to study the demand for good grains, specially, after 1990’s when food grain production failed to keep pace with population growth. Author observed that prior to mid 1990’s per capita production has increased, even when country’s population increased more than 50 percent. The study attempted to provide demand projections for food grains towards the end of Eleventh Five Year Plan and by the year 2020-21 despite the declining trend in per capita direct consumption of food grains. The total domestic demand for food grain excluding export demand was projected to reach 235.4 million tones by end of Eleventh Five Year Plan and 280.6 million tones by the year 2020-21, and this projected demand would require 1.86 per cent annual growth in food grain production during Eleventh five year Plan and growth of food grain demand would remain about 2 percent despite a slowdown in population growth and dietary diversification, involving a sharp decline in per capita direct consumption by 2020-2021.
Data, Mandal, Tripathi, Singh, Verma and Mohanty (2007) have conducted a study on the issue of food security and self-sufficiency at macro level. The per capita availability of food grains for the population was in the focus at all India level in general and particularly North Eastern region of India. It was observed that the per capita food production failed to keep pace with the population growth in near past decades. Consequently, per capita availability of food grains declined from 177 kgs per year in 1991-92 to 163.2 kgs during 2000-01. The paper was focused on to investigate into (1) The trends of macro variables viz. food grains growth vis-à-vis the population growth (ii) status of public distribution system, extent of food security at household level, policy regime to mitigate the hunger for the attainment of the Millennium Development Goals. The study area comprising about 8 states, characterized by fragility, marginality, inaccessibility, cultural heterogeneity, ethnicity and rich biodiversity with about (82%) 82 percent rural population. Mixed farming system is in practice in the region. The study pertains to about 115 villages, 56 blocks and eight states and survey was conducted in 2004 and 2005 in the region. The notion of household entitlement to food, derived from various means by which households avail food like household production, other income generating activities etc.

The researcher concluded that in the region mixed farming is the order, and households’ crop production is not profit motivated but it attains the household’s level security. Then inadequate storage facilities lead to heavy storage losses and affecting the seasonal availability of food. The household’s potential to meet food shortfalls directly depend on the ability to finance for the food – feed requirements. The main contributor in the households income was service sector (i.e. 34 percent) their livestock sector especially fishing activity (i.e. 24 percent). The stability of households income was the major determined for the ability to finance their own requirements and likely to be more robust indicators of food security than fluctuating prices. It was worked out that maximum income variation or instability was caused due to cereal production than other sources of households’ income and it was conditioned by fragility, marginality, diversity and risk prone different eco-system in the region. The study advocated a strong and vital role for the state policy regime, in
ensuring minimum income instability and uncertainty, through appropriate measures to ensure access, especially for the poorer sections to food.

Kaczor (2006)\(^6\) has carried out a study to highlight the prevailing situation of food insecurity in India. The poverty easily coexists with food insecurity and is the main cause of hunger and malnutrition. Poverty accompanied with lack of income, productivity malnutrition, illiteracy, homelessness, inadequate housing, unsafe environment, social discrimination and many other factors. It was revealed that malnutrition not only denied people their right to health, but has also serious economic implication as hampers ability to work effectively, consequently, undermining productivity and economic growth. The increasing trends of urbanization have also made the situation alarming in urban areas too. The scholar has also touched the various contingents of food insecurity namely food or diet habits, natural calamities, demographic features, environmental aspects etc. The study revealed that 93 percent of Indian diets were based on vegetable and only 7 percent consists of animal products. Secondly, the average per capita income of farm families was less than 300 dollars every year, less than the national per capita average income while other families make no money and live off of their land. About 80 percent of population was earning less than two dollars per day. Thirdly, frequent occurrence of draughts, floods etc. led to complete crop failure endangering the food security. Lastly, the caste social system has did another major harm, as the outcasts known as dalits were kept at the edge in the society that is the reason that in India 90 percent of all poor were dalits, and 95 percent illiterate were also dalits. These classes had been food insecure since long. The researcher suggested that food and nutritional security can be improved through developments in domestic polices.

The size, structure and occupation of various categories living below poverty line has remained almost similar as compare to 1970’s. The author then, define the feasible food basket, which would provide the requisite calories intake, taking into account both cultural and dietary preferences as well as price-correction. The actual cost per calorie per consumer varies between the three broad classes namely Below Poverty Line (BPL), Poverty Line (PL) and Above Poverty Line (APL) in rural and urban areas from state to state. For Himachal Pradesh in 1999-2000 it was Rs. 358,
256 and 186 in rural areas for BPL, Poverty line and APL classes respectively. It was found that poverty line class had voluntarily changed their food habits towards consumptions of "higher quality" food over the period 1972-74 to 1999-2000, despite it being within their means. The reduction in per capita consumption of calories had arisen mainly from lower consumption of cereals in rural areas specially. The per capita cereal consumption of poverty line class in Himachal Pradesh had declined 12.37 kg per month to 11.48 kg per month from 1993 – 94 to 1999 – 2000. The Author suggested that if cereals were assumed to be inferior goods by the poverty line class, then an income transfer mechanism would be more cost efficient than a food subsidy for achieving nutritional norms of food security.

Krishnaraj (2006)⁷ has carried out a study on food security, how and for whom. The paper has dealt precisely with problem of endowment and exchange entitlement, especially with regard to women in rice producing regions. The researcher seeks to draw attention to the resources in possession, mainly employment, available for women for procuring food. The study observed that it was lack of opportunities for wage labour, lack of command over productive resources, assets etc. and acts as major constraints on these women who undertake farming for the household. This paper highlighted the factual situation regarding food security among poor women and point to the urgency of public measures for the protection of this particular vulnerable section of our society.

Passicha and Singh (2005)⁸ conducted a study on the impact of land degradation and its concerns on the food security of small and marginal holdings. To mitigate the food – feed requirements of an average human being about 0.05 to 0.5 hectare cultivable land area is needed. But the ever-increasing trend of land degradation by different processes of land degradation, the land area required per capital increases due to decreasing carrying capacity of land. Consequently, moderate to light degradation of land affects agriculture by reducing maximum yields through decreased water holding capacity, reduction in crop yields, increasing risk of crop failure. These factors increases production cost and decrease net profitability continued eroding its value, agricultural investment lowered down, leading to enhance rural household food-security.
The researcher advocated the facts that land in several large irrigation schemes ultimately suffers from sanitization and water logging, endangering food security of the households, i.e. the domain of Tungabhadra irrigation projects, the land area was degraded at the rate of 6000 hectare annually, while crop yield has fallen to almost zero as study conducted by Joshi and Jha (1991) in Uttar Pradesh, about 110 farming household were sampled. Thus the researcher conducted that land degradation and ever increasing population pressure thereon must be tacked within time at all spheres, to ensure food security especially on marginalized farms.

Thakur and Sharma (2005) carried out a study on the meeting of challenges of food security in 21st century in the most progressive hill state of India namely Himachal Pradesh. The study examined the major farming system in their proper perspectives to make valuable recommendations to the planners and policy makers and farmers to ensure food security, and low-cost sustainable agriculture, in the region of the state. The study confined in backward tehsil of chopal of district Shimla and tribal tehsils Nichar and Sangla of tribal Kinnaur district to work out economics of production and marketing of crops grown under different farming system, i.e. organic farming system and in-organic farming systems. The standard cost concepts were used to work out the economics of farming systems, along with the linear regression model to quantify the technical relationship of farm income with size of holding. The comparative economics of crops under different farming system on the selected farms under research supervision reveals that the Inorganic farming system has made agriculture costly, risky, economically unviable and ecologically unsustainable, while organic farming system has proved an effective cure for soil health, soil productivity to increase yield, production, income and profits of crops on sustainable basis. Thus the author advocated the adoption of organic farming system to keep pace with the food-feed requirements of agrarian population.

Rao (2005) Feminist scholar has examined the issues of food security from a different angle and tried to explore the lines in the context of gender equality between land right for woman and household food security. The study pertains to the rice producing regions of Tamil Nadu and Kerala states. For this purpose, detailed data of
income and households contribution of men and women was collected and processed. The scholar observed that land right for women combined by additional responsibility in form of household food security and nutrition of children. The study shows that women’s income was only 55 percent of men’s average income and were paid less for the same job and their household contribution was about 70 percent that of men’s. A woman tends to contribute almost their entire income to the household in line with their social and mother’s obligation towards her family and children. The author suggested that land alone cannot give women enough work and income, improve their status or even ensure household food security, but it requires attention of policy makers and planners to generate more work opportunities at macro level for the women.

Sen (2005)\(^\text{11}\) has conducted a study to highlight the relevance of existing poverty lines, consumption behavior and nutritional norms for the measurement of poverty and designing poverty alleviation instruments in India. The Author argued that the Indian poverty line were based on the normative nutritional requirement of an average person, derived from age, sex, occupation specific norms on the basis of 1971 demographic census i.e. 2400 kilo calories per day and 2100 kilo calories per day in rural and urban India respectively. In 1972-73 Indian Poverty line widen its coverage as it covers the per capita consumption expenditure of household on other essential goods and services deemed necessary. The study shows that the concept of one-dimensional measure of poverty for all states of India was incapable to keep in account the price variations as well as varied demographic features and provided underestimate or over estimate of poverty. It was observed that the actual calorie intake at poverty line class in every state was significantly below the calorie norm in rural and urban areas except urban area of Orissa, with an average shortfall from norms being about 25 percent to 15 percent respectively. The food consumption of poverty line class in 1999-2000 on the basis of 1972 census was 1942 calories per day in Himachal Pradesh, it is about 81 percent of prescribed norms (i.e. 2400), while per month food expenditure amounted to Rs. 227.16 per month, it is 62 percent of total consumption expenditure norms in rural areas.
Abdul Kalam (2004)\textsuperscript{12} eminent scientist, approached food security problem from three different angles namely availability of food which is contingent upon food production and distribution, access to food, guided by purchasing power and food absorption. The scholar suggested a roadmap to the problem through integrated action in five specified areas i.e. (i) agricultural advancement through second green revolution focused on farmers and enhancement of agricultural productivity and agricultural diversity. Secondly, the mismatching of required skills and imparted education must be wiped out through diversity of skills and perservance in work makes an entrepreneur. The banking system should provide venture capital right from village level, thirdly to achieve balanced socio-economic development in rural and urban areas through implementation of Providing Urban Amenities (PURA) in rural areas. The scholar advocated that the recommendations of the ‘Atlas of the sustainability of Food-Security 2004’ would provide enough input for the implementation of PURA mission.

Dreze (2004)\textsuperscript{13} has conducted a study on the perspective of Political and Economic democracy, as provided in the Indian constitution which provides for the right to food as one of the basic economic and social right essential to achieve economic democracy in India. He studied the catastrophic nature of nutritional situation in India through food – feed habits of people, composition of dietary intake among various groups of people from different walks of life and indulged mostly in agricultural and allied activities.

Shankar (2004)\textsuperscript{14} has conducted a study in a tribal area in South-Eastern Uttar Pradesh, to investigate into the working of Targeted Public Distribution System (TPDS) meant to provide food security to vulnerable households in the absence of assured regular income. The study pertained to a remote backward region Duddhi block in Sonbhadra district where about 60 percent is still forest cover and only 6 percent of the cultivated area is irrigated. The study covered all those having a Below Poverty Line (BPL) cards, Antodaya and Annapurna cards in the region. The study shows that despite acute poverty, about three/fourth of BPL card holders did not purchase any food grains from PDS in absence of assured income as these were either casual daily worker or firewood collectors. Secondly, such households
consumed locally produced a substandard broken rice sold at cheaper rate than PDS wheat or rice. People in dry region some time have adequate home produce to suffice their food-feed requirements, so they will not go for purchase from PDS. The author argued that most of people did not have the access to PDS in absence of permanent income or purchasing capacity, thus policy measures should be directed towards generating more income opportunities in this region.

Sud (2004)\textsuperscript{15} has attempted to study the issues of food security and argued that Indian policy planners have treated food security as an issue of national priority and became an integral part of the food policy right from the very beginning. He has presented the modern broader concept of food security i.e. food security is not merely the availability of food but its affordability by the poor and underprivileged, it also requires access to adequate health cover. He advocated that food security needed to exist at different planes viz. right from individual level to household, social, regional and national level food security.

Murali (2003)\textsuperscript{16} has studied the extent and nature of food insecurity in urban Indian cities and towns and uses series of maps to identify food – insecurity hotspots in the country. The Food Insecurity Atlas of Urban India used existing data to analyze food security problems, based on the data of the census of India and National Sample Survey (NSS). The study reveals that urban lower income groups were really better off than their rural counter partners of the urban average calorie intake is lower than rural average calorie intake, and average calorie intake has declined marginally in urban and rural India during the last three decades. Thus the study suggested that the analysis of food security requires a more broad -based approach than to mere focus on calorie intake. Although, urban wages and salaries were higher than rural wages and salaries, even then urban poor were fairly poor in terms of livelihood security. Vulnerable groups were often dependent on causal employment and wages, caused of uncertainty of these avenues of income have a significant effect on their food security. Therefore, the study concluded that the urban population of Madhya Pradesh was the most food insecure in India. Thus the state along with Orissa and Pondicherry were classified as “extremely food insecure” while Uttar Pradesh and Bihar remained close behind these states as classified as ‘Severely Food Insecure’.
The urban population of Himachal Pradesh, Jammu & Kashmir and Delhi were most "Food Secure". The another fact revealed that only 10 percent population lives in urban areas in Himachal Pradesh, which was very low as compare to other states namely Tamil Naidu with 43.86 percent urban population. Thus the study pointed out that the problem of food insecurity and urban poverty are multi-faceted. It requires to be tackled with more integrated broad approach on the planner and policy maker’s part.

Kumar, Sharma and Vashist (2002) have carried out a study in Himachal Pradesh on profitability, risk and impact of diversification in the era of rapid pace of globalization, urbanization and mass tourism which are threatening resources, and simultaneously endangering environment, food – feed and nutritional security. The important objectives of the study were namely (i) to investigate the extent of profitability and risk in pulses and oil seeds as compare to cereals and vegetables; (ii) to formulate risk efficient farm plans; (iii) strategy to reduce risk; (iv) to augment income through increased area and productivity. The study pertains to two major crop growing areas of district Kangra namely Nagrota Begwan and Kangra development blocks with a sample of 150 farms.

In the study risk efficient farm plan was developed under two situations firstly, vegetable farming, vegetable plans dairy farming by using (MOTAD) minimization of total absolute deviation model. The objective function was based on dual criterion namely (i) maximization of gross margins and (ii) minimization of risk associated with expected gross margins. It was concluded that vegetable plus dairy plan was most appropriate choice for the farmers of the region to enhance or increase their income by about 50 percent while second situation was more risky and less remunerative.

Shiva (2002) carried out a study on the reasons for hunger and examined the issue in context of trade liberation and globalization as a major cause for hunger. The study shows that number of states were facing hunger problem while the warehouses were overflowing and a sum of Rs.300 to 400 million being expanded per day to maintain stock under pressure of rich countries to met budgetary obligation.
Moreover, children were reported to be sold for a few thousand rupees in order to avoid starvation. Author concluded that earlier studies have ignored some important aspects of the problem and the structural adjustment programmes, driven by world agencies which hampered rural livelihood and access to resources, market, entitlement and incomes etc. Author further observed that land reforms put back resources entitlement and access in the hands of peasants removing a root cause of poverty and starvation. The democracy alone couldn't prevent famine itself because political democracy divorced from economic democracy which allows governments to bid for rates rather than starvation and hunger.

Sen (2002) has examined in his study why half the planet is hungry. The study analyzed that famine does not occur in democratic set up because the survival of the ruling government would be threatened by famine, as no government could face and win election in a hunger country. The study concluded that rich countries have a vital role to play in the reduction of poverty and hunger through restoration of democracy, facilitating cheap and tariff free imports from poor countries and to build a global alliance not just to combat terrorism but also to achieve positive goals. Author concluded that a strong political leadership necessitated in encouraging democratic governments in the world along with visionary economic policies not only of export and import polices but also reforms to reduce deprivation in the poorer countries.

Thompson (1996) in his paper examined the role of international trade and improved production technology as a key instrument for the world food security in the early 21st century. The author focused on the availability of more fertile, well watered, unfrosted, non-erodible land and draw inferences for research, public policy and international trade in ensuring food security without environmental damage, and tried to access the extent of problem in different continents. Study concluded that a limited amount of additional land was available that could be brought under agricultural production at low cost in North, South America and Southern Africa. Hence a large potential for higher productivity, technology were available and the volume of agricultural research investment has lowered by public sector at national and international level, although private sector has emerged as new player. On other
hand governmental policies and anti-agricultural bias has also appeared. Further, concluded that none of the country in the world has over powered poverty and food insecurity through agriculture, thus it can be necessary but not sufficient alone, it must be assisted by non farm income.

Singh and Bhati (1992)\textsuperscript{11} carried out a study to examine the facts about an increasing farm income and employment in hilly areas of Himachal Pradesh. The study focused on whether the farm sector alone will be able to absorb the growing labour force gainfully or the tendency of labour force migration from hills to plains would further swell. Authors highlighted the scope and potential of increasing farm income and employment in the hilly areas of the state by making a comparative analysis of profitability and labour use in cereals vs. vegetable crops. The study revealed that both farm income and employment could be sustainability increased by shifting suitable area from cereal crops to vegetable crops and by facilitating market and infrastructural facilities in the region. The authors advocated that the state has been endowed with vast potential for production of variety of fruit crops and vegetable crops by the nature. These are high pay-off crops. An increase in vegetable area of small and marginal farms will not only provide gainful employment to surplus family labour but would also reduce income inequality.

Deoghase and Sharma (1992)\textsuperscript{22} have conducted a study on prospects of enhancing farm income on marginal and small farms. The study pertains to Karnal district of Haryana with objectives to find out an optimum cropping pattern and livestock combination at varying capital levels of technology. The data and information on input and output of crops, poultry and dairy enterprises were collected for the agriculture year 1986-87 using survey method. Then, four villages selected randomly, farmers were classified on the basis of farm size and their major power i.e. bullocks and tractor operated farms. The collected information analyzed in the light of prevailing situation and drawbacks. The study revealed that there was under utilization of existing resources both land as well as man power. A well though, systematic technology and adequate finance based farm planning was needed and the researchers emphasized so. They suggested a liberal credit policy to bring marginal
and small farmers above poverty line and livestock enterprises should invariably be encouraged on these farms to enhance farm income.

Guleria and Tiwari (1990) studied the prospects of increasing farm income in tribal areas farms of Himachal Pradesh through new technical know-how and credit facilities. For the study purpose, whole the state was divided on the basis of agro-climatic conditions into two zones. The authors highlighted the fact that adoption of new farm technology without any borrowing, brought almost 40 percent higher farm income on large farms, while it ranged between 15 to 27 percent on small and medium farms. The study was conducted in the tribal district of Kinnaur. The researcher suggested that economic status of tribal farms could be substantially improved if the government took the initiative to educate and awaken farmers about the use and abuse of new technology and provision for adequate credit to purchase inputs.

Parmar (1989) has conducted a study on the issue of tribal development in the state of Himachal Pradesh. The study pertains to one of the tribal district Kinnaur's cultivator population. The agrarian population was also found engaged in agriculture and allied activities viz., livestock, forestry, plantation of orchards, hunting etc. The study further stated that there had been a remarkable growth in the socio-economic infrastructure like education institutions, medical and health, road connectivity, means of transport, communication, banking and electricity supply. Author suggested that concepts of mobile hospitals, mobile post office, mobile banks, even schools can provide much more effective instrument and mechanism to change socio-economy of the people rather than putting a lot of money in erecting buildings and maintaining offices.

Chauhan (1988) has studied the potentiality, performance of agriculture and allied sector of tribal area of Himachal Pradesh. The study pertains to Bharmour tehsil of Chamba district. The study was focused on the potential and performance of agriculture sector and sheep farming. The study shows that among the farm resources, sheep farming had been the largest contributor in the households income, its contribution was varying from 43.3 percent on small farms to 80 percent on large
farms. This exhibited that as the size of sheep herd increased the income also increased, which could be attributed to the fact that the cost of raising sheep decreased for larger herd size, confirming the principle of economy of scale.

Government of Himachal Pradesh (1984)\(^26\) conducted a survey in district Chamba of Himachal Pradesh to highlight socio-economic conditions of the resident. The socio-economic conditions of the inhabitants of the Bharmour tribal area along with the impact of various development programs on the people was in focus. The study shows that agriculture and allied activities i.e. sheep rearing, and other family enterprises such as spinning and weaving etc. were the mainstay for the tribal people to draw their livelihood. About 78 percent of selected households were illiterate. A majority of literate people was under metric. Therefore, about 50.2 percent human labour was engaged in non-gainful activities and 49.8 percent in gainful work i.e. 12.4 percent in agricultural work and 37.4 percent in non-agricultural activities. The study concluded that nearly 37.4 percent sampled households were loan or credit seeker to mitigate their agricultural inputs, implement, animals and consumption requirements.

Moorti and Negi (1983)\(^27\) have carried out a study on farming system in Himachal Pradesh – An Economic Study. The study covered all zones of the state viz. low, mid and high hill zone. A sample of 118 farms was drawn from all zones and the data was analyzed in the light of predetermined study objectives. The study shows that the agriculture was the major occupation of the people and next was off farm employment i.e. skilled and non-skilled labour works particularly in low hill zone of the state. It was also concluded that vegetable based agriculture particularly in mid hill zone was most remunerative for agriculturist.

Bhati, Moorti, Singh and Verma (1972)\(^28\) conducted study to examine income, saving and Economic Rational of Investment in Tribal agriculture. The study was focused on working expenditure pattern of tribal and non-tribal areas. For this purpose, the study was carried out in four tribal and two non-tribal areas of the state. The researcher concluded that the working expenditure on the farms of non-tribal farms was about 4 times higher as compared to tribal farms. Since the consumption expenditure was found almost same, the disposable income was about 3 times higher.
on non-tribal farms than to tribal farms. The non-agricultural income constituted a minor or nominal part of the total household’s income for tribal as well a non-tribal. The non-tribal farms were saving more than to tribal farms as the Marginal propensity to Save (MPS) shows.

Mehta (1982)\textsuperscript{29} carried out a study on farm size and poverty in the state of Himachal Pradesh to investigate into and identify factors constraining improvements on small size farms. The author classify the study into three parts, firstly, examined the ages old trends in land use, demographic features, distribution of holdings, productivity growth rates and cropping intensity. The second part dealt with different concepts of economic holdings, causes for small holdings and land holding patterns. The third part consists of new definitions and concepts fitting to the prevailing conditions of study universe. An attempt was made to develop a model to work our optimum farm size, which may ensure minimum standard of living to the farming families. The study concluded that farmers with miniscule holding may be induced or provoked to give up their landed property and shift to other occupations in their villages. The Author also suggested that surplus land after fixing minimum ceiling on land holdings should be handed over to small farmers rather than landless rural people; otherwise we are also creating more uneconomic holding units. This exercise would be more fruitful, as the farmers, already operating on uneconomic holdings would be turned into economic and viable farms.

Singh (1971)\textsuperscript{30} has conducted a study on the Problems and prospects of small farmers. The study pertains to two regions of Uttar Pradesh, randomly selected. The study was focused on to identify small farmers who were potentially viable, and to lay out in actionable terms specific measures, whereby they can be helped to achieve viability through better farm production. The study shows that small farmers were suffering from the problem of lack of extension services i.e. lack of technical know-how, failure of technical application, in order to enhance their farms production up to the satisfactory level. Thus the author suggested making the agricultural techniques user friendly, through extension services and other such educative programmes and schemes.
4.2 AGRICULTURAL DIVERSIFICATION

An era of agricultural diversification towards high value crops in Himachal Pradesh has started in the late sixties which gathered pace in successive decades. The diversification process gained further momentum in the late nineties and speeded up to many low and mid-hill districts along with high – hill districts. In the VIII Five year Plan agricultural diversification has been adopted as a strategy instrument for income augmentation and employment generation in agriculture sector in order to provide enough for food-feed requirements. Agricultural diversification means a shift from subsistence farming system to commercial farming system and from low value food or non food crops to high yield varieties of food and non-food crops. Diversification broadly does not mean only undertaken seasonal crops but also animal husbandry. Firstly over the decades of diversification, it has made significant impact on the lives of agrarian population at micro as well as the macro level. Farm diversification is also presumed to act as a powerful tool in minimization of risk in farm business. Whereas agriculture is circumstanced by weather, market induced risk and capital constraints. The farm diversification helps in stabilizing farm income at a higher plane. This situation leads to a strong case for farm diversification in India as well as in Himachal Pradesh. In this concern we have scrutinized some earlier attempt made by the different scholars in the fields of poultry, forestry and horticulture etc.

Sharma (2005) conducted a thorough study on agriculture development and crop diversification in Himachal Pradesh and focused on pattern processes and determinants. The research work was based on primary as well as on secondary data inputs. To understand the pace and pattern of agricultural development and diversification, compound growth rate and Herfindhal Index had been used respectively. The study concluded that agriculture sector has recorded high growth rates during the past three decades. Simultaneously, horticulture sector has also registered significant increase in terms of area and production. Further, agriculture over the years had diversified towards high value fruits and off season vegetables like peas, potato, cabbage, cauliflower etc. The process of crop diversification was however, more pronounced in the districts or areas enjoying favourable agro – climatic conditions. Author has advocated that agricultural development and
diversification in the state has contributed to prosperity of rural economy which needed much on the state’s part in the form of bold investments and active promotion of marketing arrangements, producers, co-operative, credit structure, technical know-how, technical innovations and spread of extension services.

Joshi (2004) has studied patterns, determinants and policy implications of agricultural diversification in South Asia. The study was built around following goals, to examine the extent, nature and speed of agricultural diversification, to assess implication of agricultural diversification on food security, employment, and sustainable use of natural resources lastly, to identify determinants of agricultural diversification. The researcher concluded that the agricultural diversification in south Asian countries was gradual with some-inter-country variations in favour of high value commodities viz. vegetables, fruits, livestock and fisheries. The price policies for agro products were the main influencing forces behind, along with infrastructural development i.e. road connectivity, markets, urbanization and technical advancement. In the rain fed areas diversification have been in favour of high value crops by substituting inferior coarse cereals. The agricultural diversification was also generating more employment opportunities in this sector. The scholars advocated that there is a need for suitably integrated production and marketing of high value commodities through appropriate institutions. Hence, market reforms involves developing and strengthen desired institutions through required policy reforms and legal process changes which would ultimately boost agricultural growth, augmenting income of small farm holder and promote agro-exports.

Kumar, Sharma and Vashist (2002) carried out a study to examine profitability, risk and diversification in hilly agriculture. The study was focused on farming pattern which could generate enough farm income for the farming families and low risk. The study pertained to two major crop growing areas of Nagrota Bagwan and Kangra development block of Himachal Pradesh. Farms were selected through random sampling method. The study suggested that vegetable and dairy farming was the most appropriate choice for the farmers for enhancing their farm income. The pure vegetable farming was found to be more risky and less remunerative while coarse cereals, pulses, oilseeds were less profitable. Further the
study suggested that the diversification of cropping pattern could only be the remedy to lessen the risk and it is the need of hour in agriculture sector of mountain areas in Himachal Pradesh.

Chand (1997)\textsuperscript{34} has studied the agricultural diversification and development of mountain region with special reference to Himachal Pradesh. The study focused on the issue that whether the diversification towards vegetable growing, particularly off-season vegetable have enough potential for providing employment opportunities or not. The study shows that vegetable growing was an alternative for agricultural diversification and especially off-season vegetable posses’ immense potential for diversification. The other alternative for agricultural diversification reported in the study was like fruits, floriculture, mushroom and dairy farming. The agro-ecological conditions and market infrastructure determines the suitability of alternative agricultural diversification. The study revealed that agricultural diversification has been viewed as a most appropriate strategy instrument for employment, income augmentation and sustainable agricultural sector development.

Verma and Mishra (1997)\textsuperscript{35} have studied crop diversification and related issue on small farms in North Bihar region of India. The study focused on the prevailing cropping pattern on small farms and their food-feed requirements. The study is based on primary data collected from different regions. Authors concluded that the cultivation subsistence crops were the mainstay for small farmers and after meet out their basic food requirements they used to sell their food items to fulfill their non-food requirements. The study has also highlighted the fact that big farmers were using modern techniques and inputs on their farms and were more efficient as compare to small farmers. Authors advocated for the use of modern inputs namely high yield variety seeds, fertilizers, insecticide, pesticide and irrigation facilities for the small farmers to make them food efficient.

Gopalappa (1996)\textsuperscript{36} has carried out a study on crop diversification and income levels in Karimnagar district of Andhra Pradesh. The study analyzed the effects of agricultural diversification on the income and standard of living of farmers over time in a village. The study was based on primary data consisting of small, marginal and
large farmer engaged in sericulture belongs to weaker sections of society. The study shows that in case of traditional crops the returns per rupee invested were declining and it is only for mulberry where returns were steadily increasing over a period of time. Although small and marginal farmer were not keen for mosambi crops, despite its higher returns per rupee invested, because of long gestation period of five to six year to reap the benefits. The net returns per acre for small and marginal farmers from different traditional crops has declined while farms income from new crops like mulberry (sericulture) and other has increased over the same period. The farm income was worked out by deducting all paid out costs from total farm income. It was concluded that average income per household for the base period 1985- 86 was Rs. 876 and Rs. 1,843 for marginal and small households on the same land holdings with traditional crops, while it rose up to Rs. 2,402 on marginal and Rs. 3,280 on small farms respectively after introduction of sericulture. The study revealed a significant change in the income levels and standard of living of the small and marginal farmers due to agricultural diversification and also advocated for the spread of financial assistance and extension services.

Vyas (1996) conducted a study on diversification of agriculture and food security in the context new economic policy. The researcher define diversification as presence of any one or all of these situations namely shift from farm to non farm activities, a shift from less profitable crop or enterprise to more profitable crop or enterprise and use of resources in diverse but complementary activities. The author observed that there is a diversification in the Indian economy particularly in national income at macro level like changes in sectoral composition but at slower pace than to other countries. The share of agriculture has declined in the gross domestic product form 34.7 percent in 1980-81 to 27.7 percent in 1993-94. It shows that more and more resources from agriculture sector shifted to non-agricultural sector and main shifting source was labour. The rationale behind accelerations of pace of diversification were as under (i) the imperative to increase income the small holdings (ii) need for fuller employment in the farm households (iii) seasonal farm income stabilization (iv) conversion and enhancement of natural resources. Further, market factor was viewed as the main cause for the diversification, along with prevailing agro-economic conditions in the region and the technology available. The study
concluded that the case for an accelerated pace of diversification was strong for attainment of objectives of high income, higher employment, stabilization of incomes and conservation of natural resources and these required purposeful policies and action at different phora in form of technological development, economic reforms and institutional changes.

Varadarajan and Elangoran (1996) have examined the scope for commercialization on small farms in agriculture. The study focused on the role of Integrated Rural Development Program in rural India for the upliftment of small farmers, and how the programs bypassed the small and marginal farmers. The authors observed that the farm size was not constraints for diversification but shortage of capital and size of market were the main constraints. The study suggested that, it may be the need of hour for the small farms to strive collectively and pool their resources voluntarily to attain large scale production.

Pandey and Sharma (1996) authors attempt to examine the conflict if any, between crops diversification and self-sufficiency in food grains, especially in post green revolution period in which technological changes have been assigned a prominent role. The study shows that the nature and extent of crop diversification has not witnessed any conflict with self sufficiency in food grains. In fact, the per capita net availability of food grains has improved and country experienced a marginal surplus in food grains. The strategically measures suggested to accelerate the crop diversification that is vertical diversification in existing wheat and rice areas which lead to increase in area through rise in cropping intensity. Lastly, government's active role is required, to guide market forces, technological development and to strengthen infrastructure in order to increase flexibility in agricultural production.

Chand (1996) conducted a study on diversification through high value crops in the Western Himalayan Region with special reference of Himachal Pradesh. The study inquired into the scope for increasing income and employment on different land holding categories through diversification towards off-season vegetables and fruit cultivation specially in mid hill zone. The author also analyzed the impact of infrastructural, institutional and socio-economic factors on crop diversification. The
study pertained to 298 farm households in mid hill zone of the state and also used secondary published and unpublished data information. It revealed that it was infrastructural constraints namely non-connectivity to motorable roads, market inaccessibility and lack of irrigation facilities which determined the extent of success and profitability of diversification through high paying crops rather than farm size. For the generation of productive employment and income in the hill areas of western Himalayas where small size holdings, pre occupied by traditionally crops with low productivity were not capable of providing sufficient income and employment to the population dependent on the agricultural sector, this necessitate the promotion of enterprises like off-season vegetables and government policy interventions.

Chand (1996) conducted a study on agricultural diversification and small farm development in western Himalayan region. The study investigates into the potentiality of agricultural diversification for income and employment generation through vegetable crops. It was observed that the easy and higher availability of family labour for farm operation and vegetable cultivation being a labour intensive operation has proved beneficial especially for marginal and small farmers. The study concluded that miniscule farm size is not the only reason but it is road connectivity, market and irrigation facilities which hampered the success and profitability of agricultural diversification through high value crops.

Chand (1996) inquired the agriculture diversification and farm and non-farm employment in Himachal Pradesh. The study analysed the scope for increasing income and employment in varied categories of land holdings through diversification towards off-season vegetable and fruit cultivations particularly in mid hill zone. Author observed that agricultural diversification has vast potential for employment and income generation in the western Himalayan region. Further, infrastructural development like motorable road, irrigation and market factors provide initiative for diversification.

Shyam and Gupta (1995) authors attempt to find the existing production system and explore possibility of diversification on weaker holdings through diversification on small and marginal holdings in low productivity areas. The study
was conducted in Uttar Pradesh in reference period 1992-93 including 60 weaker farmers selected from 4 villages of Bareilly district known as low productivity area in the state. The study has shown that the resources constraints, like lack of appropriate technical know-how, social factors, organizational constraints lack of development orientation programmes etc. were main such factors which frustrate the diversification on these holdings. The study suggested that awakening among people, expansion of technical training and credit structure and provision for infrastructure development would provide viable steps to cope the problem in the region.

Bhati and et.al. (1992) carried out a study on diversity of mountain farming system in Himachal Pradesh. The study was focused on the structural and operational features of the farming system prevailing in different ecological zone in the mountains study pertained to village and farm level in different regions of the state. Authors examined the diversity of the mountain areas by comparing broad features of different ecological zones. The study concluded that some of public measures taken and observed farmer's responses to specific mountain conditions like, inaccessibility, fragility and marginality. Further, concludes with the enumeration of practices and measures adopted by farmers to harness opportunity and to manage constraints in the study areas.

Chand and et.al. (1986) has conducted a study on diversification of agriculture in Himachal Pradesh a spatio-temporal analysis. The study has examined the degree of diversification in hill agricultural in different regions during the last decades and variation in crop diversification at farm level. The Gibbs Martin method was employed to compute the diversification indices. The study observed that the diversification that took place in the state was of complex nature due to varied agro-climatic conditions of different regions. Diversification appeared to have benefited more the districts falling in mid and higher hills zones as also medium and large farmers. The potential for development of horticultural crops in lower hill zone was also highlighted, but it has remained untapped due to lack of technical know-how among farmers and un-remunerative market. Land constitutes major constraint for increasing farm family incomes. Authors suggested that for balanced development of all zones government Policies should be designed to develop non-farm enterprise
along with assured market structure to provide them sustained and minimum customary level of living.

4.3 DEPENDENCE ON AND ACCESS TO PUBLIC AND PRIVATE RESOURCES

Nature has provided certain basic necessities for every living being like land, water, atmosphere, light, forest and biodiversity, these resources by and large contributes to satisfy human needs. These environmental resources have been categories on the basis of relationship between the resources and resource users' namely (i) Private property resources (ii) state property resource (iii) open access resources (iv) common property resources. This fact necessitated a close scrutinization of related studied and literature on access to resources by the food insecure and vulnerable households to develop an understanding with existing policy and plan as well as for drafting of future plans.

Chopra and Dasgupta (2008) carried out a study on nature of household’s dependence on common pool resources. In an empirical study, authors in their analysis postulate that if the dependence could be linked to market demand for high value products independent of self consumption, the likelihood of its being of the first kind is high. Further, examined collection from CPR and drawn distinction between different products collected and also between the collection for self – consumption and for sale. The hypotheses was tested with household level data from four states of India with econometric analysis of a large cross section data set is rooted in a simple static household decision – making model. The study concluded that the households in Karnataka were income and asset rich and do collections for sale due to the better opportunities provided by access to markets and nearness to forest. The household in Bihar were income rich and have better defined property rights. Though they might be assets poor and had a lower level of access to forests. In Maharashtra households were income rich as they had better access to markets, although they were not close to forests. The households of Madhya Pradesh were income poor and had least access to market despite closeness to forests these households reported the typical case of non-timber forest product collections as a subsistence activity.
Bandyopadhyay (2008) attempted to highlight the importance of land as a basic asset or source of livelihood for millions of rural people. The study emphasized that in the era of economic liberalization, when the economy was growing at near double-digit growth rate, Indian agriculture was decelerated gradually. Industrial growth as well as non-industrial activities badly failed to provide livelihoods for rural workers. This fact highlighted the poor’s access to land, water, and forests. This study necessitated significant policy shift towards a comprehensive land reform programme, meant to disempower a small but very powerful number of people, to provide access to land and other techno-economic factors by all landless and land poor households. The study also observed that dalit groups had to depend heavily on the Common Property Resources (CPR) this dependence accounted for 9 to 26 percent of household income of landless and for marginal farmers 91 percent to 100 percent of their fuel wood requirements and 69 to 89 percent of grazing needs.

Rawal (2008) carried out a study on ownership holdings of land in rural India, putting the records straight. The study focused on land distribution in rural India and analysed households data from 48th and 59th rounds of National Sample Survey Organization (NSSO). Author pointed out that earlier estimate of extent of land inequality and landlessness were misleading as they underestimated the extent of tenancy as had been attributed to underreporting by land-rich households. The existence of large holdings results in undermining the potential for implementation of land ceiling in different states. The study concluded that more than 40 percent of households in rural India do not own any land while there is a large potential for redistribution of land in many states.

Hanstad, Haque and Nielsen (2008) in their article improving land access for India’s rural poor attempted to investigate into the existing policy regime to highlight initiatives undertaken to enhance rural poor’s access, providing for secure tenure, etc. Authors observed that planners and policy maker required to take inventory to existing land reforms, experiences, distill lessons learned and should use land laws, policies, and programmes more innovatively and with focused objective of broadening land access and strengthening land right for poor and least empowered. Further, study found that to date, the effectiveness of the legislation has been mixed.
and progress over last few decades has slowed down. But the link between rural poverty and landlessness remains. Authors advocated that plan can be both pro-poor and market friendly and the required costs were not unthinkable. An approach which involves selected rethinking to existing legislation and adoption of new methods of enhancing land access was surely expected to attain the original equitable objectives of India’s land reform legislation.

Chavan (2007) in her article, Access to Bank credit, implication for dalits rural household examined the degree of access to formal credit for rural dalit households, one of the most backward sections of the India’s population. Author used secondary data drawn from All India Debt and Investment Survey (AIDIS) conducted by NSSO and RBI for the analysis. The study observed that dalit households in rural India obtained more than 50 percent of their total debt from informal sources. Their debt share from formal sources was much lower than to non-dalit households, the commercial and co-operative banks had been the major credit providers up to 1992, but there was a distinct break in overall debt trend after 1992 to 2002. The credit vacuum was filled primarily by professional moneylenders and as with tightened grip on dalit households accompanied with onerous interest burden. The study has also shown a decline in the proportion of bank credit flowing to rural areas in general and agricultural in particular. The era of market oriented in financial sector, witnessed exclusion of disadvantaged and dispossessed dalit section of society, as an intrinsic to the functioning of market.

Dasgupta (2006) has conducted a study on common pool resources as development driver a case study of NTFP in Himachal Pradesh, India. The study examined the role of common resources in reducing income disparities in the rural area, when other sources fail to provide livelihood. The stud concluded that CPRs continued to be the major player to provide livelihood to the poorest households. These were contributing upto 40 percent of their annual income in rare cases.

Gowda and Savadatti (2004) have conducted a study on common property resources and rural poor in North Karnataka with objectives to study (i) status and trends in following common property resources (ii) the contribution of resources to
the rural poor (iii) gender factor in common property resources activity, time spend for CPR product collection and accessibility. The study pertained to Dharwad district of Karnata, the highest CPR area in the district Kalaghatagi taluka. The stratified random sampling technique was used to select households of poor and non-poor households. Primary as well as secondary data was used in the analysis. The technique of tabular analysis was employed for estimating the proportion of household making use of CPR, type of benefits derived from etc. The general characteristics of CPR in the study areas were noted as fuel wood collection, source of fodder, dependence for land income, gender issues and future prospects of CPR land etc. The study concluded that a substantial proportion of the total geographical area was under the common property resources, marginal decline of CPR between 1978-79 to 1989, forest area accounted about 95 percent of CPR, fuel wood collection met more than 2/3 of total energy requirements, 50 percent fodder requirement, CPR income accounted for more than 1/4 of the poor household income, and about 22 percent of the total income of non-poor household, about 50 percent household reported that CPR forest was opened for fuel wood collection, and this activity was mainly performed by adult male members of the family. Further, study suggested that protection regeneration, development aspects of common property resources should be entrusted to the Panchayati Raj institution with active participation of local community beneficiaries.

Singh (2004) has studied livelihood concern in water resources management regimes in scarce conditions. The study pertained to four minor irrigation schemes of Rajasathan out of these, three irrigation schemes were constructed before independence and one new proposed scheme. The study attempted to analyze various issued relating to livelihood across the irrigation schemes and different categories of households. Primary as well as secondary data information were gathered through structured scheduled from farms located on the head, middle and tail reaches of irrigation schemes to give a proportionate representation to all water users. A random sample of 199 households was drawn. The study concluded that socio-economic conditions of households living in command and non-command areas were similar among different categories of households, along with adoption of livelihood strategies in form of work participation access to resources as land, livestock and credit -
facilities. The study advocated female’s active participation in the formal and informal village institutions that play vital role in managing water resources which could only improve the conditions of rural households in general and that of women in particular. Irrigation was the major factor affecting agriculture sector and allied activities i.e. livestock economy. Further, the study suggested that through expansion of market facilities and health infrastructure livestock economy may be turned economically viable. Irrigation Management Transfer (IMT) is the major concern of water sector reforms which will help a lot to make efficient use irrigation facilities through empowering the water users.

Purkayastha (2004) conducted a study on credit deepening in farm, and non-farm sectors in Assam. The study examined the working of second generation reforms with focus on agriculture and strengthening of credit delivery mechanism. The study shows that the progress of Kisaan credit cards scheme a National Bank for Agriculture and Rural Development (NABARD) sponsored scheme towards facilitating access to short term credit to all farmers to purchase agricultural inputs such as seeds, fertilizers, pesticides and draw cash for production needs i.e. wage payment, hiring cost of power tiller, pump set for irrigation etc. was quite tardy. The KCC were issued on the basis of farmer’s land holdings. In a sample of 500 households only 20 card holders were reported and mainly by rich household despite needy down trodden poor ones. Among 93 samples households female’s self-help groups were reported about 55. It was again observed self help groups were mostly concentrated among better off families while agricultural and non-agricultural laborers, artisans, petty traders or vendors etc. The poorest class remains yet unrepresented in this new movement. The study concluded that underprivileged people working in groups were now gradually gaining confidence that they could have some amount even from their meager income and could also procure loans if needed to launch productive venture.

Tripathy (2004) carried out a study on the issue of cooperative credit in rural India. The study focused on the government policy initiatives for strengthening the rural credit delivery mechanism at the grassroots levels through an appropriate credit planning, i.e. adoption of region specific strategies and rationalization of lending
policy and procedures. Further, among multi-agency networks of different banks namely commercial banks, regional rural banks etc. the co-operatives have been the major player for supplying agricultural credit to the farming community. The author advocated that co-operative credit have been considered as an indispensable instrument of rural development for short-term and long-term loans. The diversification of loans is required in order to enable large number of farmers and weaker sections to take loans for area-specific viable activities like dairying, poultry farming, aquaculture, pisiculture, goat and sheep rearing, sericulture etc., although banks were not found to be promoting the same. The diversification of agriculture and cropping pattern in the country was necessitated to ensure enhanced productivity and income to the poor farmers.

Chopra et. al (1990) have carried out a study on participatory development, people and common property resources. They focused on the role of common property resources as means of livelihood and stable income for rural poor who have access to common property resources. Further, they examined the complementary between agricultural and livestock incomes and protection of upper catchments for fodder collection and common water resources for irrigation. The study concluded that cultivator households got substantial benefits from common property resources.

4.4 POLICY INITIATIVES TOWARDS ENSURING FOOD SECURITY AND SUSTAINABLE AGRICULTURAL DEVELOPMENT

Policy initiative towards ensuring food security, means instrumental strategies to tackle multifaceted problem of food and nutritional insecurity among under privileged households with the miniscule holdings in rural areas. The Tenth Five Year Plan emphasized on the importance of adequate level of consumption of food along with access to education, drinking water and to the basic sanitation facilities. However sustainable agriculture refers to the successful management of resources for agricultural development to satisfy the ever changing human needs while maintaining the quality of environment. A number of studies have been so for conducted by different scholar concerning policy instruments to cope with food and nutritional insecurity and agricultural development. A few related studied have been viewed to approach the problem in right way.
Barah (2007) conducted a study on criticality of rice and wheat system in sustainable food security in India an analysis. The study examined that what should be the policy emphasis on food grains sector. Author observed that cultivation of wheat was concentrated in only six states as occupied about 88 percent of wheat area, contributed 93 percent of total production during 2004-05. But despite well equipped infrastructural facilities, irrigation and technical know-how. Agriculture has been becoming less attractive in these region caused due to certain climatic factors resulted in more risk, which has increased the vulnerability on production system. Author advocated a need for technological break-through and taking knowledge to the doorstep of farmers and maintaining an enduring environment.

Kumar et. al (2006) conducted a study on food safety programs and methodologies for economic assessment and focused on the following objectives to evaluate hazard analysis and critical central point, review of various tools for valuation of food safety programmes and to assess data requirement for overcoming the uncertainty in evaluation of food safety programme. The study reveals that Hazard Analysis and critical control point system is a process – oriented approach to assuring food safety, meant for production of a safe product every time, which would help to increase the participation of all work force. The study concluded that economist may contribute to answering questions about whether and how to improve food safety and nutrition, by providing accurate measures of the benefits and costs of current and proposed quality management system. For this, they need reliable actual scientific information rather than their assumed levels. The study advocated links between actions, results, benefits and costs along with the distribution channel from farm to consumer.

Chand (2006) carried out a study on whither India’s food policy, from food security to food deprivation. The study examined the government’s intervention in food-grain markets through shift in food policy during reforms period, than to earlier policy regime, reasons for accumulation of excessive stock, implication of price distortions induced by government intervention. Author concluded that government intervened in order to protect produce from price distortions for their products i.e.
fixing of minimum support price and reasonable prices for consumer through food supply at subsidized rate to vulnerable sections. Consumer met their consumption demand through purchases from open market and public distribution system i.e. about 91 percent and 9 percent respectively. The availability of per capita cereals has been steadily declined from open market as well as to PDS from 428.5 gram in 1995-96 to 423.1 gram in 1996-97, caused due to continues price rise over the years. Further, with the ever increasing government procurements have lessened the share of private traders in the cereal purchases. The study revealed that no doubt government interventions have raised cereal production. Consequently, India attained food security at the national level and became net cereals exporter. But, on other sphere, hefty increase in minimum support price and procurement prices and an excessive procurement have raised food grains prices beyond the purchasing power of common consumer or vulnerable sections and divested cereals produce from market or common consumers towards government warehouses.

Singh and Verma (2004) have conducted study on Production and export of banana in light of an increasing preference for new varieties of banana in developed countries. The study shows that bananas market has been expanding over the years and developing countries have endowed with lot of potential for its production. Being a good source of vitamins and fat free fruit its demands has been increasing and providing good opportunities for the producer. Authors concluded that at same time a strong bond is established between banana-generated income and household food security at local and regional level.

Sharma (2004) conducted a study on non-intervention regime in agriculture, in the era economic liberalization and globalization of trade in agro-product. Author asserted that the package of non-intervention regime was designed to facilitate an environment where farmer could survive and compete in a market economy without any government assistance. For this, farmers should be equipped with all urban infrastructural facilities. The government of India has launched as a major initiative namely new Farm Income Insurance Scheme (FIIS) as a pilot project in eight states of Indian Union including Himachal Pradesh for rabi season. Author concluded that there is need for farmer’s organization in every cluster of villages to come forward.
and form their own managed and controlled organizations, cooperatives or companies to compete in market.

Krishna et. al (2004) carried out a study on falling into poverty in villages of Andhra Pradesh, why poverty avoidance policies are needed. The study examined the different reasons or set of factors account for escaping from poverty ‘upward movements’ and falling into poverty ‘downward movements’. The study pertained to 36 villages out of these 25 villages having majority of population in poverty were selected with majority of SC, ST, and OBC from Nalgonda districts where due to industrial or agricultural activities, minor irrigation schemes have been initiated since last 25 years for the upliftment of villagers from the clutches of poverty. The extent and trend of poverty witnessed that overall 65.5 percent of households were poor in these villages before 25 years today and situation have remained somewhat same as 63.5 percent people were poor today. Author’s advocated that different sets of policies and programmes would be required to tackle separately with each of these two trends, simultaneously. Authors evolved strategies and the stages of progress approach started with locally respected understanding of poverty. Authors concluded that social expenses on marriage and death feasts together with health and high interest private debt emerge as the major factors associated with household’s falling into poverty in these villages along with frequent irrigation failure. On other side factors like diversification of income sources, agricultural improvements through new-techniques and crops and particularly new sources of irrigation led to escape from poverty. Further, proper identification of such factors and mechanisms to deal with would be necessitated in designing of poverty avoidance policies and programs.

Swamithan (1996) conducted a study on freedom from Hunger and deprivation. The scholar observed that at present the number of people living on one tone of food grains per year varies from 1 to 6. Further, stated that if efficiently used and healthy foods are encouraged, about four individuals can be feeded by one tone of food grains per year. For proper food requirements, author estimated that to feed about 10 billion populations about 3500 million tons of food grains needed including seeds and spoilage.
Dorosh (2004)⁶⁴ in his article examined the positive contribution of trade liberalization and private sector import to short-run food security in Bangladesh in recent past and also highlighted the evolution of food grain production, availability, government intervention and international trade. The study observed that Bangladesh has enhanced its production and availability of food-grains particularly of rice and wheat through domestic production and import from India at all levels i.e. at National as well as at household level over past two decades. The Private sector imports have enhanced national food security by quickly adding to total market supply along with food grain price stabilization. The study concluded that flexible trade policy may be needed to protect producers interests and long term food security, particularly to deal with export subsidies or steep decline in world market price in case of good domestic harvests because large scale food aid inflows which have enhanced food security at national level by increasing food availability and at household level by increasing access to food, may in poses a serious threat to reduce domestic price and incentives to the producers.

Alagh (1995)⁶⁵ conducted a study on poverty and food security, towards a policy system for food security. The study examined the recent estimates of the incidence of poverty and nature of information in light of modeling of a food security system. The empirical results revealed that rural poverty was less than to urban poverty in India during 1987-88, an abnormal crop year i.e. 39.06 percent and 40 percent respectively. This was particularly so in some of the most industrial states of India, having high proportion of urban male labour force in manufacturing sector and low and declining share of agriculture in labour force. The state of poverty in Himachal Pradesh was reversed as 27.42 percent poverty in rural areas and 13.2 percent in urban areas in 1973-74. Author advocated for a decision making system for food security at two levels i.e. National level and state level decision making. Study suggested for maintaining a long range marginal cost based agricultural policy to attain higher agricultural growth and adequate returns of new investment, proper utilization of existing water and soil resources, as the best alternative food policy.

Suryanarayana (1995)⁶⁶ conducted a study on some experiments with food stamps. The article examined the experiences of such a program in some developed
and South Asian developing countries viz. U.S., Sri Lanka, Zambia and Jamaica etc. while Indian government was considering food stamps programme as an alternative to the Public distribution system in order to reduce its budget deficit with least social cost and to ensure access to food for all. Food stamps programme was designed to provide economic access to low income households to food grains and therefore their nutritional intake could be improved either by direct or indirect income transfers. Food coupons are to be issued to households having low income to facilitate purchase of specified food item from authorized shops, as direct income transfer. The author concluded that a major problem which every country faced during implementation of food stamps programme was that of the mean test for identifying vulnerable sections for food stamps target. The problem is more complex in India, with majority of labour force in an unorganized sector, where no income record available less than one percent income tax payee, and two-third rural population with seasonal income. In this context, India can not set up such sophisticated scheme like U.S. Not even we can hope to successfully implement a scheme like those of Sri Lanka and Jamaica based on self reported income. India could consider the option of Zambia.

4.5 OTHER RELATED WORKS

Sustainable agriculture we mean a purposeful management of resources for the agricultural development to satisfy the ever increasing and ever changing (human needs) food-feed needs of human being, while simultaneously maintaining quality of environment. A number of studies have been so for conducted by different scholar’s concerning sustainable agriculture development and other related works. A few studies of eminent scholars have been viewed.

Goswami (2002)\textsuperscript{67} has conducted a study on farm income and employment vis-à-vis preservation of natural resources base. The selection of study universe was based on the intensity of shifting cultivation. Study concluded that systematic farm planning approach is a paying proportion for making improvements even under the existing technology and with existing resource base on the hill farms. A suitable credit policy combined with employment policy and a national allocation of land and inputs policy to increase the farm profitability and sustainability in tribal agricultural was advocated by the author. Author suggested that adoption of farm plans would
certainly help in income and employment augmentation for the tribal farms through preserving land resource from degradation by preventing soil erosion. This way ecological and economic sustainability could be achieved at grass root level.

Vashist and Pathania (2001) conducted a study sustainable development of small farms in Himachal Pradesh to analyze the problems faced by the majority of small and marginal farmers and suggest ways and measures for improving productivity of agriculture crops. A stratified random sample of 30 marginal and small farmers was drawn from Nagrota block of Kangra district. The study revealed that large and medium holdings have decreased while marginal and small holdings increased over the years, resulting in higher human labour pressure on agriculture. The net sown area and gross cropped area might be increased through use of unutilized land for some other short duration crops. The researchers observed that there have been a slight change in the cropping pattern and productivity of crops over the years, particularly productivity of maize, wheat, paddy and oilseeds crops have increased while pulses registered a declining trend. The irrigated area under maize and rice has declined while for wheat and other crops reversed trend was observed. Author further advocated that transfer of technology to improve crop productivity needs to be taken up on priority basis along with subsidiary income generating activities viz. bee-keeping, mushroom cultivation off season farm activities etc. for income generation and augmentation.

Sharda and Sharma (1998) have carried out a study on development of agriculture in tribal areas of Himachal Pradesh during 1971-72 to 1992-93. The study shows a shift in cropping pattern in favour of horticulture and other cash crops like hops, off-season vegetable, vegetable seeds etc. particularly in Kinnaur and Lahaul regions. The average holding size was reported higher than to the state as a whole. The adverse agro-climatic and geographical constraints rendered for the mechanization of agriculture. Authors advocated that appropriate extension services and marketing network can go long way in accelerating the pace of commercialization. Animal husbandry can be made more remunerative by improving livestock breed along with technological up gradation of traditional crafts can ensure more remunerative employment in tribal areas.
Haque (1997)\textsuperscript{70} has studied sustainability of small holder's agriculturist in India. The study pertained to Andhra Pradesh, Bihar, Haryana, Rajasthan based on an approach of one who owns land and who cultivate it. Net returns were worked out to get exact results. The study revealed that neither agricultural diversification strategy nor liberalization policy could benefit to small farmers since they face self-sufficiency constraints i.e. input nor market based. It was concluded that appropriate irrigation facilities and technological know-how was needed to be at the farmers door step for enhancing the non-farm income and employment opportunities. Finally the contract farming and command area approach will also prove useful for sustainability of small holders as the last but not least measure.

Singh (1996)\textsuperscript{71} has analyzed the trends in operational holdings in Himachal Pradesh with the objective to analyze the emerging trends in operational holdings emphasized on the concentration of number of holdings and operational land over different size of farms and also to highlight the factor responsible for the variation in the number of operational holdings. Marginalization of holding was perpetuated by a host factor rendering from informal institutional changes to formal legislations. The major institutional changes that emerged were the disappearance or break-up of joint family system and changing tenure systems. While major legislations were two phases of land ceiling to support small farms and tenants. The study revealed that success story of land reforms and legislations implementation in the state which left no land less in Himachal Pradesh. The study also examined the trends in number and area of operational holding in different districts and macro reason i.e. trend in tenurial system, irrigation facilities, and land utilization are also examined in the present study. The author advocates that credit to marginal and small farmers rigorously and legal implementation of tenancy law and expansion of off season farm activities in rural area should be emphasized to get fruitful results.

Paroda (1996)\textsuperscript{72} in his lecture, on Sustaining the green revolution, new paradigms has examined the pace and impact of the green revolution on food sufficiency and rural prosperity. The Green Revolution enhanced total food grains production from 50.8 million tonnes in 1950-51 to 192 million tonnes in 1994-95,
accompanied with a threefold increase in productivity over the same period, and generated a marketable surplus of wheat and rice. These have contributed to food security mainly by including sharp declines in real prices, which benefited rural poor more than the upper income groups because farmer spend a much larger proportion of their income in cereal than other. In 1980s sustaining self sufficiency in food requirement was attained and had have 36 million tonnes in buffer stock and a bulk for export with an enhanced per capita availability of 166 kg. The scholar pointed out that the growth in total factor productivity which has been accelerated with initial phase of green revolutions has declined in the 1980s that of 1970s, due to declining public sector real investment in agriculture combined with increasingly, salinity and water logging problems. These results emphasize the need for strengthening efforts to increase production by increasing factor productivity through large bulk of public investment in infrastructure, irrigation and efficient use of water and plant nutrients. Further, scholar concluded that diversification in food basket would ensure food security and with improved quality of life. To mitigate the future food grains demands, we have to strive to increase productivity of available land rapidly particularly on dry lands significantly and hoping to have second green revolution from dry lands.

Khanna (1995) has carried out a study on the planning for sustainable agricultural development and examined the socio-economic and environmental problems in commercial and traditional agriculture, as being noted constraints in achievements of sustainability in agriculture. The degradation of land has been assessed with the help of remote sensing imageries in both areas. The study worked out that, while on one hand commercial agricultural created social inequalities and environmental imbalances, on other hand traditional agriculture is becoming uneconomic, due to frequent use of degenerated or defective seeds, broad casting method of sowing, poor composite techniques, lack of proper irrigation facilities, inefficient storage system, lack of communication and non-availability of improved tools and techniques etc. but despite of all this, traditional agriculture still has lot of potential to be developed as sustainable agriculture system if these drawbacks are removed. The diffusion model is tested in a unique manner by considering physical, economic, social communication and administrative distances. The study thus have
suggested or proposed many alternatives which can take Indian farmer on the path of sustainable agricultural development.

Verma and Partap (1992) analyzed an area based development in Himachal Pradesh in terms of conventional indicators viz. income and productivity growth, infrastructural facility, use of modern input and quality of life indicators such as reduced landlessness, education, housing, health and nutrition etc. Thus Himachal Pradesh on the basis of these indicators has emerged as a role model of hill development. Horticulture is accepted as a lead sector in its development strategy and in some cases on related activities such as animal husbandry, bee-keeping, and vegetable crops. The scenario of farming in low hill zone was totally different and high population density or accompanied with low or no commercial crop farming. Authors observed that tropical fruits i.e. mango, Santra, and Kinnow have been produced only in two blocks out of twelve blocks and most of farm community was looking for non-farm work or income.

Dhiya and others (1991) focused their study on a critical appraisal of the changing profile of the state agriculture with a view to imparting new thrust in the next phase of development. The analyses based on secondary data from published and non-published government gazetteer or surveys and simple statistical tools were deployed. Authors observed that there was an impressive need to take concerted measures for shifting area from cereal crops to high value horticulture crops for better net returns and employment opportunities in the rural sector. It is only an efficient and accessible market structure that can induce farmers to reap the benefit from their production. The study concluded that accelerated development of the horticulture crops and other cash crops on scientific basis alone can usher in an area of sustained growth and prosperity in an agriculturally dominated hill economy.

Thakur et al (1991) conducted a study in tribal areas of Himachal Pradesh, on optimization of cropping pattern and credit requirements for agricultural development. The scholar pleaded that there was strong and unavoidable causes which necessitated for the optimization of the cropping pattern of farmers in tribal areas. The study suggested that farmers might devote more on seed potato and off-
season vegetables for increasing their income and on other hand governmental agencies must ensure proper supply of inputs and fertilizers etc. in far flung areas of district Kinnaur. The study further revealed that on an average farm household in the districts invested 70 percent of their income on farm and residential buildings replacements, while the share of income invested on farm machinery and implements was lowest needed to be increased.
REFERENCES


54. Goutam, Purkayastha, **Credit Deepening in Farm and Non-Farm Sectors in Assam**, Yojna, April 2004. pp 28-34.

55. Tripathy, K.K., **Cooperative Credit in Rural India**, Yojana, April 2004. pp 23-27.


76. Thakur, D.R., D. S. Thakur and T.V. Moorti, Optimization of Cropping Pattern and Credit Requirements for Agricultural Development in Tribal Areas of Himachal Pradesh, Seminar on Problems and Constraints of Agricultural Development in Hill Areas, Sponsored by Indian Council of
Social Science Research North Western Region, Chandigarh, Department of Agricultural Economics, Himachal Pradesh Krishi Vishvavidyala, Palampur, April 3rd - 4th, 1991. pp 51-64.