REVIEW OF LITERATURE
II. REVIEW OF LITERATURE

Agriculture is supporting both rainfed and irrigated farmers in rural areas by providing larger amount of employment opportunity and food security; in turn agriculture is supported by various kinds of subsidies and Government programs to both rainfed and irrigated area farmers in rural areas. However, these Government programs are more concentrating on irrigated area farmers. The review of studies provides insights about missing research gaps and up to date status of researchers to collect relevant data, analysis and interpret the same so as to draw meaningful interpretations. This chapter attempts the brief review of relevant studies related to the theme of research. Keeping in view the objectives of the study, reviews are presented under the following headings

2.1 Livelihood security of households,

2.2 Farming system- concepts and definitions,

2.3 Food consumption, nutrient intake and adequacy,

2.4 Economic analysis of Farming system,

2.5 Optimization of Farming systems,

2.6 The health, habitat, educational and social network security of households,

2.7 Quantifying the benefits of developmental programmes /subsidies received by farm households.

2.7 Constraints faced by the farmers for their livelihood

2.1 Livelihood security of households.

2.1.1 Concept and Definition of livelihood

According to Chambers and Conway (1992) livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. Livelihood becomes sustainable when it can cope with and recover from
stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource.

The concept of livelihoods (Davies et al. 1996) has gained wide acceptance as valuable means of understanding the factors that influence people’s lives and well being particularly those of the poor in the developing world, the risk of a livelihood failure determines the level of vulnerability of a household to income, food, health and nutritional insecurity. Therefore livelihood are secure when households have secure ownership of, or access to resources and income earning activities including reserves and assets, to offset risks, ease shocks and meet contingencies. Sustainable livelihood creation basically translates into the creation of livelihoods that empower individuals to earn enough money to provide for basic amenities such as food, clothing and shelter. It also enables people to lead a life of dignity in a sustainable manner. Livelihoods are way of keeping one self meaningfully occupied by using ones endowments (human and material) to generate adequate resources to meet the requirements of the household in a suitable manner.

Ellis (2000) stated that “A livelihood comprises the assets (natural, physical, human, financial and social capital), the activities, and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or household”. A livelihood intervention (livelihood promotion) is a conscious effort by an agency or an organization to promote and support livelihood opportunities usually for a large number of people. A livelihood intervention is more than income enhancement. It is facilitating asset creation, capacity building and access to opportunities.

One can describe a “livelihood” as a combination of the capabilities and resources people have (including social, human, financial, natural and material assets) and the activities they undertake in order to make a living and to attain their goals and aspirations (Bhuvaneshwari, 2008).
Shyamalie and Saini (2010) conducted a comparative study of Kangra district in India and Nuwara Eliya district in Sri Lanka in regard to livelihood security of women in hills. They opined that food security was higher in Nuwara Eliya district to Kangra district.

Upadhyay and Palanivel (2011) focused on First Millennium Developmental Goal which states the target of “Halving hunger by 2015”. The recent statistics for India present a very gloomy picture. India currently has the largest number of undernourished people in the world. The causes of existing food insecurity can be better viewed under three concepts namely the: traditional concept, socio-demographic concept, politico-developmental concept. If the Millennium Developmental Goal is to be achieved by 2015, efforts to improve food and nutrition security have to increase considerably. Priority has to be assigned to agriculture and rural development along with promoting women empowerment, ensuring sustainable employment and improving environmental conditions (water, sanitation and hygiene). As the problem is multi-factorial, so the solution needs to be multi-sectoral.

2.1.2 Livelihood systems

Tacoli (1999) in his study on understanding the opportunities and constraints for low-income groups in the peri-urban interface reported that peri-urban interface has important effects on different level of urban centres growth pattern. Labour is the most important assets for poor people to have higher-income employments which requires different level of working skill and type of activities. Livelihood strategies of individuals and households depend on internal factors (household assets) and external factors (trends in circumstances).

Prita (2001) in her study conducted at Dharwad district reported that the wide range of activities undertaken by the SHG members were raising paddy nursery (25.92%), pickle making (25.53%), leaf storage + leaf plate making (23.66%), mushroom cultivation (17.56%), seed storage (15.27%), goat rearing (9.16%), buffalo rearing (7.63%), pottery and shop box making (6.11% each), book selling (4.58%), manufacture of lice killing medicine (3.82%), tailoring (2.29%), rabbit rearing (1.53%), bee keeping
poultry rearing and vermicomposting (0.76 % each) as income generating activities to improve the livelihood status.

Devi (2006) on sustainable livelihood option for rural prosperity evidences from Kerala observes that the socio economic status of the entrepreneur plays an important role in the success or failure of the enterprise concerned. The perceptions, training support and family characteristics have been found to influence the successful performance of the unit, apart from the general aspects like age, education, etc. The study has suggested the identification of rural home scale agri-enterprises based on the efficiency and sustainability attributes and development of effective management packages for their efficient functioning.

Samra and Solanki (2006) reported that agro forestry as a viable option for food, fodder, fuel wood, timber and other products from trees for livelihood security. Various models of agro forestry increase farmer's income, generate employment, reduce soil erosion, conserve water (watershed-based agro forestry), enhance human health, and conserve biodiversity. Acacia nilotica and Prosopis juliflora based agro forestry models have been found to rehabilitate more than 2000 ha. Salt affected soils in Haryana, Uttar Pradesh and Punjab. Fast growing trees like poplar planted in agro forestry models have been estimated to provide returns of Rs. 3.27 lakh per acre. Multipurpose Tree Species (MPTS) like Bordssusflabellifer, Prosopis juliflora, Lawsoniainermis, Agavasislana, Tamarindusindica, Bamboo sp., Terminalia spp., Madhuca indicna etc., in different agro forestry models have tremendous potential in improving human health.

Sherbinin et al. (2008) reported on linkages among rural household demographics, livelihoods and the environment. Using the livelihood approach as an organizing framework, they examined evidence on the multiple pathways linking environmental variables and the following demographic variables, fertility, migration, morbidity and mortality, and lifecycles. Though the linkages are mediated by many complex and often context-specific factors, there is strong evidence that dependence on natural resources intensifies when households lose human and social capital through adult morbidity and mortality, and qualified evidence for the influence of environmental factors on household decision making regarding fertility and migration.
2.2 Farming system- concepts and definitions.

Norman (1978) has defined the farming system as the pattern of resource allocation and processes of resource use in a farming unit. Farming unit gives the flexibility to apply it, in any specific instance, to a geographical unit, an economic unit or to a unit displaying a particular technical pattern of resource use.

According to Shanner et al. (1982) farming system is an approach to agricultural research and development that views the whole farm as a system and focuses on (i) the inter-dependencies between the components under the control of members of the household and (ii) how these components interact with the physical, biological and socio-economic factors which is not under the control of households.

Maji (1991) referred farming system specifically to a crop combination or enterprise-mix in which the products and or the by-products of one enterprise serves as the input for the production of other enterprise(s). It takes into account the consumption needs of the family, the economic factors like relative profitability of the technically feasible enterprises, availability of farm resources, infrastructure and institutions such as irrigation, marketing facilities including storage and transportation and credit, besides the agro-biological considerations, namely, interdependence if any among the various enterprises and the preferences of the individual farmers.

Swaminathan (1996) lists the principle components of intensive integrated farming systems (IIFS) as seven pillars that include soil health care, water harvesting and management, crop and pest management, energy management, post-harvest management, choice of crops, farm animals and other components of the farming system and information, skill, organisation and management empowerment.

Rangaswamy, (1999) stated that the concept of “farming system” has got more relevance in the present day farming to reap better harvest in the long range by maintaining a productive resource base on a holistic approach. The IFS approach introduces a change in the farming techniques for maximum production in the cropping pattern and takes care of optimal utilisation of resources. The farm wastes are better recycled for productive purposes. A judicious mix of agriculture enterprises like dairying,
poultry, mushroom, piggery, fishery etc. Suited to the local agro-climatic situations and socio-economic status of farmer would bring in prosperity in the farming.

2.3 Economic analysis of Farming system.

Patil et al (1993) has observed that many small farmers who practice rainfed agricultural have low incomes and are seasonally under employed. Introduction of dairy animals on their farm increases the opportunity for employment and potentially adds to their income. A study was made to design new farming system with crop and dairy, for conditions representative of the rainfed farming around Baroda in Gujarat, India. He concluded that the mixed farming systems are more rewarding than the system if cash crops only, provided that the animal productivity is adjusted to the feed quality, so as to be able to utilize the available feed biomass.

Chandrashekaran et al (1994) evaluated the feasibility of including dairy as an enterprise with rice. Additional income generated from IFS over the existing cropping system alone was Rs.11,478/year. Additional employment generated with cattle was 309 mandays over existing cropping system.

Kandasamy (1998) stated that dairy based farming system gave the highest annual income (Rs.6090/ha) with a per day income of Rs.16.16 and provided additional employment of 217 man days per year as against Rs.1902 and Rs.5.21 net annual income and per day income, respectively, with farmer’s method of sole cropping.

Devadoss et al (1985) concluded that inclusion of dairy in crop plans increased the farm income and labour employment in both irrigated and unirrigated small farms. On unirrigated small farms, dairy enterprise plays a vital role in augmenting the farm returns and labour employment. Hence, there is considerable scope for diversification by including dairy enterprise thereby increasing the farm returns.

Selvam (1996) made an attempt to throw light on the development aspects of dairying in India. This study provides a comprehensive view on some of the issues like milk production, consumption, bovine population, animal milk productivity, feed and fodder availability, animal health, veterinary facilities and etc. Further with the help of
above mentioned factors, contributions and constraints of dairying in India were identified.

Sharma and Singh (1996) while examining the low per capita availability of milk in the country, opined that the cattle improvement programmes which have high returns to investment, should be introduced on extensive scale to help increase not only nutritional standards but also socio-economic conditions of the people, particularly small and marginal farmers and landless agricultural labourers who can look forward to increase their employment and income by dairy farming with the improved breeds of milch animals in developing countries like India.

Elumalai and Pandey (2004) estimated value share of output from the livestock sector in Haryana. Among various constituents of output values, the share of milk group had ranked highest followed by meat group, draught power, dung and others during different periods of time. The share of milk group in total value of output, increased during the period 1970-71 to 1998-99. The highest contribution of milk group into the total livestock output seems to be due to rearing of crossbred milch cattle with high milk production potentials along with murrah buffaloes yielding fat rich milk, in conjunction with adoption of scientific methods of rearing these animals. The share of meat group into total output growth increased from 28.53 per cent in 1970-71 to 29.79 per cent in 1998-99. Despite relative decline in the share of meat group into the value of output during 1980-81 and 1990-91, it constituted the second highest dominant product into total value of livestock output. Infact, the decline in share of milk group in total livestock output is offset by increase in the value share of meat.

Prasad (2004) assessed income and employment potential of dairy farming in the existing and alternative farm situations in Ranga Reddy district of Andhra Pradesh. The income realized from dairy farming under the existing situation were Rs.14.50, 33.82, Rs.47.46, Rs.12.28 and Rs.11.09 per day for the landless, marginal, small, medium and large size group respectively under the existing situation, while it was Rs.49.43, 72.77, 63.83, 19.37 and 28.68 under the optimal situation for the corresponding size groups of farms in the same order as indicated above. When the income under the optimal situation was considered in terms of percentage increase over the existing situation, it was found
that the increase in income was 240.89 per cent, 115.17 per cent, 34.49 per cent, 57.74 per cent and 158.61 per cent for the landless, marginal, small, medium and large size-groups, the optimal situation shows maximum gains to the landless size-group and the minimum gain to the small size group. The employment per day per animal under existing situation in terms of the number of man-days was 0.28, 0.38, 0.29, 0.30 and for the landless, marginal, small, medium and large size-groups respectively, while the optimum situation shows the they are 0.59, 0.51, 0.46, 0.41 and 0.49 in the order indicated. It could be observed that the employment was more than double in the landless size-group, nearly one and half times in the other size-groups compared to the existing situation.

Shyamalie and Saini (2010) conducted a comparative study of Kangra district in India and Nuwara Eliya district in Sri Lanka in regard to livelihood security of women in hills. They opined that food security was higher in NuwaraEliya district to Kangra district.

From the above studies it can be concluded that IFS earns an higher income compared to the conventional solo cropping system and it also generates better employment opportunities to the farmers. Integration of dairy enterprise with crop is suggested by various researches as it helps in improving nutritional standards and socio-economic conditions of the farmers.

2.3 Optimization of Farming Systems

To study the optimum utilisation of the available resources within the farm is the main objective of any researcher, and to see whether the farmer under various cropping pattern, the utilisation of various available resources is very important for further recommendations. To study the optimality of cropping pattern linear programming technique was employed by many of the researchers in the past. Here some of the relevant studies pertaining to the present study conducted in the past and present were given below for an appropriate comparison.

Desai (1960) used linear programming technique in Agriculture planning for the first time in India for developing optimal plans for farmers in Ahmednagar district of
Uttar Pradesh. The optimal plans yield significantly higher income over the existing plans.

Dhawan and Johl (1967) applied linear programming for obtaining optimum organization with dairying as a fixed activity. The results of the study indicated that a regular flow of returns throughout the year would be possible with dairying along with crop cultivation. They extended this study and used variable price programming to locate price at which dairy enterprise would become more profitable vis-à-vis crop production. They found that dairy enterprise was more profitable with an increase in the price of milk from Rs. 0.70 to Rs. 0.77 per litre.

Kahlon (1975) conducted a study by including milch animals with crop activities and developed optimum plans under existing and improved technology level. They concluded that incomes of the small, medium and large farmers would increase by 44.06 per cent, 66.95 per cent and 76.96 per cent, respectively over the existing plan by adopting recommended technology. Crossbreed cows that were most profitable entered the solution. The study has also not accounted for the other farm enterprises like poultry, honey bees etc.

Wheeler and Russell (1977) were the first to introduce several goals in a farm level decision-making in agriculture. They analysed the planning problem of a hypothetical 600 acres mixed farm in United Kingdom. The goals considered were maximum gross margin, minimum seasonal cash expense and provision of stable employment for the permanent labour throughout the year.

Ratnam et al (1979) examined land use planning in Southern Karnataka and its relevance to agricultural policy. With the help of macro level optimisation model the authors delineated optimal cropping pattern for different agro-climatic regions in Karnataka. The results indicated that with rational reorganization of resources, saving a net 35.65 per cent of land could produce the same level of output.

In a study by Keshavareddy (1979) an attempt was made to determine optimum crop and dairy mix for small, medium and large farmers of Bangalore district, by using linear programming technique under varied capital situation. The results indicated that
one cross breed cow for small farmers, one cross breed cow, one local dairy cow and one local dairy buffalo for medium farmers and none for large farmers in optimum plans for crop and dairy mix. As a result the net returns were increasing by 45.77 per cent for small, 42.25 per cent for medium and 57.88 per cent for large farmers over existing resources.

Sirohi et al (1980) used linear programming to a sample of 72-farm household in union territory of Delhi and examined the possibilities of increasing income and employment through introduction of dairy and poultry into crop farming system. On optimisation with liberal credit facilities, the new enterprise system (crop + dairy + poultry) was found to increase labour employment besides augmenting income on small and marginal farms.

Singh and Jain (1983) generated normative plans using profit maximizing linear programming and MOTAD for different categories of farms in Ludhiana district of Punjab state, India. Comparison of efficient farm plans with existing plans showed that all farmers were operating at comparatively high risk. The enterprise mix was observed to reduce variability on the farm. In an empirical analysis target MOTAD for examining risk return off target MOTAD maximizes mean income subject to a limit on the total negative deviation measured from the fixed target rather than mean.

Gracy (1987) derived optimum cropping plans of Bangalore north taluk of Karnataka using parametric linear programming (MOTAD). According to her, the present use of resources was less than optimum. The normative plans derived by MOTAD suggested that judicious use of resource would increase farm income, facilitate prompt repayment of loans, and create additional employment on small and large farms.

Ganesan et al (1991) found that introduction of duck-cum-fish culture into rice farming system resulted in increase of net profit from Rs. 13,790 to Rs. 24,117. The income per men per day increased from Rs. 37.78 in arable farming to Rs. 66.07 in mixed farming and an additional employment of 144 man-days was generated. Thus by following a systems farming the farmers can engage themselves productively and realize augment farm income even in the off-season.
Deoghare et al (1991) studied the impact of mixed farming system on income and employment on small farms in Karnal district of Haryana. The results revealed the utility of mixed farming system under which the farmers could gain higher net returns and thus raise above poverty line. The study also indicated that a combination of crop+dairy, crop+poultry and crop+poultry+dairy enterprises was more promising and beneficial in that order. He further showed the potentiality to increase the net farm income on bullock-operated farm with relaxed credit constraints along with adoption of recommended technology.

Bhowmick et al (1992) identified the different types of farming systems in Sonitpur district, Assam and optimised the resource use among different size groups of farms using deterministic linear programming technique. The net return increased from Rs. 11,516 to Rs. 18,480, Rs. 17,180 to Rs. 23,900 and Rs. 24,805 to Rs. 40,806 in small, medium and large farms respectively in the optimum farming system (crop + goat pigeon + duck).

Chaudry and Chaudry (1992) investigated the possibilities of increasing net farm income by including labour-intensive dairy enterprises and vegetables along with crops under existing levels of technology in Pakistan. Linear programming was used to determine the optimum allocation of resources and combination of activities on farms. Activities were those of producing crops and livestock; augmenting resources, namely hiring additional labour, consuming wheat and paddy produced on the farm; and selling surplus quantities of produce. Results were obtained on the optimum and feasible number of buffaloes, and optimum cropping patterns. Dairy animals (buffaloes) were found to be an essential part of farm plans. Besides providing milk and milk products they helped to secure net cash returns which could not be achieved through crops alone; provided employment for some of the family’s excess labour; and served as a useful outlet for crop by-products which would otherwise go to waste. Basically, the price of milk determined the profitability of buffaloes. It is concluded that increased net cash returns can be achieved by mixed farming even with subsistence food restrictions, through efficient resource allocation and improved marketing practices.

Nagaraja (1995) assessed the potential for increasing farm employment through
an efficient farming system. The study was conducted in Bangalore rural district of Karnataka. An efficient system is one with the minimum income variability commensurate with high incomes. The data was analysed using linear programming and its complements MOTAD, multiple objective and compromise programming techniques. An efficient farm plan has the potential to increase farm income by 124 per cent for crop + poultry system of marginal farms, 53 per cent for crop + sericulture system of small farms and 85 per cent for crop + dairy + sericulture system of medium farms. The efficient farm plan generated the highest employment for crop + sericulture system in all the categories of farms.

It can be concluded from the above studies that by optimising the existing farming systems of different categories of farmers a regular flow of returns throughout the year and additional employment generation would be possible by integrating crop along with different livestock enterprises.

2.4 Food consumption, Nutrient Intake and Adequacy

The study of food habits in urban and rural areas of four southern states viz., Andhra Pradesh, Mysore, Tamil Nadu and Kerala indicated that in Mysore the consumption of rice was less as compared to jowar. In Kerala, most of the consumption of rice was in the form of cooked rice, while Tamil Nadu, other rice-based preparations were consumed to an appreciable extent. (Anonymous., 1971). Among various pulse preparations, dal was preferred in Andhra Pradesh, rasam in Mysore and sambar in Tamil Nadu. In Kerala vegetable curry was used by most of the people. Kerala and Mysore people consumed tea to a higher extent while coffee was widely popular in Tamil Nadu.

Umapathy et al. (1978) studied the food habits of rural people of Mysore state. Ragi and jowar was the main staple foods consumed in the form of ‘mudde’ and ‘roti’ respectively. Rice was consumed daily by 38 percent of the families where as wheat, parboiled and beaten rice was consumed occasionally. Pulses were reported to be used daily. Among vegetables, roots and tubers were used more frequently than green leafy and other vegetables.
Pushpamma et al. (1982) studied the food intake and nutrient adequacy of rural population of Andhra Pradesh. Cereals formed the major food item in each meal and all other foods were consumed in very small quantities. The proportion of cereal to pulse was 20:1 as against 9:1 ratio suggested by Indian Council of Medical Research. Consumption of green leafy vegetables, fats and oil and animal foods was negligible. The adequacy of energy ranged from 60 to 91 percent, protein from 73 to 91 percent and niacin from 52 to 84 percent. The intake of vitamin A and ascorbic acid was grossly inadequate in every group.

Mathur and Reddy (1983) observed that the average energy intake in rural areas of Bangalore district varied between 2600-2800 kcal per consumption unit (cu) per day, whereas, protein intake ranged from 65-70 g per cu per day.

Distribution of food and nutritional adequacy among farmers of Dharwad taluk was studied by Usha (1987). Results indicated that large farmers had significantly high intake of all the food groups except cereals. In terms of nutrients, study population was grossly deficient in ascorbic acid followed by riboflavin, retinol and thiamine. But, the intake of calorie and calcium by large farmers could meet the recommended dietary allowances. Intake of these nutrients was far below the Recommended Dietary Allowances(RDA) in landless labourers.

Wadker et al. (1988) analysed the diets of 60 farming families in Sindhudurg district of Maharashtra. Total intake of energy was below the recommendation but that of protein was slightly above the recommended level. Further, it was less in families with small or medium sized holding. Nearly, 53 percent of the families were deficient in energy intake and 27 percent in protein intake.

A cross sectional survey of food consumption and nutrient intake was conducted by Delisle et al. (1991) in 225 rural households involved in agriculture in three adjacent zones of Central Africa. Average household intake of energy, protein and iron appeared to be adequate except in Nokou, where 41 percent of the households did not meet 60 percent of their energy requirement. Vitamin A intake was extremely low in all three
zones. Cereals provided around 22 percent of total energy irrespective of total energy intake.

Mohanty and Sahu (1991) studied the food intake of the rural *kisans* of Sambalpur, Orissa. Mean daily food consumption was assessed in 11 randomly selected families. Energy yielding foods like cereals, roots and tubers were mainly consumed by *kisans*. Foods rich in protein (meat, fish, milk, liver, pulses) were consumed occasionally and inadequately. Protective foods that are rich in protein, vitamins and minerals (milk, egg and fruits) were seldom consumed by the people.

A food consumption and nutrient intake survey of 120 families belonging to different zones in Gwalior city was studied by Arora (1992). Results indicated that mean intake of all the food groups was more than the RDA except for cereals (81%) and green leafy vegetables (45%). Intake of fruits (banana), milk, sugar and jaggery was found to be high. The mean intake of nutrients was also higher as compared to recommended levels except vitamin A and C, which were 86 percent and 55 percent of RDA, respectively.

While studying the nutrient adequacy of farm and landless labour families of Devanhalli taluk, Karnataka, Shakuntala (1993) observed that both type of families met more than 80 percent of RDA with reference to calories, protein and ascorbic acid. Calcium intake of the families was equal to the recommended standard. All the households had lower adequacies of fat and iron. The adequacy of β-carotene was more than 80 percent of RDA in farming community and 70 percent of recommendation among landless labourers.

Food consumption pattern, food habits and beliefs in Jaipur city were studied by Gupta and Bansal (1994). The sample comprised of Punjabi and Jain families (35 each) in the age group of 30-45 years. None of the Jain families believed in consumption of fleshy foods. Only 14.2 percent were in the habit of consuming egg. Majority of the Punjabis were non vegetarians (85.2%) and had greater tendency of eating more spicy and fried foods. Garlic and onion had important place in Punjabis diet. Jains had very rigid food habits *viz.*, avoidance of honey, cauliflower, brinjal, roots and tubers.
Food and nutrient intake of Indians was reported by National Nutrition Monitoring Bureau (1997) for the period of 1975-1995. The average consumption of cereals and millets, though tended to decrease, was more or less equal to RDA. The intake of pulses and legumes remained marginally lower than recommended level (32 g to 33 g) while that of green leafy vegetables, an extensive source of vitamins and minerals was about one third of the RDA. The intake of milk and milk products as well as fats and oils was about half the recommended level.

Durrani (1998) conducted a survey of food and nutrient intake in Aligarh, India. The consumption of cereals was high in rural areas as compared to urban areas. There was a difference of about 162 kcal/cu/day between urban and rural people as consumption of cereals decreased. Consumption of pulses, milk and green leafy vegetables increased with increase in income. The mean intake of sugar and jaggery was low in both urban and rural areas as compared to recommended levels. The intake of protein and calcium was higher in upper economic class, whereas vitamin A and iron intake were lower in all the groups.

Bose et al. (2007) studied food and nutritional security in Bangladesh. Results have shown wide spread inequalities in income and expenditure distribution. Among food items, the inequalities have been found very low for cereals and high for livestock and horticultural commodities and various types of fish species in both rural and urban areas.

The above studies indicated that the dependence of farmers on the market for consumption is increasing as the trend of subsistence farming moving towards commercial farming. The studies also indicated the maximum share of cereals in the total food articles consumption.

2.5 The health, habitat, educational and social network security of households

Lalitha and Sharadha (1988) on socio economic and living condition of farm labour, studied the various socio economic factors which reflect the living condition of farm laborers. 30 families were interviewed with the aim of obtaining the information on expenditure pattern, living condition and health and hygienic practices. It is suggested
that those families not entirely depending on wages have a higher standard of living consequently the keeping of dairy cattle or poultry should be encouraged.

Ajaykumar (1989) reported that 27.00 per cent of grape growers in Ranga Reddy district of Andhra Pradesh had education up to college level, 38.00 per cent of the respondents studied up to graduation and none of the respondents were found to be illiterate.

Gotyal (1989) conducted a study on lime growers in Bijapur district of Karnataka and reported that 25.00 per cent of respondents each were illiterate and studied up to primary school, 20.00 per cent of the respondents were graduates. Only 16.60 per cent and 12.67 per cent studied up to high school and PUC level, respectively.

Lokhande (1990) observed that 45.00 per cent of the grape growers were having medium level of social participation, followed by high (35.00 per cent) and low (20.00 per cent) level of social participation.

Sheela (1991) in her study observed that 90.50 per cent of the respondents were members of any one of the organizations and among them 3.91 per cent were office bearers.

Jayale (1992) observed that 15.83 per cent of horticulture crops growing respondents were illiterates, 18.33 per cent each could read only and could read and write, while 8.34 per cent respondents each had education up to primary and middle school level. Nearly one fourth of the respondents (22.50 per cent) studied up to high school level and only 8.33 per cent of the respondents were graduates.

Chikkanna et al. (1994) conducted study in Ramanagar, Kollegal and Sidlaghatta cocoon markets in Karnataka and indicated that a proportion of reelers with primary level education were the highest (50%) compared to the reelers with other category education levels like illiterate, secondary, college and post graduate.

Srinivas reddy (1995) in a study on mango growers of Kolar district reported that 28 per cent of the respondents were educated up to high school level, 25 per cent of the respondents were illiterate, 19 per cent of the respondents studied up to primary school.
level and only 7 per cent of the mango growers had education up to graduation level. In respect of social participation, 57 per cent of mango growers had medium level followed by low level (33 %) and high (10 %) level.

Saravanakumar (1996) revealed that 27.50 per cent of the mango growers studied up to college level, 23.33 per cent and 9.16 per cent of the respondents were educated up to primary school level and graduation level respectively. Only 1.67 per cent of the respondents were illiterates. The study also revealed that 79.17 per cent and 78.33 per cent of the mango growers were members of cooperative milk society and district cooperative bank. While only 9.17 per cent of the mango growers were members of youth club and farmers discussion group.

Shivalingaiah et al. (1996) in their study conducted in Bangalore rural and Kolar districts of Karnataka reported that 90 per cent of small farm youth had low to medium social participation. While 26 per cent of farm had medium to high social participation and 68 per cent from youth had high participation in farm activities while high per cent (42 %) of big farm youth had low participation in farm activities.

Saikrishna (1998) conducted a study in Raichur district on Andhra migrant farmers reported that, six per cent of the respondents were members of milk co-operative society, only 1.33 per cent of farmers were office bearers. Only 3.33 per cent of farmers were the members of village Panchayat and no one was its office bearer and two per cent of migrant farmers were members of youth club and co-operative bank.

Vijaykumar (2000) conducted a study on sugarcane growers in Belgaum district of Karnataka and found that 29 per cent of the respondents were members of co-operative society and 2 per cent were office bearers. Whereas, 8 per cent of the farmers were members of youth club and 5.33 per cent of the respondents were members of gram panchayat.

Chandracharan (2003) in a study on Sujala watershed project beneficiary farmers in Dharwad district reported that, only 4 and 2.66 per cent of the farmers were members and office bearers, respectively of gram panchayats whereas 30 per cent and 43.33 per cent of the respondent farmers attended the meetings regularly and occasionally, respectively.
Shyamalie and Saini (2010) conducted a comparative study of Kangra district in India and Nuwara Eliya district in Sri Lanka in regard to livelihood security of women in hills. They opined that food security, habitat security, health security, education security, social network security were higher in Nuwara Eliya district compared to Kangra district, although economic security is same in both districts. The overall livelihood security index further reveals that one-fourth of the women in Kangra district are under the low livelihood security trap which is a matter of great concern.

The above studies highlighted the educational levels under various categories of farmers along with their participation in various organizations.

Zamani and Erfanirad (2011) described that rural women take different responsibility and roles such as producers of crops, ranching and keeping poultry, children education, housekeeping, supervising family economy and managing it, collecting firewood, weaving carpet, so illiterate women who haven’t possibility to utilize mass media properly too, wouldn’t able to do their duties and roles and also wouldn’t be affective to develop rural societies. So importance of education is very critical for rural women especially extensional educations. Approximately in most UN reports, women has been considered as greatest deprived group at human societies, while at global level, about two third of all affairs is done by women. But only one third of all recorded affairs relates to women. And also just one percent of proceeds of estates and assets of world are women, however they form 50 percent of work force at agriculture and they produce half of foods at all over the world.

2.6 Quantifying the benefits of developmental programmes /subsidies received by farm households.

De gorter (1993) studied the dynamics effects of the farm subsidies in the United States. The subsidies a farmer receives are based upon historical plantings, also called based acreage. It is sometimes optimal for a farmer temporarily not to participate in a program in order to increase future subsidies. Farmers with low base acreage opt out of these programs, whereas those with high base acreage participate in them. The article examines aggregate data involving corn, cotton, rice and wheat during 1987. It shows that
these programs increase the output of each of these crops and represent an annual deadweight loss of more than $2 billion.

Guia (1991) conducted a study on borrower transaction costs in rural financial markets and their role in the rationing of credit in the Philippines. The conclusions can be drawn from the results of this study that transaction costs play an important role in the demand for credit and in the rationing of credit among borrower classes, the lifting of interest rate restrictions decreased the absolute level of transaction costs in the deregulated period compared to the regulated period, but the change was not statistically significant, indicating that some barriers may be preventing its full effect and transaction costs have a regressive impact on borrowers, which instead of improving after deregulation, has proven to be of greater magnitude.

Tietenberg (1992) opined that expenses, such as court time, lawyers’ fee and so on, fall into a category called transaction costs by economists. In the context of natural resource economics concerning property rules and liability rules, the transaction costs include administrative costs incurred in attempting to correct the inefficiency.

Kumbhare et al. (1994) defined the transaction cost from the point view of institutions that are lending credit. The transaction cost includes costs associated with loan processing, loan disbursement, and monitoring and loan recovery. The cost associated with collection of information on potential borrowers, assessment of value of collateral and documentation are among the transaction costs.

Anonymous (2005) studied the impact of subsidy policy on sustainable agricultural products of date palm in the United Arab Emirates (UAE). In this study, enterprise budgets, policy analysis matrix (PAM) and measures of economic protection are used. Using the private cost ratio (PCR) of 14%, the results of the study indicate that the costs or the invested money are less than the achieved value added. However, the domestic resource cost ratio (DRC) is 0.46, indicating efficiency and it means that the UAE has comparative advantage in producing date palms. The nominal protection coefficient for tradable outputs (NPCO) is 1.39, which indicates that the adopted agricultural policy allows the market price to be larger than the social (international) price by 39%
The nominal protection coefficient for tradable inputs (NPCI) of 0.88 indicates that there is a decline in the costs paid by the farmer as a result of the government subsidy. This means that the costs of tradable inputs were only 88% of what they would have been at world prices (without policy).

Fan (2005) analysed the impact of agricultural research in poverty reduction in India by using state level data for empirical analysis from 1970 to 1995. From this study it was found that Agricultural research investment plays a major role in reduction of urban poverty apart from its large impact on reduction of rural poverty. The agricultural research investment causes reduction in the food prices by increasing the agricultural production. Since urban poor are spending 50-80% of their income on food, they are benefitted proportionately more than non-poor. One of the major finding of this study is that, among all the rural investments considered in the study agricultural research investment has the large impact on the urban poverty reduction per additional unit of investment. At present urban poverty accounts for about 25% of the total poverty in the country and it is expected to increase in future. Policy makers cannot afford to be satisfied about this trend and more investments are needed to keep food prices low.

Hari and Kumawat (2006) conducted a study on impact of Swarnajayanti Gram SwarojgarYojana (SGSY) in Jhunjhuna (Rajasthan) the study revealed that small farmers who obtained assistance under SGSY for buffalo rearing could be able to increase their annual income by Rs. 15,310 over Rs. 14,170 earned by non-swarojgari families. In percent terms it was 108% higher than that of non-swarojgari families. The study also revealed that the buffalo rearing activity helped to increase employment.

Achterbsch et al. (2007) studied that there is increasing insight into how household poverty in rural and peri-urban areas is affected by developments in the markets for fruit, vegetables and flowers. This study extends the knowledge, and feeds into the debate on agricultural growth policies. Based on a positive outlook on the growth of Horticultural production and distribution and marketing the low income countries of Uganda and Vietnam, this paper asks whether poor and vulnerable groups in society share in the benefits of the foreseen economic expansion.
Fisher and Monica (2007) examined impacts of an agricultural subsidy program on forest pressure in Malawi. Using household survey data, they measured the effect on forest product marketing and on forest clearing of Malawi’s Starter Pack Scheme (SPS). Regression results show households receiving a free packet of hybrid Maize seed and chemical fertilizers (a “starter pack”). In addition, no measurable effect of starter pack receipt is found on forest clearing decisions, suggesting the program raised agricultural output without encouraging agricultural expansion. Findings thus indicate potential modest improvement in forest conditions due to the SPS.

The above studies indicated agriculture is supporting both rural and urban population by providing larger amount of employment opportunity and food security; in turn agriculture is supported by various kinds of subsidies and developmental programs both in rural and urban areas. However, these developmental programmes are more concentrating on rural farmers than urban farmers.

2.7 Constraints faced by the farmers for their livelihood

Tacoli (1999) in his study on understanding the opportunities and constraints for low-income groups in Peri-urban interface. The contribution of livelihood frameworks in London reveals with reference to Peri-urban area in this framework with livelihood, assets and access of low-income groups. Peri-urban interface has important effects on different level of urban centres growth patterns. Labours is the most important assets for poor people to have higher-income employments which require different level of working skill, depend on type of activities. Livelihood strategies of individual and household depend on internal factors (household assets) and external factors (trends in circumstances).

Arunkumar (2005) in his study on profile of SHGs and their contribution for livestock development in Karnataka reported the problem faced by the members were lack of timely support from banks / other organization was the major problem, inadequate number of organization linked up, unequal distribution of work among members, non introduction of agriculture based income generating activities (IGA), non availability of information about IGA, and difficulty in getting external loans.
Pattnaik (2009) studied that for a considerable social development women empowerment is essential. But it is difficult to look at the empowerment of women when they have been suffering from acute poverty amidst nutritional insecurity. The main factors behind such hunger and nutritional insecurity are poverty, illiteracy, population growth and unequal distribution of assets. The study was carried out in Kendrapara district of Orissa. The sample consisted of 150 respondents. The farm women used to face many constraints like absence of ownership of land, inadequate women’s program, lacking technical guidance and knowledge, exposure to mass media, and financial inability to purchase, occupational health hazard and social stigma. The suggestions to overcome such constraints are flow of latest information for increasing crop production, extensive training programme, access and control over food, awareness on the different welfare schemes, strengthening of public distribution system, removal of gender disparities, storage facility, formation of community grain bank for poor and needy persons.

Conclusion:

The forgoing review of the literature on farming system has revealed that, earlier studies on farming systems tended to confine themselves to the investigation of farming systems under either irrigated condition or rainfed condition exclusively. Such studies failed to throw light on the relative features and economics of irrigated and rainfed farming systems being pursued by farmers in a geographically contiguous area.

Hence, as an attempt towards plugging this research void, the present study has made a comparative analysis of farming systems and realization of benefits from government programs by farmers under irrigated and rainfed situations within a geographically contiguous area.