

**ACCOMPLISHING FOOD SECURITY THROUGH COMMUNITY
BASED INITIATIVES IN THRISSUR: A PARTICIPATORY
ANALYSIS**

By

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DECLARATION

I hereby declare that the thesis entitled “**Accomplishing food security through community based initiatives in Thrissur: A participatory analysis**” is a bonafide record of research work done by me during the course of research and the thesis has not previously formed the basis for the award to me of any degree, diploma, fellowship or other similar title, of any other university or society.

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INTRODUCTION

CHAPTER 1

INTRODUCTION

“One cannot think well, love well, sleep well, if one has not dined well.”

Virginia Woolf

Conventionally, food is supposed to be one of the most basic human needs within the hierarchies of concerns. Within this hierarchy,

“Lower order needs (physiological and safety) are dominant until satisfied whereupon the higher order needs come into operation. If you are starving, your needs for esteem or status will be unimportant; only food matters (Maslow cited by Handy 1985).

Hopkins(1986) also argues that

“Food security stands as a fundamental need, basic to all human needs and the organization of social life. Access to necessary nutrients is fundamental, not only to life *per se*, but also to stable an enduring social order”.

FAO (2003) is of the view that addressing agriculture and population growth is vital to achieving food security. It states that the world over, 852 million people are chronically hungry and two billion lack food security. Of late, food security has become a matter of serious concern thanks to shift of focus of major producers towards bio fuel, decline of public distribution systems in the developing economies in the after math of neo liberal economic reforms and huge deviations in the land use pattern even in rural areas.

However, India deserves commendation for realizing the food requirement of its swelling population. Considering India alone we see tremendous advances over the last

50 years as food grain production has increased four fold (50 to 200 MT) while population has increased three fold (330 to 960 million). It is one of the largest producers of food grains in the world, feeding 17 per cent of the world population on only 3 per cent of the world's arable land. The country had achieved food self sufficiency 30 years ago through dramatic investments in technology, institution and infrastructure. Yet India's efforts in achieving food security for all remain unimpressive. Growth rate of food grains declined from 2.73 per cent in 1980s to 2.09 per cent in 1990s and further to 2.01 per cent in 2000-2008. With just one year (2007-08 to 2008-09), the total food grain production of India reduced from 230.78 million tones to 229.85 million tones (GOI, 2008-09).

According to the FAO (2000), 364 million people, one fourth of the world's poor and undernourished population, live in India. Hunger and deprivation affect about 260 million people in the country. It is estimated that 41 per cent of world's underweight children are in India and face enormous growth challenges. Two square meals continue to be a distant dream for millions of families. At the global level, the South Asian region is a home to more chronically food insecure people than any other region in the world and India ranks 94th in the Global Hunger Index (GHI) of 119 countries. The alarming results of India State Hunger Index shows that not a single state in India is either low or moderate in terms of its index score but states have a "serious" hunger problem. India being a fast developing country, positioning itself to be one of the world's most powerful nations cannot afford to have a vast number of food insecure people. Hence, we have the difficult task of meeting the food needs of a growing population while coping with decreased area of arable land, increasing scarce water supplies and greater intensity and frequency of extreme weather events such a floods and drought caused by global climatic change.

Food security is a concept originated only in the mid 1970s in the discussions of international food problems at the time of the global food crisis during this period. By definition, sustainable food security involves strengthening the livelihood security of all

members within a household by ensuring both physical and economic access to balanced diet including the needed micronutrients, safe drinking water, environmental sanitation, basic health care and primary education. Food Insecurity is regarded as a household level economic and social condition of limited access to food.

Food security initiatives in India

Any national food security programme requires an approach which relies largely on domestic production needed for consumption as well as for building buffer stocks which would prove as an effective strategy for self sufficiency. Food security therefore necessitates timely, reliable and nutritionally adequate supply of food on a long term basis. This implies that a nation has to ensure the growth rate in food supply so that it takes care of the increase in population and also the increase in demand resulting from increase in the income of the people. Practically, this dimension of food security focuses on the need to enhance production.

Together with production, the Public Distribution System (PDS) would act as an instrument of price stabilization and a countervailing force against private traders who are interested to exploit the situation of scarcity to acquire more and more profits. An effective PDS has proven to be the only way to ensure equitable distribution of essential commodities in the country to control prices in the open market. Radhakrishna *et al.*, (1997) observe that poverty has declined by 1.6 percent in rural areas and 1.7 percent in urban areas as a result of PDS subsidies especially on food grains. The country has embarked on an intensive effort to ensure food security through various national programmes designed exclusively for this purpose. It is worthwhile to remember the noble wish of Mahatma Gandhi, who categorically stated: “to people famishing and idle, the only acceptable form in which God can dare appear is work and promise of food.”

The concrete manifestations of the country’s commitment to achieve Gandhiji’s goal of food for all, is evident through programmes like the recently launched Rashtriya

Krishi Vikas Yojana (RKVY) and the National Food Security Mission (NFSM) which is being contemplated.

Food security: The Kerala perspective

Kerala is a food deficit state producing only 15 per cent of its requirement of food grains. As far as Kerala is concerned the issue of food security has become crucial in recent times, with a heavy decline in the domestic agricultural production. At the same time there are ample institutional mechanisms to plan and implement the agricultural development process at the grass roots level through democratic decentralization. A wide network of formal community organizations bolsters these institutions in different ways as seen in the case of Kudumbasree, farmers self help groups, rice group farming councils like *padasekhara samithis* etc.

Analysing the agricultural production in Kerala, it is seen that of the total 38.86 lakh hectares, only 21.05 lakh ha is the net sown area. Out of this only 2.29 lakh ha come under rice with a production of 528488 MT (Kerala State Planning Board, 2008). The area under paddy cultivation decreased from 3.47 lakh hectares to 3.11 lakh hectares and the production from 7.51 lakh tonnes to 6.89 lakh tonnes during the period from 2000-01 to 2002-03. Similarly, the area under vegetable cultivation shrunk from 1.80 lakh hectares to 48000 hectares and production from 18.13 lakh tones to 4.81 lakh tonnes during the period from 2002-2007.

During 2007-08, decline in area of paddy was 34591 hectares which reduced the total area of 2.64 lakh hectares in 2006-07 to 2.29 lakh ha. In the mean time, rice production decreased from 6.42 lakh MT to 5.28 lakh MT, a decrease of 2.29 per cent during this period compared to an increase of 1.8 per cent in 2006-07 with that of 2005-06. In view of this situation, the Department of Agriculture (DoA) introduced a scheme on promotion of paddy cultivation in fallow lands in 2004-05. Later, another major food security project was launched during 2008-09 covering the production of rice, egg, vegetables and milk. Special schemes were also launched during 2008-09 by the local

governments and the DoA which expected to increase area under paddy during 2008-09. Separate targets were fixed for increasing the production of each commodity and the local governments were given a target of 10,000 acres to be brought under paddy during 2008-09. In fact, as an outcome of these efforts, the average productivity which was stagnant at around 2.2 tonnes/ha for four years till 2005-06 has improved to 2.4 tonnes/ha in 2006-07 and slightly declined to 2.31 tonnes/ha in 2007-08. Rice productivity at the current level is sub optimal. This has materialized through different programmes implemented simultaneously by the government. Apart from providing area based subsidies, measures for timely procurement of harvested paddy and suitably designed incentive system have been instituted to help promote food security of the state. The conversion of paddy lands for other purposes was also strictly regulated with the enactment of the Kerala Paddy Land – Wet Land Conservation Act, 2008 passed by the state. Bolstering these efforts, the domestic price of paddy also moved to a higher trajectory during 2007 and 2008 in the state. Government announced a higher procurement price of Rs.11 per kilogram to support the farmers in the state, which was later enhanced to Rs.12. The crucial question of the relative profitability of paddy in the state has been effectively addressed as a result of all these measures.

As regards Thrissur district, which is the study area, the total geographical area is 302919 hectares and the net sown area is 129350 hectares. The total area under paddy and vegetables are 24422 hectares and 2846 hectares respectively and the production of paddy from Thrissur amounts to 59381 tonnes. Out of the total land available for cultivation, 20667 hectares of land remains fallow in the district (Government of Kerala, 2007-2008), which seems to be important from the view point of food security. The status of area, production and productivity reviewed so far points to the scope of enhancing all these determinants of food security as far as major food crops in the state as well as the district are concerned.

Importance of accomplishing food security at the local level

While considering food security, it is generally accepted that people must have access to their own locally produced food, the ability to purchase food in local markets

and access social safety nets of food. Since food insecurity may manifest on a chronic basis reflecting severe poverty or as “crises,” the emphasis needs to be on achieving food security at the local level through increasing yields, reduction in production costs, as well as enhancement in the ability of small farmers to retain adequate quantity of food grains for self-consumption.

There is a daunting task ahead at various levels to ensure that demand-supply gap is bridged by accelerating the domestic agricultural production. Most important of all these levels is community food security which seeks to ensure safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self reliance and social justice (Hamm and Bellows, 2002). Community food projects are intended to take a comprehensive approach to developing long-term solutions that would help ensure food security in communities by linking the food sector to community development, economic opportunity, and environmental enhancement. Along with this, they would also meet the food needs of low-income people and increase the self-reliance of communities in providing for their own food needs. Community food projects are widely acclaimed as the means to promote comprehensive responses to food, farm, and nutrition issues by combining the resources of multiple sectors of the food system.

It has been widely acknowledged that a stable local agriculture base is the key to a community responsive food system. It involves the intervention of various stakeholders including producers and consumers through a network of community organizations at the grassroots level. Therefore, it is needless to say that food security can be achieved in a better and faster way if a decentralized approach is adopted while implementing food production and distribution programmes. The decentralised planning movement in Kerala provides ample scope for implementing community level programmes with the participation of all stakeholders. The local level development administration envisages active and functional participation of all development departments under the aegis of the local self government institutions (LSGIs). Besides this, every local level development programme, by design, needs to harness the participation of people’s representatives, credit agencies, NGOs, CBOs, beneficiaries etc, as per the objectives of the programme.

Similarly, food security programmes would involve the Department of Agriculture, people's representatives, CBOs such as Kudumbasree units and *padasekhara samithis*, credit agencies, NGOs etc during planning as well as implementation phases, with well defined roles. This allows CBOs to take up ventures to bolster the efforts towards food security. Several CBOs, particularly the neighbourhood groups of women and men formed under the State Poverty Eradication Mission-Kudumbasree-are involved in such ventures. Kudumbasree, the network of Self Help Groups (SHGs), is a multi faceted women based participatory poverty eradication programme jointly initiated by the Government of Kerala and NABARD, implemented in co-operation with LSGIs. Unlike other community institutions, the CBOs have an economic base of its own to give it autonomy and sustainability. CBOs have basically three levels of operation viz. Neighbourhood Group (NHG), which is the fundamental building block, Area Development Society (ADS) at the ward level and Community Development Society (CDS) at the local level.

Among several other enterprises, these organizations are increasingly taking up food grain (mainly paddy) and vegetable cultivation on leased or self owned fields and contribute to the food security of the state. The LSGIs encourage these CBOs to take up cultivation in lands that have been left uncultivated. Necessary financial help is also given in the form of soft loans and grants. The success of 'Harithasree' a special programme involving women SHGs in agriculture is worth mentioning in this regard. The "leased land farming" of paddy, vegetables, tubers etc. taken up by 'Harithashree' units has clearly shown the prospects of involving CBOs in achieving food security. In connection with this programme, several Kudumbasree units have been trained in the use of mechanized transplanters for paddy cultivation.

There is significant possibility for harnessing local human resources to invest their efforts and time in agriculture and allied sectors with a view to enhance food security at the residence as well as the community level. This calls for concerted efforts to devise programmes to involve every one possible in the process of food production and distribution at the local level, with greater roles for CBOs.

It is in view of this greater possibility of CBOs becoming instrumental in accomplishing food security that this study has set its objective as described below.

Objectives of the study

The present study envisages an objective evaluation of the nature and extent of the involvement of CBOs in ensuring food security by exploring the issues and constraints related to food security initiatives in the villages in Kerala. The study also envisions a closer look at the concept of community food security and various aspects related to it.

The specific objectives of the study are as follows

- To appraise the nature and relative role of CBOs involved in ensuring food security
- To explore the extent of awareness of various stakeholders in agricultural development process regarding food security and factors contributing to it
- To identify gaps in food grain production in a selected *Grama Panchayat*
- To assess possible interventions to ensure food security through community based initiatives

Scope of the study

This study primarily focuses on the efforts that have been initiated across the state to accomplish food security by involving CBOs and harnessing local human resources. This assumes greater importance in view of the pessimistic predictions that agriculture per se can not be revived in Kerala and the state has to pull along as an absolute dependent on other states for its daily meals. Initiatives through CBOs would pave the way for allaying the apprehensions on unavailability of labour, which is rampant in the state. Moreover, the enthusiasm of at least a small section of the society

to invest their resources in agriculture brings about not only prosperity in terms of increased production, and lesser dependability for vital food items, but also several positive environmental impacts like regeneration of water sources, agro bio diversity etc. This study therefore would be helpful in understanding the dynamics of farming by CBOs, which could emerge as an alternative to prolonged fallowing, and use of agricultural land for commercial purposes. This would also shed light on the various ways of harnessing local resources, the issues of viability and feasibility of CBO initiatives, challenges of sustaining the efforts towards accomplishing food security, and scalability of small scale local initiatives. The study also brings to focus, the need to initiate local level efforts for enhancing community consciousness on self reliance with regard to food. There is immense scope for further analysis of the dynamics of CBOs in operation, in the field of food security in other parts of the state as well as the country.

Limitations of the study

The study is confined only to Thrissur District and hence generalization of the inferences drawn as part of this work might not be so appropriate elsewhere. Apart from this, the study had identified only a limited number of variables due to paucity of time and other resources. The relative contribution of several socio economic and psychographic attributes to the inconsistency in awareness on the food security concerns of the community among the stakeholders remain to be found out. Moreover, the dynamics of stakeholder participation in accomplishing food security also largely remain to be explored. The efficacy of the rapid technique to assess the food production status in a locality based on food requirement of the inhabitants need to be proved statistically. The issues of sustainability of CBOs engaged in food security programmes also need to be found out.

Presentation of the thesis

The report of the research programme is presented in six chapters. The first chapter deals with introduction highlighting the importance, objectives, scope and

limitations of the study. The second chapter covers the review of literature pertaining to the objective and background of the study. The third chapter is the methodology followed in executing the research programme. The fourth chapter deals with the results and discussion of the study. The fifth chapter includes summary, implications and conclusion of the study. References, appendices and abstract are furnished at the end.

REVIEW OF LITERATURE

CHAPTER II

REVIEW OF LITERATURE

The prime objective of the chapter on review of literature is to establish the theoretical tenets of the concepts and ideas that are being explored in the study. The review would bring out the status of the theoretical and empirical work done on the topic so far. Since the concept of food security at various levels and community based initiatives have drawn much attention recently world wide, several authors have worked on these topics. However, as community based initiatives in accomplishing food security has only a recent origin, the researcher had to concentrate on very recent and relevant literature. The following is the review of the work done on various concepts that are explored in this study.

2.1 Food security

In a world of growing prosperity and agricultural abundance, about 800 million people still suffer from hunger and malnutrition. The United Nations has set the goal of cutting this number to half by 2015. Eliminating hunger and malnutrition is one of the most fundamental challenges facing humanity (Lomborg, 2004). It is widely accepted that optimal physical, cognitive and emotional development and function in humans requires access to food of adequate quantity and quality at all stages of the lifespan (Cook and Frank, 2008). According to Sen (1998), not being well nourished affects the capacity of people to work, to participate in community life, to be respected, to concentrate in school, thus this problem should be urgently addressed. Attaining self sufficiency in food, which is usually termed as ‘food security’ turns out to be an important concern in this context. The threat of food insecurity is looming large over communities, across the world, particularly the deprived sections.

According to IMF, food insecurity in many lower income countries is expected to remain precarious in the longer run (Shapouri *et al.*, 2009). The number of food-insecure

people is projected to remain relatively constant through the next decade, equaling 834 million by 2018. This has led the former US President Bill Clinton to point out in his speech at United Nations World Food Day on October 16th 2008: “Food is not a commodity like others. We should go back to a policy of maximum food self sufficiency. It is crazy for us to think we can develop countries around the world without increasing their ability to feed themselves”.

Episode of financial crisis and changes in the temporal pattern determine the food security of households across the world. The global economic downturn is expected to reduce import capacity in many lower income countries, adversely affecting their food security. The difficult financial environment worldwide threatens food security because commercial imports account for a growing share of food supplies in many developing countries. Income growth, trade liberalization policies, improvements in the global transportation system, and, in some cases, an inability to increase domestic production spurred the growth in food imports, including imports of such staples as grains and vegetable oils, which are an important component of diets in most developing countries. The weakening of the global economy directly affects the food security situation of the developing countries, many of which suffer from persistent extreme poverty (Rosen and Shapouri, 2009).

In the context of the internationalization of agriculture, it is argued that though there has been improvements in the food security situation over the past decades in physical terms (food availability), the trend is not very encouraging as significant sections of the population still suffer from malnutrition and under-nutrition (FAO,2003). It is also observed that the WTO and the other neo liberal policies are likely to impact the food security situation, especially through their impact on the farm sector by adversely affecting the incomes and employment of people involved. Therefore it is imperative that unsustainable farming systems should provide nutritious and sustainable supply of food which needs both national as well as local level initiatives to strengthen the food security situation (Singh, 1998). It is further accepted that adequacy at the aggregate level does not necessarily ensure adequacy at the household or individual level. In the recent past,

there has been a shift” from the global and the national” to “the household and the individual’ level and “from a food first perspective to a livelihood perspective” (Maxwell, 1996). This is the context in which initiatives for accomplishing food security at the community level is explained in the study.

2.1.1 Definitions of food security

The definition of food security has evolved considerably over time. The starting point of food security is the availability of food to balance unequal food distribution regionally and nationally. However it was later accepted that availability, though a necessary element is not sufficient for food security, because food may be physically existent but could be inaccessible for those most in need. According to World Bank (1986) definition, which is accepted world wide, food security is “adequate access to food for all people at all times for an active healthy life”.

Similarly, food security is believed to be achieved if adequate food (quantity, quality, safety, socio-cultural acceptability) is available and accessible for and satisfactorily utilized by all individuals at all times to live a healthy and happy life”(Gross,2002).

Reutlinger (1982) defines the ultimate goal of food security as the “freedom from food deprivation for all of the world’s people all of the time”.

According to Christensen (1991), “food security is obtained when there is an adequate supply to which all members of the population have full access”.

Klein (1996) observes that “food insecurity consists mainly of anxiety about having enough food to eat or running out of food and having no money to purchase more”.

The World Food Summit, 1996 comprehensively defines food security as given below;

“Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO, 1996).

The definitions thus invariably emphasize availability, accessibility and utilization of food. Food security thus encompasses availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports; access by households and individuals to adequate resources to acquire appropriate foods for a nutritious diet and utilization of food through adequate diet, water, sanitation, and health care. At the practical level, availability is said to be achieved if adequate food is ready to have at people’s disposal; access is ensured when all households and all individuals within those households have sufficient resources to obtain appropriate foods for a nutritious diet and adequate utilization refers to the ability of the human body to ingest and metabolize food. Nutritious and safe diet, an adequate biological and social environment, a proper health care to avoid diseases ensures adequate utilization of food (USDA, 1996).

2.1.2 The evolution of food security concerns

The concept of global food security has a history of more than 50 years history with a sequence of definitions and paradigms evolved over time. Here is an overview of the changes in the definitions of food security (See Table 2.1).

With the historic Hot Spring Conference of Food and Agriculture(FAO) in 1943, accepting the concept of a “secure, adequate and suitable supply of food for everyone’, bilateral agencies of donor countries such as the USA or Canada, which were created in the 1950s, started to dispose their agricultural surplus commodities overseas.

Table 2.1 Evolution of food security concerns

Year	Stage
1940-1950	Food surplus disposal
1960	Food for development
1970	Food security
1980	Broadened food security
1990-till date	Freedom from hunger and malnutrition

(Source : Weingärtner (2004))

In 1960s, when it was acknowledged that food aid may be a barrier for development for self sufficiency, the concept of food for development was introduced and institutionalized. The creation of World Food Programmeme (WFP) in 1963 is one prominent example of this approach. The food crisis of 1972-74 marked a dramatic turning point from the past area of food abundance of donor countries to highly unstable food supplies and prices. As a result food security insurance schemes, which assured international access to physical food supplies, were developed in the 1970s. Improved food security assurance was achieved through better coordination between donor organizations and agencies and food availability surveillance in recipient countries. In the 1980s, following the success of the green revolution which helped increase the food production, it was widely accepted that food emergencies and even famines were not caused as much by catastrophic shortfalls in food production as by sharp decline in the purchasing power of specific social groups (FAO,2000). Therefore food security was broadened to include both physical and economic access to food supply. From1990s, till date, concrete plans have been formulated to eradicate or at least reduce hunger and malnutrition drastically. In addition, the human right to adequate food and nutrition has been internationally reaffirmed and committed the national governments to a more proactive role in this regard.

Thus food security implies the fulfillment of essential food needs of the population of a country. At the pragmatic level, ensuring food security would require an

increase in food production relative to the country's population; improvement in per capita food supplies; and controlled and stable food prices. However, this has to be viewed from nutritional security, which cannot be ensured by food security alone (Alderman (1993); Alderman and Garcia (1993); and Malik and Malik (1993)). Various household characteristics, such as, household income, household consumption patterns, household's living condition, and tastes and preferences are the determining factors of individuals' nutritional standard in the family.

2.1.3 Dimensions of food security

Based on the large body of literature referred, the concept of food security has been attributed with four dimensions as followed.

- a. Production dimension
- b. Distribution dimension
- c. Nutrition dimension
- d. Socio-Economic dimension

2.1.3.1. Production dimension

The world's population is expected to grow by 2.3 billion to reach more than 8 billion in 2020 (UN, 2008). This dimension of food security becomes relevant in the context of this need for growing more food grains as a starting to accomplish food security. Adding to the woe, over 700 million people are undernourished and are unable to grow or buy the food they need to lead healthy lives. More than 180 million children under five years of age are underweight (UN ACC/SCN 1992). Agriculture would therefore continue to play a central role in tackling the problem of food insecurity by maintaining and increasing global food production, ensuring food availability.

Food production in India has grown multifold over a period of last forty years thanks to increase in use of hybrid seeds, increased nutrient consumption, and easy availability of rural credit. But still many parts of India exhibit productivity levels far

lower than world average which points to the imbalances in regional contribution to self-sufficiency in food production (GOI, 2010a). This warrants focused approach to improve productivity levels is needed to realize the objective of producing 260 million tones of food grains by 2010-2011(Prasad, 2009).

As far as Kerala is concerned, it is a food deficit state producing only 15% of its requirement of food grains. Of the total 38.86 lakh hectares, only 21.05 lakh ha is the net sown area. Out of this only 2.29 lakh ha (2007-08) come under rice with a production of 528488MT (2007-08). The area under paddy cultivation decreased from 3.47 lakh hectares in 2000-2001 to 3.11 lakh hectares in 2002-2003 and the production from 7.51 lakh tonnes to 6.89 lakh tones. The area under vegetable cultivation shrunk from 1.80 lakh hectares in 2002 to 48000 hectares in 2007 and production from 18.13 lakh tones to 4.81 lakh tones.

Rice is the dominant food staple cultivated by the small farmers in the wet tropics largely due to the high calorific value (Finck, 1970) and it is a commodity of strategic importance and has become the fastest-growing food source to both rich and poor households (Nwanze *et al.*, 2006).So it continues to draw major attention of the government for further increasing the production. Factors affecting increased consumption of rice include rising incomes, trade liberalization, extensive promotion and effective marketing strategies of rice importers and ease of cooking among others (Oteng 1997; Tomlin's *et al.*, 2007).Rice-based food systems is the mainstay of the agricultural production system in the country, particularly in Kerala .It has forged a strong link with livelihood, socio economic status and environment in the state.

2.1.3.2. Distribution dimension

With a network of more than 400,000 Fair Price Shops (FPS), the Public Distribution System (PDS) in India is perhaps the largest distribution machinery of its type in the world. PDS is said to distribute each year commodities worth more than Rs .15, 000 crore to about 16 crore families. PDS system in Kerala-often referred to as the ‘Kerala Model’ of implementation of the food security programme which subsidizes consumer prices and procures grain from farmers at prices higher than market prices. This huge network plays a meaningful role by translating macro level food security to a micro level self-sufficiency by ensuring availability of food grains for the poor households. The shift of the universal PDS system to the targeted PDS system in 1997 which divides the population into two categories viz. Below Poverty Line (BPL) and Above Poverty Line (APL) with greater subsidies for the BPL categories had some implications in the food security status of the population. Increase in prices for APL families under the TPDS and the fact that now the ration card is no longer the primary identity card ,coupled with factors like globalization and the increasing number of retail shops in the state,have made it impossible to say definitively that Kerala would have continued to have 95 per cent coverage and utilization of the PDS if the shift to the TPDS system had not taken place (Shruthi *et al.*, 2008) .there are several reports of the declining contribution of PDS in food security across the country. Srivastava (2003) refers that the public distribution system, despite attempts to revitalize it, has largely failed to deliver and the Integrated Child Development Services has not drawn young mothers and children to the Anganwadi centres or improved their nutritional status. Paradoxically, while the food surplus statistics indicate an upward shift, so do starvation deaths in different parts of the country. It calls for structural adjustment and investment in agriculture with regard to food provision.

2.1.3.3. Nutrition dimension

Food security is a constituent part of the broader concept of nutrition security. A household can be said to be nutritionally secure if it is able to ensure a healthy life for all

its members at all times. According to Sen (2003), in developing countries, where a large part of the population faces constant deprivation, income is not a good indicator of the quality of life; instead, the consistent elements of life include “being adequately nourished”. Nutritional security thus requires that household members have access not only to food, but also to other requirements for a healthy life, such as health care, a hygienic environment and knowledge of personal hygiene. Food security is a necessary but insufficient condition for ensuring nutrition security. Nutritional security is emerging as a larger issue which is not addressed by many countries. It is usually regarded as a policy objective that is distinct from food security and it highlights the importance of intra household distribution issues in developing countries. Rahman and Choudhury (2009) observes that knowledge of food and nutrition is absent even in the rich class of society. They argue that this is the reason why lack of nutrition knowledge makes people vulnerable and food insecure irrespective of rich and poor class of the society.

2.1.3.4. Socio-Economic dimension

This dimension refers to the socio-economic factors influence food security of the communities. This includes the determinants of access to food, which is primarily the purchasing power of the people. It also includes the various socio economic factors that influence food grain production which include income, education, occupation, farm size etc. of the farming community. Shifting emphasis on crops and enterprises according to change in market levels and consumer preferences also influence initiatives towards accomplishing food security. Food security requires policy level decisions and it would be difficult to impose such decisions on the farming community forcefully. Dwindling prices both at the producer’s level and income related to it also influence the efforts towards accomplishing food security.

Laraia *et al.*(2006) reports that women from marginally food-secure and food-insecure households had significantly less income, less education, and were older than women from fully food-secure households. Socio economic and demographic predictors for household food insecurity were income, race, and age. She further reports that these

socio economic and demographic indicators are associated with household food insecurity among pregnant women.

Similarly, the impact of socio economic variables like age, education, family size, farm size, extension service, credit use, manure application, off-farm income and timely irrigation availability on the adoption of fertilizers among the maize growers of Nepal show that family size, farm size, credit use, off-farm income and irrigation availability had a positive influence on maize productivity and consequent food security (Paudel *et al.*, 2009).

2.2 Role of Community Based Organizations (CBOs) in accomplishing food security

Food insecurity has a high cost to individuals, families and society as a whole in terms of reduced physical, mental, spiritual and social health and wellbeing. For understanding local food security, a quick food security audit of the area in order to identify trends of changes that affect food security, to subdivide the area according to differences in local food security systems and to outline a food security strategy for the area can be formulated. The audit requires few resources and relies on rapid and participative techniques of gathering and analyzing information, backed up by whatever data may be available on local populations, their sources of income and their state of health. Rapid and participative techniques promote and facilitate communication, discussion and joint action with communities. (Hubbard, 1993)

Community organizations (sometimes known as community-based organizations or CBOs) are civil society organizations that operate within a single local community. They often run on a voluntary basis and are self funding. Within community organizations there are many variations in terms of size and organizational structure. Some are formally incorporated, with a written constitution and a board of directors (or a committee), while others are much smaller and are more informal (Wikipedia, 2010). The recent evolution

of community organizations, especially in developing countries, has strengthened the view that these "bottom-up" organizations are more effective in addressing local needs.

A CBO is an organisation that provides social services at the local level. It is a non-profit organisation whose activities are based primarily on volunteer efforts. This means that CBOs depend heavily on voluntary contributions for labour, material and financial support. The characteristics of CBOs include the following -1) they are non profit organisations 2) relies on voluntary contributions; 3) acts at the local level; and it is service-oriented (Chechetto-Salles and Geyer,2006).

All organizations, institutions or congregation of people, which have local area or village based presence, maturity and structural arrangements, owned and managed by members, are called as Community based organizations. They are formal, legal entity or informal registered organizations maintaining separate books of accounts, systems and ways of working. They have group identity and membership (GOI, 2010b).

Groups of individuals within a village or group of villages or residential area with similar vested interests that have established an agreement to work together in a structured manner to achieve common objectives constitute CBOs. CBOs are seen as appropriate grassroots types of organizations that emerge to address community needs and intervene to address key social determinants.

The CBO concept is an integrated bottom-up socioeconomic development concept, which is based on full community involvement supported through inter sectoral collaboration. It is regarded as a self-sustained people-oriented strategy that addresses the diverse basic needs of the community (Mohamud 2001). The most salient aspects of this approach are the organization, mobilization and enhancement of community capabilities and involvement in micro-development through social and income-generating schemes. These initiatives are observed to have substantial impact on basic needs, which constitute the most powerful determinants of social development, poverty reduction, good health, quality of life and productivity. In a related context, Woolcock and Narayan (2000) opine that the "social" benefit of education for food security and well-being in general, is

enhanced through an improvement of social relations. They define “social capital” as the social networks in which a person is included, arguing that the larger these nets are the larger the possibility to find assistance in emergency situations. This way the risk, even to become food insecure, is alleviated, making individuals less vulnerable.

It is seen that in villages where CBOs operate, women’s organizations are established to spearhead women’s development activities at the community level. They are characterized by provision of interest-free loans for income-generating schemes, targeting the poorest members of the community. They work on the approach of the initiatives in line with the country’s stated policy of decentralization and the adoption of policies which are concerned with the building of democratic institutions and empowering institutions (Ardakani, 2007). The implementation of community-based initiatives will facilitate the process of socioeconomic development and will enhance the quality of life of vulnerable groups within the country.

They provide a new stimulus for health and human development, and have initiated a transformation process whereby communities are playing an active role and multisectoral government functionaries are providing support for sustainable local development in order to improve the quality of life of the people (Belal and Al-Hinai, 2009). The CBI programmes aim at assisting and strengthening the community organization and mobilization to meet their basic socioeconomic needs. CBI improves access to basic needs such as food, nutrition, safe water, sanitation, shelter, access to preventive and curative health services (WHO, 2006).

2.2.1 Community initiatives for food security

As discussed earlier, creating food security involves more than just distributing food to people in distress. It is therefore accepted the world over that a development-oriented, participatory approach to address the multiple dimensions of food insecurity must be evolved. Booth and Smith (2001) observe that research, practice and policy directions clearly indicate the need for comprehensive, inter sectoral, integrated strategies

that are based around community responses supported by state and national policy and funding directions to fight against food insecurity.

Quaye *et al.*(2010) while reporting the experiences from Ghana narrates that the concept of farmer based organization as a tool to consolidate farmers' strengths and capabilities in sustainable rice farming has been achieved to an appreciable extent. Muralt (1993) reports that self-help institutions of a participatory type can play an effective role in the establishment, effective use and maintenance of rural infrastructure which helps to improve food security. There are several reports on experiences in building up the institutional capabilities of local communities to combat food insecurity through the establishment of directly productive assets or economic and social infrastructure.

Self help based community development organizations are a major mechanism through which the issues of food security can be effectively addressed. Tarasuk and Davis(1996) report that these organizations suggest a participatory model in providing assistance in the areas of food acquisition, preparation and management through community gardens and nutrition education workshops . There is great scope for integrating the the issues of food security with the larger democratization process .The local self government are active players in harnessing local resources for enhancing food security. Catalyzing civil society movements towards greater transparency and accountability enhancing grassroots democracy processes. Extension services should be a part of the decentralization and devolution agenda that engages local government units and grass roots organizations.

Government of India (2008) cautions that as the population is increasing at an alarming rate, there is a challenging task ahead in bridging the demand-supply gap by accelerating the pace of domestic production of food grains to ensure food security in the country. Food supply determines availability and food demand is an expression of the ability to gain access to food. Among the different public actions that ensure food security, community food security which ensures a safe, culturally acceptable, nutritionally adequate diet through sustainable food systems that improves community

self reliance and social justice, is an important concept (Hamm and Bellows, 2002). According to them this approach can be environmentally economically and socially sustainable and an effective and sustainable way of increasing food security. At a basic level, community food security (CFS) is about making healthy food accessible to all. It includes making nutritious and culturally appropriate food accessible; promote equitable access to resources, building and revitalizing local communities and economies. It is about empowering diverse people to work together to create positive changes in the food system and their communities.

Hunter (2006) on observing community initiatives on food security states that community gardens increase food security, help to connect people with where their food comes from, how to grow and cook it, the learning of life skills and the building of vibrant communities. Community gardens are places where neighbors gather to grow food and plants together. Such gardens provide fresh produce, urban greening and an opportunity for neighbors to get to know each other and improve their community. Winne (2009) envisages the function of community gardens as a democratic organization that allows gardeners to make decisions about garden management giving them opportunities to gather for community and family events educate on organic and sustainable gardening practices and provide opportunities for gardeners to market their produce, or to donate it to the to the hungry . In short CFS, in its fullest expression, draws on a range of community food system resources, invites the participation of many individuals and sectors, and promotes solutions that reduce food insecurity and build the health and well being of the wider community.

2.3.1 Social capital and food security

Martin (2001) established that social capital which is a measure of trust, reciprocity and social networks arising out of community participation was found as positively associated with household food security. Social capital has been defined as a set of informal norms that promotes cooperation among the members of the community. Where there is repeated interaction, the members are able to get better information about

the activities and intentions of other members in the community than outsiders, thereby promoting collective action or community participation supported by peer monitoring and social sanctions. Winne (2003) reports that low-income families were more likely to be food secure if their social capital, i.e. connections to local social networks, was high. Reiterating this, Martin *et al.*(2004) also observes that households with higher levels of social capital, particularly in terms of reciprocity among neighbors, are less likely to experience hunger.

Research from the community development field provides ample support for community participation as a central component of urban problem solving strategies. When community development corporations connect neighborhood people to each other and to the programmes that are trying to better their community, there is a higher rate of lasting community improvement. The results of community participation experiments from West Bengal show that the group contributions of the villagers, as members of the CBO have a common history of social interaction leading to better group cohesiveness (Mitra and Gupta, 2009)

With regard to the food security, community involvement is reported to enhance food security at the household level, help farmers' institutions identify their priority needs and strengthen their capacity. Murwira (1994) observes that community participation help them work with local institutions to identify and develop technology options while building on existing knowledge and to influence agricultural policies to take into account the production needs of small scale farmers. Briggs and Mueller (1997) identified community participation as a central component of problem solving strategies as it connects neighbourhood people to each other and to the community improvement programmes.

While appreciating local production, local storage and local distribution of food grains in Medak District of Andhra Pradesh operationalised by marginal farmers reclaiming their fallow lands through timely cultivation, application of farmyard manure and carrying out other timely farming practices, Planning Commission (2003-2004)

reports that community action help them produce nearly three million extra meals in 30 villages or 1000 extra meals for each participating family. It is further reported that over 1000 hectares of fallow land were brought under plough.

Kirkpatrick and Tarasuk (2009) are of the view that community base food initiatives could set up policy directions to alleviate high poverty problem in rural neighbourhoods in Canada. To conclude community participation and the social capital thus formed can build up synergies to bring more area under cultivation and solve issues of food security to a considerable extent. Some of the vibrant and robust civil society groups have taken the lead in enabling marginalized communities to assert their rights and entitlements in different parts of India through grassroots mobilization and social action (Jha, 2009) which can be replicated for food security issues also.

2.4. Awareness of stakeholders on food security concerns

According to FAO(2003) growing awareness that food and feed grain imports put too heavy a drain on the balance of payments lead the people to think about attaining food self sufficiency . It is important to raise awareness at all levels of the implications to make food security and nutrition a priority. Herbinger (2010) termed food security as the base for nutrition and viewed that the notion of food security was not fully understood among the people and as such there was a need for raising awareness in this respect.

The results of the study in Oyo state of Nigeria by Lawal and Jibowo (2005) on the improved practices for household food security and nutrition by rural women show that a majority of the women are aware of and utilize most of the recommendations. Moreover, a majority of the women have favorable attitude towards the programmeme. Also, there existed a positive and significant association between awareness and utilization of recommendations by rural women regarding household food security.

According to Ross (2002) in Vietnam, the Network Technical Working Group, develop food insecurity and vulnerability information and mapping systems to increase

public awareness of food security and to provide technical support to the Government on food security issues.

Women have always played strong economic and social roles in the household, as income-generators and household sustainers. In rural areas women play a major role in food production, food processing, food preparation and food distribution within the household. SSWA (1995) observes that attitude of women to these activities and their capacities to operate in them can significantly influence household food security. Their attitudes to and knowledge of nutritional and hygiene questions can have a significant impact on the nutritional well-being of members of their household. Tickner (1996) states that awareness of women on various aspects of food security influence the role of women in relation to household food security. Mougeot (2000) observes that the farmers' knowledge, attitudes and skills depended upon the training they received. Experiences from Kenya and reports of Njogu (2008) show that all households both before and after intervention had positive attitudes towards urban farming. Farm members recommended that their neighbors should consider adopting urban farming as it enhanced household food supply and that the government should support it.

2.5. Personal and socio economic attributes of stakeholders

Literature on the personal and socio economic attributes of the stakeholders involved in food security programmes that are being undertaken by various agencies are reviewed below.

2.5.1. Age

IFPRI (2007-2008) states that households of the elderly and the disabled are more food-insecure than others. Sachin (2010) reports that the most food deprived sections in India include old aged, smaller and young children

Croome *et al.* (2007) show elderly people and households including elderly members are more likely to be amongst the poorest in the population and chronically liable to hunger vulnerability. Gorman (2004) is of the argument that number of people

over 60 years of age will be 1,500 million over the world and will outnumber children by 2050. According to Nyanguru (2003) older people are the fastest growing population group which is especially apparent in developing countries.

Cook (2008) tells that in 9.2 percent of Canadian households, at least one adult or child member experience multiple conditions characteristic of food insecurity. Analysis by USDA (2000) reports that households that include elderly persons are generally more food secure than other U.S. households. In the US, the lower rate of food insecurity of elderly households compared with non elderly households is, in part, a result of a lower poverty rate among the elderly. At all income levels, food insecurity was much less prevalent among households consisting entirely of elderly persons than among households with no elderly persons. As per Koc and Welsh (2002), in Canada, children aged 0 to 17 were the age group most likely to live in a food-insecure household (14 per cent), and seniors aged 65 or older, least likely (4 per cent). But children in such households are not necessarily undernourished. Adult caregivers tend to sacrifice their own diet so that children will not be hungry.

Matheson *et al.*, (2002) finds that food insecurity is negatively associated with the children's Body Mass Index (BMI) and household food supplies but not with the children's food intakes. Wooden and Oakland (2003), observes that shopping for food once a month or less, use of food assistance, and income at or below 130 per cent of the poverty threshold, predicted food insufficiency for both older men and women.

Household food insecurity is positively associated with fair or poor health and hospitalizations in young children (Cook *et al.*, 2006). Shaikh (2007) observes that in poor economies as a woman gets older, the food security of her household members deteriorate as her productivity declines both on the farm and in the household. While stating the need to make people aware of food security, FAO (2008) recommends that children need to be educated and nurtured so that they are convinced that farming is very important towards achieving food security in the world.

2.5.2. Gender

Gender is found to have significant influence on overall food security as well as the awareness on it. Osmani (1998) and Asad (1996) while studying food security projects in India observes that by improving women's access to resources and by enabling them to gain greater control over decision-making within the household they can enjoy more improvement in food security compared with those women whose access and control have declined or remained unchanged. Moreover, those women's organizations have been the most important determinant of their access to resources, their control over decision-making and, ultimately, their ability to improve household food security.

In developing countries, rural women and men play different roles in guaranteeing food security for their households and communities. While men grow mainly field crops, women are usually responsible for growing and preparing most of the food consumed in the home and raising small livestock. In many poor economies, women and girls eat the food remaining after the male family members have eaten. Women, girls and disabled are the main victims of this "food discrimination", which results in chronic under nutrition and ill-health. The physiological needs of pregnant and lactating women also make them more susceptible to malnutrition and micronutrient deficiencies. Rural women also carry out most home food processing, which ensures a diverse diet, minimizes losses and provides marketable products. FAO (2010) observes that women, therefore, play a decisive role in food security, dietary diversity and children's health.

It is widely observed that gender relations are important as it is becoming apparent that the future of food security is not only dependent on a reduction in resource-intensive agriculture but on more knowledge-intensive approaches which includes the exchange and interaction of different ideas and knowledge about natural resource management and food production, use and distribution. Under these circumstances, Wanner (2009) records that the emphasis on women and gender mainstreaming needs to include the role of men in food security. He further cautions that gender mainstreaming

approach with the sole focus on women can lead to declining ecological sustainability and thus food insecurity.

However the relatively greater importance of women in ensuring food security is reiterated by Mehra and Rojas (2009) when they observe that the direct responsibility for household food provision largely falls on women, and that the improvement of household food security and nutritional levels is associated with women's access to income and their role in household decisions on expenditure. Ajani (2009) based on studies in Nigeria reports that important differences exist between women and men in their contributions to agriculture, and in poverty, nutrition and food security awareness levels.

Pinstrup-Andersen *et al.* (1999) finds that improving women's access to education would be crucial for maintaining global food security. Apart from general education, women should be directly targeted for training on such themes as agricultural production and resource management and conservation which help to attain food security.

According to Wakwabubi (2006), gender disparities, are responsible for food insecurity in Sabatia division of Kenya. Active role of women in family is likely to lead to lower mortality rates, in developing countries (Sen, 1999). Reiterating this observation, World Food Programme (2005) observes that all over the world, most vulnerable group to food insecurity are single women, widows, disabled destitute and pregnant women. While suggesting alternative strategies for long term food security. Viswanath (2001) argues that long-term food security for rural women requires them to be able to increase their earnings and diversify their income sources. Micro enterprises like farming can address the long term food security needs of rural women.

2.5.3. Income

According to Nord (2002) food security is strongly related to income. Piaseu and Mitchell (2004) observe that a decrease in income leads to difficulty meeting their basic needs, such as access to health service and food provision. Nyangweso *et al.* (2007) opined that household income significantly influence household food security. The circumstances that women identified as precipitating acute food shortages in their households included chronically inadequate incomes; the need to meet additional, unusual expenditures; and the need to pay for other services or accumulated debts (Tarasuk, 2001).

When the elderly have income security, they have improved access to other basic human needs, including food (Nyanguru, 2005a and 2005b). Canadian Community Health Survey (2004) says that the financial ability of households to access adequate food is strongly related to household income. The prevalence of food insecurity increased markedly as income adequacy declined. Most of the food-insecure households in the United States have low levels of income (USDA, 2000). Food insecurity and hunger, as measured by the household food security scale (Hamilton *et al.*, 1997), are expected to be linked to inadequate financial resources. According to Famine early warning systems network of United States Agency for International Development (2010) food insecurity among poor urban households will remain high during the coming months due to high staple food prices and low income.

Shaikh (2007) also studied the determinants of household food security in Pakistan and suggest that household full income and food prices influence household food security. Jerome (2004) reports that the lower the household incomes, the higher the vulnerability to food insecurity.

The level of household income and prevailing market prices play an important role in making a household food secure. The urban poor in low income developing countries spend up to 60per cent of their income on food (Maxwell, 1999). Wealthier and more food secure households are more optimistic than their poorer and food insecure

counterparts (Fuster *et al.*, 2008). The lack of purchasing power is a great hindrance for the poverty stricken people on the way to achieve food security in Bangladesh (Rahman and Choudhury, 2009).

2.5.4. Education

According to FAO (2005) education is acclaimed as one of the most powerful engine for reducing hunger and poverty”. Further it clarifies that “lack of education undermines productivity, employability and earning capacity, leading directly to poverty and hunger”. Muro and Burchi (2007) again state that rural people with more education are more likely to experience higher levels of food security. More specifically, in rural areas, education improves agricultural productivity, leading to food security (Pudasaini 1983; Koffio-Tessio *et al.*, 2005).

As Mukudi (2003) claims, education has a key role in accessing public information, especially concerning health, nutrition and hygiene. Children of less educated parents and those of parents with no educational exposure consistently score poorly on nutritional status indices. Most of the elderly women respondents have no education which negatively influence their knowledge of nutrients derived from various foods. An empirical research carried by Glewwe (1997), shows that maternal education improves child health primarily by increasing health knowledge and it depends on the very general abilities to read, write, reflect and process information. According to her, school children are good agents of change and need to be educated and sensitized to specific issues of hunger and malnutrition. The children's knowledge of nutrients and their functions and their understanding of the social factors responsible for hunger and malnutrition can be improved through appropriate intervention. As a strategy, this kind of approach can be applied in rural schools where "the poorest of the poor" children can improve their understanding of balanced diets, better nutrition, the causes of malnutrition, and approaches to combat hunger and malnutrition (Bamji and Murthy, 2006).

Education provides an inner contribution to food security, making people more ambitious and self-confident. It influences food security through the economic production

channel through the increase of agricultural productivity and efficiency in that sector. Another economic contribution of education to food security is the income obtained by crops different from the main one and non-farm activities.

The education level of the female heads of households also is positively correlated with food expenditures and nutrient consumption (Brink, 2001). Basic education, and not higher education, is a key factor for food security; an increase of younger children's school attendance by 100 per cent can reduce food insecurity by approximately 22 per cent (Burchi, 2006). Olumakaiye and Ajayi (2006) conclude that women with higher education are likely to provide varieties of food thereby increasing the household food security.

Results of studies on determinants of food security suggest that knowledge associated with primary education can substantially improve nutritional education and hence improve household food security. The elasticity with respect to secondary education is positive and statistically significant for calories and protein. Investment in women's education is believed to be strongly associated with household food security. These observations reaffirm that education has a strong impact on the various indicators of household food security (Mukudi, 2003).

Lawal and Jibowo (2005) establishes positive and significant association between education and utilization of the recommendations on improved practices for household food security and nutrition by rural women farmers.

2.5.5. Farm size

Agriculture in Asia is characterized by small farms. Small farms characterize agriculture in Asia. These small-scale farmers play an important role for food security and poverty alleviation. However, whether and how these small farms can survive under globalization is a hotly debated topic. Sen (1964) highlighted the importance of small farmers by establishing the inverse relationship between farm size and productivity. According to him, the small farmer's vital contribution to India's food and agricultural

economy and to its national food security results from the small-holders' responsiveness to public policies and to national investments in agricultural research and development and in public infrastructure.

Small holder farmers are vital for India's agriculture and rural economy. As per Agricultural census (1990-91), small-holder farmers - defined as those marginal and sub-marginal farm households that own or / and cultivate less than 2.0 hectare of land. Though India's small-holder farmers comprise 78 per cent of the country's farmers, they own only 33 per cent of the total cultivated land; producing 41 percent of the country's food-grains productivity. This is somewhat higher than that of the medium and large sized farms. Their contribution to household food security and poverty alleviation is thus disproportionately high and is increasing.

Tschirley and Weber (1994) believe that incomes and calorie consumption are highly correlated with land holdings. Land holdings will continue to be key determinants of household income and consumption for the foreseeable future. Other data from the agricultural censuses, and various regional micro-scale studies, demonstrate that smaller (< 2.0 ha) farms do practice diversified farming. Diet diversity is found to increase with farm size. Small and fragmented holdings farmers allocate their land among seasonal crops, fruits, and vegetables, cattle and perhaps poultry to maximize their household labour utilization and income (Singh *et al.*, 2002). This agricultural diversification helps achieve food security and improved human nutrition and increased rural employment.

However in contrast to the earlier observation, the Forum for Food Security in Southern Africa (2004) shows that small holding size can be a constraint to agricultural growth in the context of weak economic coordination and the difficulty small farmers face in accessing markets and services. Obamiro *et al.* (2003) while studying the farmers in Nigeria observes that increase in farm size would probably promote the household to food secure group.

2.5.6. Occupation

Diverse observations have been found to exist between the relationship between occupation and food security. A family whose household head is self employed is likely to fall within the food insecure group. A family whose household head is a regular wage worker represents the highest number of those who are food secure (SEFSEC Report, 2009). The report says that self-employment does not necessarily provide either regular or sufficient income which can account for the high level of food insecure and vulnerable groups. This confirms that food security is predetermined by both regular and sufficient access to income, which could be a direct derivative of one's occupation.

2.5.7. Experience in farming

Given the fact that farmers with fairly long experience would possess passionate regards for food security, farming experience was taken as an important variable in the study. Reiterating this assumption reviews indicated significant relationship between food security concern and farming experience. According to Ojo (2009) who observed farming in reports that 78 per cent of the backyard farmers had farming experience of less than ten years but many of them went into backyard farming because of increased food security concerns which improved their consumption and real income levels. Similarly, Oluyole *et al.*(2009) who studied food security among cocoa farming households of Nigeria is of the opinion that increase in farming experience of household head output of roots, tubers, cereals and cocoa increases the probability of household to be food secure.

Udoh and Etim (2009) prove that experience in farming positively affects farm level technical efficiency. More years of experience enables farmers to acquire and process relevant information and knowledge more effectively and thus higher levels of technical efficiency. Henderson and VanEn (2007) observe that lack of experience of farmers in Community Supported Agriculture would result in inadequate production, disorganization and poor quality products.

2.5.8. Innovativeness

Rogers (1983) defines an innovation as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption". Innovativeness is in fact the result of the requirement to solve a problem or crisis. Farmer innovation is regarded as a product of informal experimentation of farmers and involves trying out something new.

However, understanding the innovative elements in the activities of a farm depends on the perception and attitude of the observers. In recent times, innovativeness has become so important in view of the new barriers that have emerged, including climate change, rise of food prices, increased use of bio-fuels and the global economic crisis that started in mid-2007 (Morris *et al.* 2008; Oya, 2009; Sheeran 2008). According to many scholars Innovation in the fight against hunger has become essential to balance out the negative impact of these trends. This naturally has a direct bearing on accomplishing food security. The main goal of identification, recognition and providing support to local innovations is to help farmers develop and sharpen their own innovations and overcome problems which help in achieving food security (Audinet and Haralambous, 2005).

Regarding innovation of farmers, Ngutu and Recke (2006) observes that both men and women farmers are most interested in increasing their available income through improved technologies. It is concluded that farmers need to be exposed to new ideas in exciting and thought provoking ways to tap their innovation potential.

Akwiwu *et al.* (2005) asserts that youth are veritable assets in the household because of their dynamism, adventure, ambition and innovativeness. These potentials could be harnessed for rural household food security.

Anandaraja *et al.* (2008) draws a positive relation between innovativeness and adoption of new practices. He observes that innovativeness and information seeking behavior are positively related with symbolic adoption among coconut growers of Tamil Nadu. At the global level, OECD (2009) is of the view that the challenges of global food

security can be addressed only by fostering agricultural productivity in which innovation plays an important role.

2.5.9. Information seeking behavior

Information seeking behavior shall be defined as the actual process of identifying and obtaining the information itself which varies from one user group to another. Pettigrew *et al.* (2001) define this as how people need, seek, give and use information in different contexts. Information seeking behavior is a basic human activity that contributes to learning, problem solving and decision making with one view positing ‘the individual as the basic unit of social life, the site of meaning and knowledge generation that guides the information seeking perspective’ (Mokros and Aakhus, 2006). Most of the research on information behavior has focused on information needs and information seeking (Fisher *et al.*, 2004). According to Baldwin & Hunt (2006) it is the process by which people actively acquire feedback through the use of strategies to understand, predict and control their environments. Information seeking can be used to increase the mastery of a task and reduce role ambiguity.

Munyua and Stilwell (2009) state that farmer groups expressed diverse information seeking behavior. About 50.7 per cent of the farmers indicated that they obtained information from extension service providers. The groups either invited the extensionists to their group meetings, or representatives of the groups visited extension officers in their offices. Others participated in farmer field schools, attended training at agricultural training centers, visited research institutions or worked with NGOs to access knowledge and information. Sometimes they were trained at their locality by local and external experts such as horticultural exporting companies. The groups also consulted input stockists at their premises and veterinary officers. They have also made use of field days, shows, seminars and study tours. Some respondents only relied on their own knowledge.

Rezvanfar *et al.*(2007) while conducting studies on the information seeking behaviour of farm women in Iran observes that the information needs of farm women are

mostly occupation driven. Most of the farm women depend on the friends, husband, neighbors and other native sources like local leaders and educated people for their information needs who are primary and most important sources of information for them.

2.6. Current food security initiatives taken up by the Government

In view of the increasing concern on food security and the potential of community based initiatives to mitigate this problem the national and state governments have formulated several programmes exclusively for food security the present study is centered around such initiatives. Many schemes sponsored by, both central government have been implemented by Department of Agriculture, Kerala to accomplish food security. The most important among the ongoing food security programmes are mentioned below. The programmes are characterized by community participation.

2.6.1. Food Security Action Scheme

Food Security Action Scheme of the State Government of Kerala aims to achieve self-sufficiency in food by 2011-'12. The various schemes related to productivity and production of food crops in the state under different departments of the government and local self government institutions are synergized under this scheme to achieve the targets set forth in stipulated time. Food Security Scheme aims at increasing the production of paddy to 9.45 lakh tonnes in 2011-12.

2.6.2. The National Food Security Mission

The National Development Council (NDC) in its 53rd meeting held on 29th May, 2007 adopted a resolution to launch a Food Security Mission comprising rice, wheat and pulses to increase the production of rice by 10 million tons, wheat by 8 million tons and pulses by 2 million tons by the end of the Eleventh Plan (2011-12). Accordingly, a Centrally Sponsored Scheme, 'National Food Security Mission', has been launched from 2007-08 to operationalise the above mentioned resolution. The National Food Security Mission will have three components viz. (i) rice (ii) wheat and (iii) pulses. The objectives include increasing production of rice, wheat and pulses through area expansion and

productivity enhancement in a sustainable manner; restoring soil fertility and productivity at individual farm level; enhancing farm level economy (i.e. farm profits) to restore confidence of farmers of targeted districts etc.

2.6.3. Sustainable development of rice based farming system

It was started by Government of Kerala in the year 2002-2003 .The objective of the scheme is to implement a package of measures capable of augmenting rice productivity and make cultivation more profitable by reducing per hectare cost of cultivation and adopting modern farming technology through a group approach. The components of the programme include, input subsidy, assistance to paddy development agencies etc. The project is to be implemented through the departments, Kudumbasree and local self governments in association with research institutions and financial institutions.

2.6.4. Rastriya Krishi Vikas Yojana (RKVY)

Another programme is Rashtriya Krishi Vikas Yojana (RKVY), announced on August 15, 2007, which aimed at achieving 4 percent annual growth in the agriculture sector during the Eleventh Plan by ensuring a holistic development of agriculture and allied sectors. With an allocation of Rs.25, 000 crore the scheme hopes to push up the investment in agriculture substantially reducing the yield gaps across the country. The Department of Agriculture, Government of Kerala tries to achieve the goal of reducing the yield gaps in food crops through focused interventions bringing additional area under paddy and increasing productivity by mechanization.

2.6.5. MoU in Rice

Government of India introduced a new mode of central assistance in 2000-01 by pooling the funds of selected ongoing Centrally Sponsored Schemes in the agriculture and allied sectors on a funding pattern of 90:10 to allow regional priorities to be reflected in schemes. The macro management mode of assistance gives flexibility to the state to

formulate schemes appropriate to local situations. As per this policy a Memorandum of Understanding (MoU) containing scheme-wise detailed work plans should be signed between the state and the central government every year. It is proposed to implement the macro management scheme on rice development with a view to increasing productivity of rice through further popularization of high yielding varieties.

2.6.6. Vegetable production schemes

The production of vegetables in the state being insufficient to meet the requirement, the Vegetable and Fruit Promotion Council, Department of Agriculture, State Horticulture Mission and local governments are involved in the promotion of vegetables. During the year 2008-09, a major scheme for the development of vegetables in selected villages has been introduced and implemented through a convergence approach involving Kudumbasree units. This is supported under the food security project.

Considering the paramount importance of food security in rural communities of developing economies, this is considered as a "public good" obligation of countries worldwide (Diouf, 2002). It is well established that without increasing the reach and influences of services in rural areas, it is unlikely that there will be significant impact on poverty reduction. It is also argued that in a climate of cutting public expenditure, one way to reduce poverty is to develop community based service delivery models. . Farmer access to, and use of, extension services increases with density, presence and involvement of CBOs and NGOs in service delivery, although there remains a crucial role for government in strategic areas of a more "public good" nature (Mugunieri and Omiti,2007). An assessment of the twenty CBOs done by the Institute for Health Care Research and Improvement, USA, indicated a high level of knowledge for developing goals and objectives and high self-assessed abilities to conduct specific intervention activities, including the development of community relationships and coalitions (Mayberry *et al.*, 2008). Thus, a community food security movement can prove to be effective in addressing the problems of hunger and food insecurity by utilizing a community-based approach. Chaturvedi (2003) concludes that food security can be ensured by active involvement of non-governmental organizations (NGOs)/civil society

organizations' (CSOs) organizations in South Asia. The development of community food leadership is a tangible indicator of building capacity to address community issues (Pothukuchi, 2007). It is a truth that food security can be ensured only through collective mobilization and sustained social action. There is a need to initiate public action through community mobilization if duly supported by government with congenial policies.

2.7 Important CBOs involved in the food security programmes in Kerala

Kerala has a wide network of community-based organizations of men and women involved in developmental activities. According to the Government of Kerala (2008), self-help groups are largely involved in agriculture, with special focus on ensuring food security. The two most important community based initiatives included in this study are the Kudumbasree units and *Padasekhara samithis*.

2.7.1. Kudumbasree units

The State Poverty Eradication Mission-Kudumbasree- launched by the Government of Kerala State in 1998 is a massive poverty eradication programme in contemporary history. Kudumbasree has gained national and international acclaim as an ideal and workable model of participatory development aiming at a multi pronged attack on poverty. It is a multi faceted women based participatory poverty eradication programme jointly initiated by Government of Kerala and NABARD, implemented by CBOs of poor women in association with local self government initiatives.

Kudumbasree is today one of the largest women-empowering projects in the country. The programme has 37 lakh members and covers more than 50 per cent of the households in Kerala. The functioning of Kudumbasree is tied up to the development initiatives of the local government, be it for social infrastructure, welfare, employment generation including food security.

2.7.2. Structure of Kudumbasree

Kudumbasree has developed an innovative methodology to identify the poor using non-economic parameters. The poor thus identified are organized under a well networked Community Based Organization . This methodology has since been incorporated into the policy framework of the state for identification of the poor. It has the three-tier framework comprising Neighborhood Group (NHG), Area Development Society (ADS) and Community Development Society (CDS). NHG is the lowest tier consisting of 10-20 women members from economically backward families. The second tier is the Area Development Society, which is formed at ward level by federating all the NHGs in the ward. The activities of the ADS are decided by the representatives of the women elected from various NHGs. At the gramapanchayat or municipal level, a Community Development Society (CDS), a registered body under the Travancore-Cochin Literacy Scientific and Charitable Societies Act is formed by federating all ADS s in the Panchayaths (Government of Kerala, 2010).

Kudumbasree is actively involved in food security programmes as farming is an important activity identified by the mission along with other enterprises. For revamping the agricultural sector, Kudumbasree units take up farming in their own land or lease land which create employment opportunities for women, bring fallow land under cultivation and increase land productivity and income. They primarily take up paddy cultivation, vegetable cultivation and tuber cultivation which contributes to the food security directly. Lease land farming programme, named 'Harithashree' in local language, lend helping hands to those cultivators who are having no land at all. About 820 Grama panchayaths in the state are involved in this programmeme with 26499 NHG s covering 43425.36 ha land (Government of Kerala, 2010). Kudumbasree pools uncultivated fields on rent and provide the willing cultivators for agricultural operations. 'Niravu' was such a project which aimed to achieve food security through farming paddy and vegetables on fallow land. In December 2009, over 1,000 Kudumbasree members cultivated paddy in 107 acres of fallow land at Perambra block of Calicut district (Jiby, 2010).

2.7.3. Padasekharasamithis

Padasekharasamithis or local rice farmer collectives form another important community based initiative which leads Padasekharams or groups of rice fields. The LSGIs implement micro level rice development activities through the Krishi Bhavan infrastructure by formulating Padasekharams wise action programmes. They are provided with technological support, input assistance and marketing facilities. Of all the programmes launched to enhance the capability of the paddy farmers and to reduce the cost of production by combining all available technological innovations, group farming for rice launched in 1989 on Padasekharams basis was the most outstanding in winning the confidence of the rice growers (Hali, 2007). Group farming was done in 60,000 acres of rice fields spread over 3000 Padasekharams covering all the districts in the state. About 1.8 lakhs farmers and 4000 people's representatives were involved in the task. The farmers retained their right over land and the entire produce generated. But all agricultural operations in each Padasekharams were done in a uniform manner under the leadership of the Padasekharasamithi. This unity building exercise was the key to the success of this programme. Thus collective farming of paddy through Padasekharams are playing an important role in retaining the paddy cultivation of the state, rice culture and rice farmers thus paving way to food security. This mechanism has been widely revived in the decentralized planning programme of the Government of Kerala. Currently Padasekharasamithis play a major role in cultivating fallow land, preventing illegal reclamation and protecting water bodies and wet lands apart from paddy cultivation. Each Padasekharam has a secretary, president and treasurer, who deal with the day to day matters of the group, representing all the members of the forum.

2.8. Conceptual framework of the study

Based on the review of relevant literature on the various theoretical concepts under study, the following conceptual framework has been formulated to establish the inter relationship between dependent and independent variables selected for the study (Fig 1).

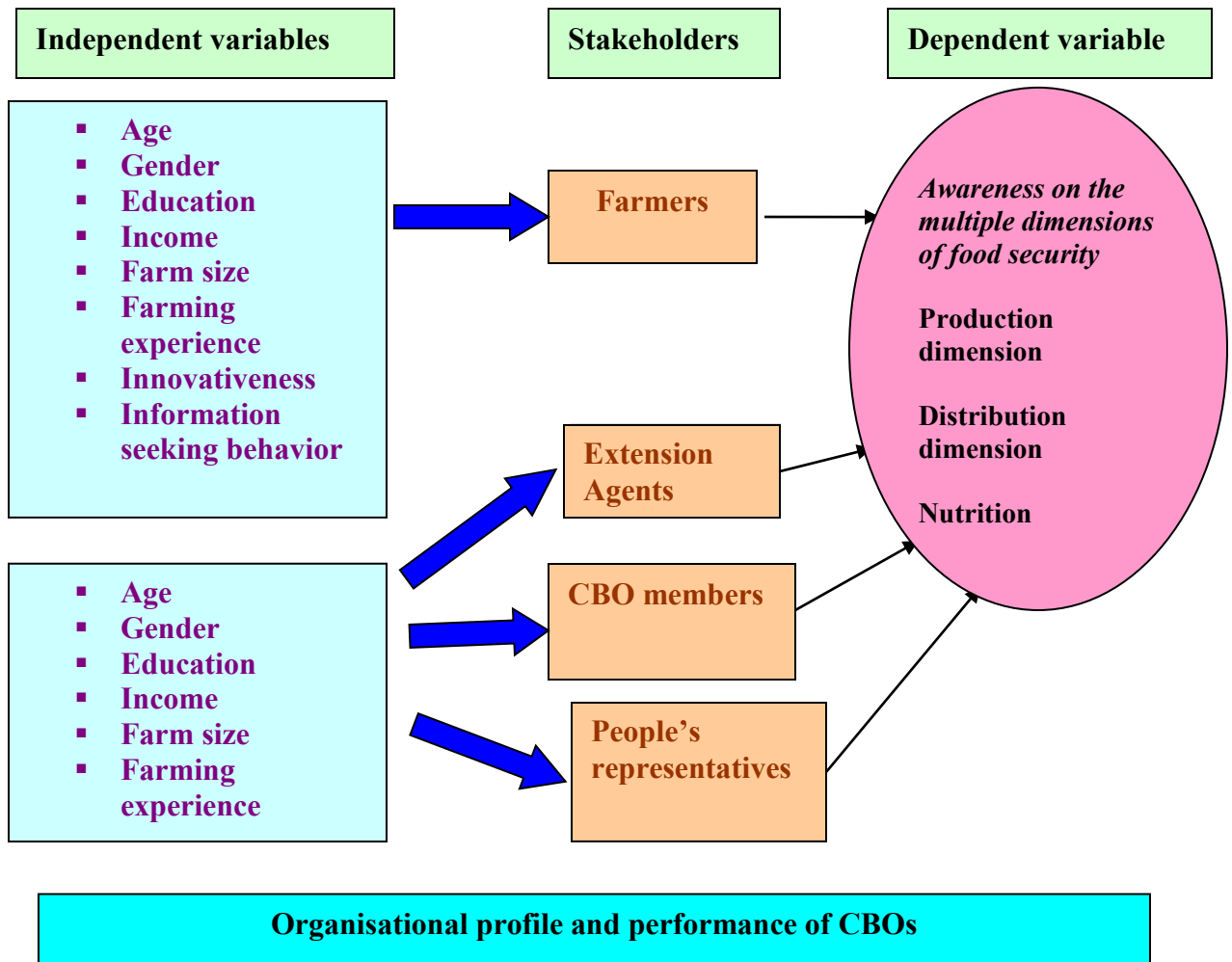


Fig 1 Conceptual frame work of the study

RESEARCH METHODOLOGY

CHAPTER III

RESEARCH METHODOLOGY

A suitable design of the study or research methodology is an important component of any systematic research. Research methodology is the description, explanation and justification of various methods of conducting research.

This chapter deals in detail the methodology adopted by the researcher in studying the research problem along with the logic behind them. Methodology is grouped and presented under the following sub-headings.

- 3.1 Research design of the study
- 3.2 Locale of study
- 3.3 Selection of CBOs and other stakeholders
- 3.4 Selection and operationalisation of the variables
- 3.5 Methods of data collection
- 3.6 Statistical tools used

3.1 Research design of the study

Kerlinger (1979) defines research design as the plan, structure and strategy of investigation conceived so as to obtain answers to the research questions and to control variance. The strategy includes the method to be used to gather and analyze the data or in other words, the strategy implies how the research objectives and how the problems encountered in the research could be tackled.

This study follows ex post-facto research design as there is no scope to manipulate the independent variables, since the process under study has already occurred. Inferences on the relationships between independent and dependent variables are drawn on the basis of effects already manifested. The specific methodologies adopted for the study at different stages of data collection and analyses are described below.

3.2 Locale of study

3.2.1 Selection of district

Thrissur district of Kerala was purposively selected for the study as food security programmes of the state government as well as LSGIs are being implemented in most of the Gramapanchayats of this district with the active participation of CBOs. Moreover, the researcher is familiar with the socio - cultural milieu of farmers, officials, peoples's representatives and CBOs of the district which would be helpful in establishing good rapport and obtaining exact information from the stakeholders of the programme. For assessing the gap in food grain production and requirement, Kodakara panchayat of Kodakara block in Thrissur district was purposively selected as the panchayat has been involving rigorously in food security programmes. Samples were taken randomly from 20 panchayats of Thrissur district. The study was confined to one district due to limited time and resources available at the disposal of the researcher.

3.3 Selection of CBOs and other stakeholders

Twenty Gramapanchayats were randomly selected from among the 99 Panchayats which were implementing food security programmes through different CBOs. One CBO (either Kudumbasree unit or *Padasekarasamithi*) was selected from each of these 20 panchayats to study about the organizational aspects of CBOs. Four categories of respondents were selected for the study. They include individual rice farmers, extension agents (Agricultural Officers and Agricultural Assistants), CBO members, and people's representatives. Two respondents were selected from each category, so that a sample of eight respondents was collected from each Panchayath, making the total sample of size 160. All the respondents for the study were selected by random sampling.



Fig. 2 Map of Kerala showing the locale of the study

3.4 Selection and operationalisation of variables

3.4.1. Selection of variables

The important variables that would determine the awareness of various stakeholders on food security were selected by an extensive review of literature and discussion with experts. The independent variables that could possibly influence the dependent variables identified for the study are listed in Table 3.1

Table 3.1 List of variables with their measurement procedures

Sl. No:	Variables	Measurements
A. Independent variables		
1	Age	Scoring procedure followed by Jayasree (2004)
2	Gender	Arbitrary scores
3	Education	Scoring procedure followed by Ramani (2004)
4	Farm size	Scoring procedure followed by Agricultural census, Government of India (2005-2006).
5	Farming experience	Scoring procedure followed by Jayasree (2004)
6	Information source utilization	Scoring procedure followed by Sasikala (1997)
7	Monthly income	Scoring procedure followed by Vilas (2005)
8	Innovativeness	Scoring procedure followed by Kanaka Saba(2002)
B. Dependent variables		
8	Awareness	Scoring procedure followed by Arunachalam (2003)

3.4.2. Measurement of independent variables

The operational definition and scoring method used to quantify the independent variables selected for the study are explained below.

3.4.2.1 Age

Age is operationally defined as the number of chronological years respondents have completed at the time of study since birth. Scoring procedure followed by Jayasree (2004) was used with slight modifications as given below. The stakeholders were classified based on frequency and percentage analysis.

SI No:	Category and age group	Score
1	Less than 35 years(Young)	1
2	35-50 years(Middle aged)	2
3	More than 50 years(Old)	3

3.4.2.2 Gender

Gender is operationally defined as the state of being male or female which is measured by assigning arbitrary scores as follows.

SI no:	Gender	Score
1	Male	1
2	Female	2

3.4.2.3 Education

Education is operationally defined as the extent of formal schooling undergone by the respondents at the time of investigation and their ability to read and write. The sub-items were illiterate (people who didn't know to read and write), people who can only read, functionally literate (people who can read and write), people with primary education (up to fifth standard in schools), people with high school education (up to tenth standard in schools) and collegiate (pre degree/degree/diploma after schooling). Scoring procedure followed by Ramani (2004) was adopted with slight modification.

SI No:	Education	Score
1	Illiterate	1
2	Can read only	2
3	Functionally literate (Can read and write)	3
4	Primary education	4
5	High school	5
6	Collegiate	6

3.4.2.4 Monthly income

Monthly income is operationally defined as the amount earned by the respondents from on farm and off farm activities in a month. The respondents were classified into three categories as low, medium and high based on their monthly income obtained. The scoring procedure followed and adopted by Vilas (2005) was used with slight modification.

SI No:	Category	Score
1	Low income(Upto Rs.5000)	1
2	Middle income(From Rs.5000-10000)	2
3	High income(Above 10000)	3

3.4.2.5 Farm size

Farm size is operationally defined as total area of land owned and cultivated by the respondents. The classification of farmers according to their holding size is followed as per the categorization given by Agricultural Census, Government of India (2005-2006).

SI No:	Classification of farmers	Farm size
1	Marginal farmers	Below 1 ha(Below 2.5 acre)
2	Small farmers	1-2 ha (2.5 – 5 acre)
3	Semi- medium farmers	2-4 ha(5-10 acre)
4	Medium farmers	4-10 ha (10-25 acre)
5	Large farmers	More than 10 ha (more than 25 acre)

3.4.2.6 Experience in farming

Farming experience is defined as the actual number of years of experience of the respondents possessed in farming at the time of enquiry. Scoring procedure followed by Jayasree (2004) was adopted as given below. The stakeholders involved in the study were classified into three categories, viz. low, medium and high based on the number of years engaged in farming.

SI No:	Experience in farming	Scores
1	Less than 5 years (low)	1
2	5-10 years (medium)	2
3	More than 10 years (high)	3

3.4.2.7 Innovativeness

Innovativeness denotes the quality of being innovative. An innovation involves creation of entirely new knowledge (Subrahmanya, 2005) as well as an idea perceived as new. Innovativeness is operationalised as the degree to which a farmer was relatively earlier in adopting new ideas. The scoring procedure followed by Kanakasaba (2002) was adopted as shown below. The respondents were classified into low, medium and high based on the responses given by them to a query as to when would they prefer to adopt an improved practice that would help achieve food security.

Sl. No :	Response	Score
1	As soon as it is brought to my knowledge	3 (high)
2	After I have seen other farmers using it successfully	2 (medium)
3	I prefer to wait and take my own time	1 (low)

3.4.2.8 Information source utilization

This has been referred as the respondent's expressed use of different types of information sources for getting information on farm technologies that helped achieve food security for the country. This has been measured over a four point continuum. The scoring procedure followed by Sasikala (1997) was adopted for this variable with suitable modifications.

Sl No:	Utilization	Score
1	Regular	4
2	Often	3
3	Rarely	2
4	Never	1

Along with this the adequacy of the information from Department of Agriculture and Kerala Agricultural University was also assessed using arbitrary scores.

3.4.2.9 Adequacy of information

Adequacy of information is defined as the degree to which the respondent perceives the information to be sufficient enough to cater his/her needs.

SI No:	Level of adequacy	Score
1	Very adequate	3
2	Adequate	2
3	Inadequate	1

3.4.3. Measurement of dependent variables

One of the objectives of the study is to find out the extent of awareness of the stakeholders of food security programmes viz. farmers, CBO members, extension agents and people's representatives on the concept of food security and its different dimensions, with special reference to the concerns of the community.

3.4.3.1 Awareness

Lionberger (1960) defined awareness as “the first knowledge about a new idea, product or practice”. At the awareness stage a person has only general information about the subject. However, as far as food security is concerned, various dimensions of the food security concerns of the community had to be brought to the attention of the stakeholders due to the fact that food security is mostly viewed from very limited perspectives particularly, from the point of production alone. All possible dimensions of food security, which are also the dimensions of the concerns of the community regarding food security were reviewed and represented in the statements to measure this variable. In this study awareness is operationally defined as the general information and perception of a stakeholder with respect to different dimensions of the food security concerns of the community.

3.4.3.2. Measurement of the awareness on food security

Based on the exhaustive review of literature on various dimensions of food security, 64 statements covering four important dimensions of the food security concerns

of the community viz. production, distribution, nutrition and socio – economic were drafted. The list of statements was subsequently sent to 30 selected judges for relevancy rating. The judges were requested to rate each statement based on the degree of relevancy attached to them with regard to its ability to express the relevant domains. Ratings were given for each statement under each dimension as given below.

SI No:	Item	Score
1	Highly relevant	4
2	Relevant	3
3	Less relevant	2
4	Irrelevant	1

The median score for each statement was found out and six statements which had a median score of 3.5 or above under each dimension was selected for the final questionnaire. In this way, six statements from each of the four dimensions were selected making a total of 24 statements to measure the awareness of stakeholders regarding the four identified dimensions of food security concerns.

3.4.3 Constraints faced by the extension agents in implementing the food security programmes

The extension agents were asked to state different constraints that they have encountered in the implementation of food security programmes. Their responses were collected and categorized based on the similarity in the concerns expressed and ranked based on frequency.

3.5 Methods of data collection

The data were collected using structured and pre-tested interview schedule and questionnaire. The details regarding the functioning of community based initiatives and the basic details of the four groups of respondents were collected through separate questionnaires. The questions were structured and comprehensive covering important

organizational and managerial aspects of CBOs. The important points of observation included details regarding their members, crops, area, production, BC ratio, skills of the members, relation with local self government institutions, difficulties encountered in implementing food security programmes and their aspirations. All the dependent and independent variables were collected through questionnaires.

3.5.1 Participatory methodology for rapid assessment of food requirement

A participatory methodology for quick assessment of food requirement in an area was developed as part of the study in Kodakara panchayat, so that the agricultural production strategy shall be reoriented based on an estimate of food required by the people inhabited in an area. An improvisation of wealth ranking (PRA) combined with survey and memory recall was done in the Kuzhikany North watershed of Kodakara Panchayat.

Wealth ranking is a method of ranking or grouping of households on the basis of income, wealth and other local measures of well-being (Mukherjee,1997). Different criteria can be used for wealth ranking based on rural perceptions. Wealth ranking or grouping is based on the presumption that rural people have the necessary knowledge to rank or group households which implies that they have knowledge of kinds and position of household assets, other items and attributes of the households concerned, which would manifest the well being of households. Here Grandin's(1988) method of card sorting was improvised for categorizing households based on material assets and socio economic status as criteria of well being. The methodology adopted had the following steps:

- a. The different criteria for ranking house holds and classifying them into distinct categories were finalized by focus group discussion of key informants. The different criteria used in ranking by key informants emerged from their discussion on wealth classification which also helped cross checking of the list and the final wealth classes were computed on this basis. By employing this technique, three distinct socio economic categories were identified to classify the households.

- b. Subsequently, proportionate samples were drawn from each category and the sample households were surveyed using memory recall method to assess the average quantity of food grains, vegetables and tubers that would be required by the household as per their present consumption pattern. For this the members of the household were asked to report the food items that they have had during the previous three days and the type and quantity of the constituents of food items. The amount of rice, vegetables and tubers required for a period of one year by the household was estimated from these reports
- c. The average quantity of food grains, vegetables and tubers required by the sample households belonging to a particular socio economic category was estimated and the total quantity that would be required by the entire households belonging to this category was found out by multiplying the average requirement by the total number of households in that category.
- d. The total food requirement in terms of food grains, vegetables and tubers was then estimated by adding up the total requirement of different classes. This estimate, though may not be very precise, would give the planners and other stakeholders a feel of the gaps in production and distribution and hence the targets to be fixed with respect to agricultural production and public distribution in a locality. The wealth classes would also shed light into the socio economic status of various categories and how they get probably get affected by food security programmes.

Before finalizing the interview schedule and questionnaire, it was pre-tested in a non sampling area. After pre testing, inconsistencies found were properly modified and the schedule and the questionnaire were finalized. The household survey took place in February and March and other data were collected during the months of April and May 2010, by personally meeting the respondents. Necessary efforts were made to check and cross check the data collected from the respondents. The data thus collected were calculated and tabulated for statistical analysis.

3.5 Statistical tests used

The following tests were used for the analysis and interpretation of the data.

1. Percentage analysis
2. Correlation
3. Kruskal-Wallis test

Kruskal –Wallis one way analysis of variance by ranks is used for deciding whether k independent samples are from different populations. Kruskal-Wallis technique tests the null hypothesis tests whether k samples comes from the same population or from identical populations with the same median. Here, the scores on awareness on food security concerns obtained by the four categories of stakeholders were compared to find out whether any differences existed among them in this regard.

$$KW(\text{Kruskal Wallis statistic}) = \frac{12}{N(N+1)} \sum_{j=1}^k n_j (mR_j - mR)^2$$

k = number of samples or groups

n_j = number of cases in the j^{th} sample

N = number of cases in the combined sample (the sum of the n_j s.)

R_j = sum of the ranks in the j^{th} sample or group

$m R_j$ = average of the ranks in the j^{th} sample or group

$m R$ = average of the ranks in the j^{th} sample or group

$m R$ = $(N+1)/2$ = the average of the ranks in the combined sample (the grand mean)

The data was analyzed using SPSS version 14.0

Plate 1

Data collection from stakeholders



RESULTS AND DISCUSSION

CHAPTER IV

RESULTS AND DISCUSSION

This chapter presents the results that have emerged out of this study. The discussion is taken up simultaneously along with the results. The results of the study have been presented in the following sections in the order and logic of the objectives set forth.

- 4.1 Profile of Community Based Organizations (CBOs) under study
- 4.2 Profile of stakeholders
- 4.3 Awareness level of stakeholders on food security
- 4.4 Relationship between the independent and dependent variables
- 4.5 Gap in the food grain production and reported food grain requirement in the selected *Gramapanchayat*
- 4.6 Constraints faced by extension agents in implementing food security programs

4.1 Profile of Community Based Organizations (CBOs)

From among the 20 randomly selected gramapanchayaths in Thrissur district, one CBO which was involved in food grain or vegetable cultivation as part of any food security programme implemented in the local body was identified from each gramapanchayath. Out of the 20 CBOs, 16 were Kudumbasree units and the rest four were *Padasekarasamithis*. The profile of these CBOs were collected through a semi structured questionnaire which captured the organisational, managerial and human resource related aspects as described under the following headings.

- Basic details of the CBOs
- Cultivation and marketing details
- Skills of the members
- Relation with LSGIs
- Difficulties encountered in implementing food security programs
- Level of aspiration of the CBOs

4.1.1 Basic details of the CBOs selected for the study

The basic details of the CBOs regarding the origin, membership and constitution are given in Table 4.1 below.

Table 4.1 Basic details of the CBOs selected for the study

Sl No	Theme	Details		
1	Origin	Started before 2000	Started after 2000	-
		20 per cent	80 per cent	
2	Membership	More than 20 members	Less than 20 members	-
		45 per cent	55 per cent	
3	Age of members	35 and below	36-50	Above 50
		40 per cent	50 per cent	10 per cent

Origin of CBOs

The study revealed that 20 per cent of the CBOs were started before the year 2000 and 80 per cent of CBOs were started after 2000. Kudumbasree units worked in close liaison with the respective gramapanchayat and the *padasekara samithis* directly deal with Krishi Bhavan, the office of the Department of Agriculture. This indicates that majority of the CBOs involved in farming and allied sectors are of recent origin.

Membership in CBOs

As regards membership, while about 45 per cent of the CBOs had more than 20 members the rest had less than 20 members. The minimum number of members was nine and the maximum number was 585. A huge variation is observed in the number of members in the CBOs. This is evident from the fact that the Kudumbasree units have only limited members, where as *padasekhara samithis*, which represent the vast stretches of paddy owned by several people should invariably have more members, sometimes running into hundreds.

Age of the members of CBOs was also found to be in a wide range. While 40 per cent of the CBOs had members of the average age 35 years and below, 50 per cent had members of average age 36-50 years and the rest had members of average age above 50 years. It was seen that middle aged people are more active in the selected CBOs. This is yet another indication of the well proven fact that though farming is not attractive to the younger generation, the membership in CBOs is owned by housewives, who are comparatively middle aged. Membership in CBOs comes as an ordinary alternative to this category of housewives as Kudumbasree units are widespread and are involved in many activities including micro credit and other enterprises. Kudumbasree has largely targeted housewives and those sections who would like to earn independently, to support their family.

Gender participation

All the CBOs under study had female participation. Among them, 16 were Kudumbasree units which had 100 per cent female participation. The female membership in the remaining four *Padasekara samitis* ranged from 5-30 per cent. While 35 per cent of the CBOs did not have SC-ST participation, the rest had SC/ST members ranging from 1-50 members. This observation is also not very queer as all the Kudumbasree units would invariably have female members. At the same time, *padasekharasamithis* may also have female members in them as they have large number of members. However, the most important observation in this regard is that female participation is evidently overwhelming and this in one way signifies the greater concerns of women regarding food security.

Plate 2. CBO members in their fields



4.1.2 Cultivation and marketing details

CBOs involved in food security programmes were largely engaged in farming operations in fields leased out from those land owners who did not intend to pursue farming due to various reasons. In some cases, the CBO members owned land, which was used for cultivation.

Size of holdings cultivated

The size of holding cultivated by CBOs showed that about 45 per cent of the CBOs were having marginal holdings (Below 2.5 acre), 10 per cent had small holdings (2.5 – 5 acre), 20 per cent CBOs had semi medium holdings (5-10 acre), 5 per cent had medium holdings (10-25 acre) and 20 per cent had large holdings (more than 25 acres). (See Fig. 3) More than half of the CBOs had only small and marginal holdings, which implies that the contribution of CBOs to food security can not be quantitatively substantial unless they cultivate more area. In connection with this, majority (65 per cent) of the CBOs opined that land was available for cultivation in their localities. However, seven CBOs reported unavailability of land for cultivation in their localities due to different reasons including commercialization of agricultural lands.

Crops cultivated

With regard to crops cultivated, 45 per cent of CBOs were involved in rice production alone, 25 per cent were cultivating vegetables alone, 15 per cent were growing rice and vegetables, 10 per cent CBOs were growing rice and tubers, where as five per cent were growing all the three, viz. rice, vegetables and tubers under food security programs. Interestingly, over 30 per cent of the CBOs had taken up organic cultivation and majority of them were marginal holdings (less than 1 ha) and 33.33 per cent had small holdings (1-2 ha) under organic cultivation (See Fig. 4)

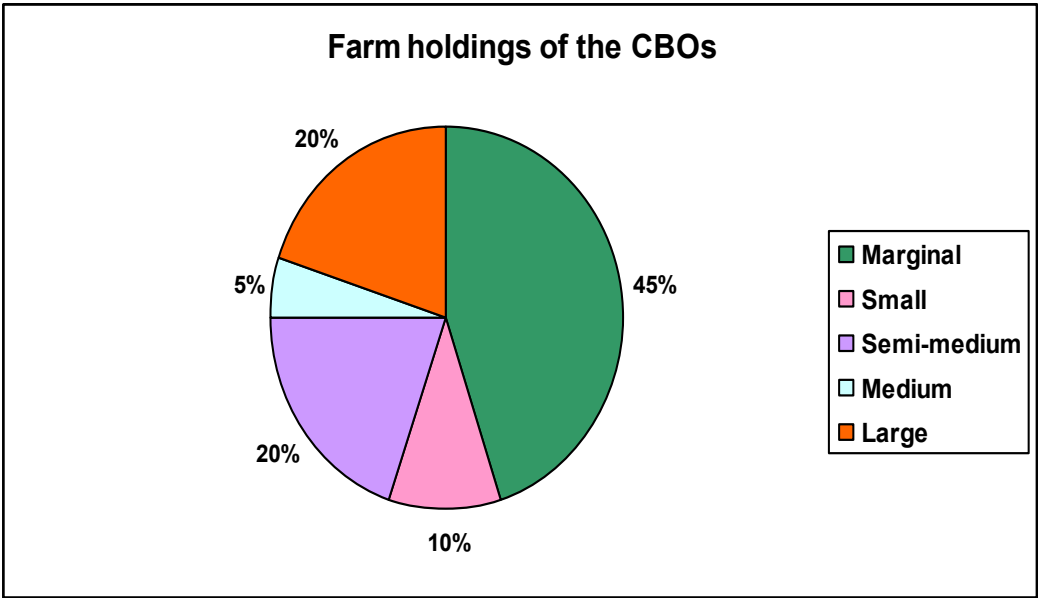


Fig. 3. Distribution of CBOs based on holding size in possession

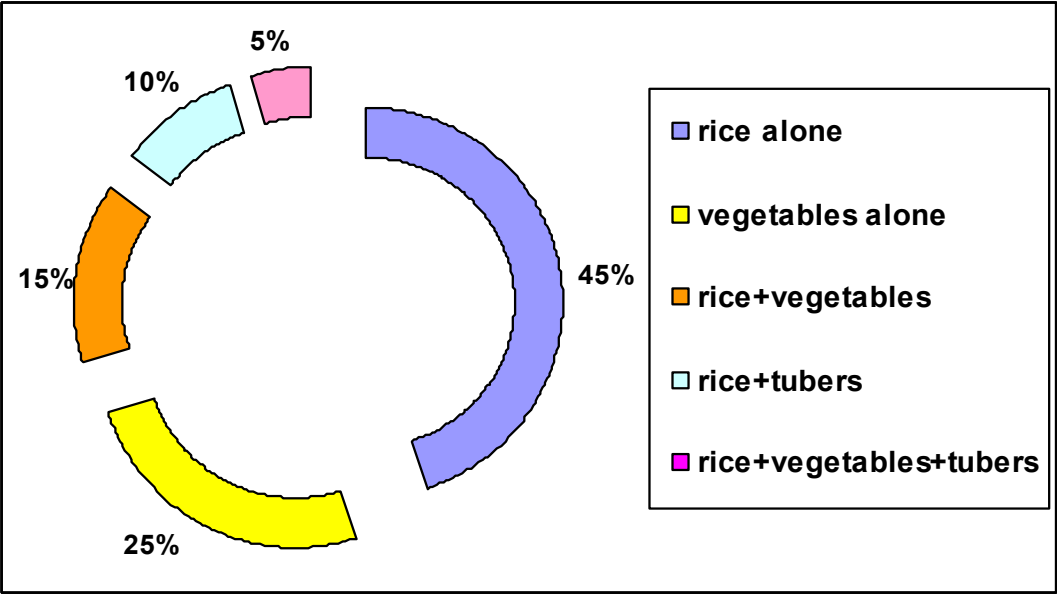


Fig. 4. Crops grown by CBOs selected for the study

Diversification of enterprises

Diversification was found to be widely attempted by CBOs as 55 per cent of the CBOs had enterprises other than farming which included bakery, tailoring, soap powder making, nutritional food production, book binding, livestock rearing, poultry, fish culture, rabbit rearing etc. Only nine groups were solely dependent on farming.

Utilization of human resources

Utilisation of human resources by CBOs showed an interesting pattern. They were found to use hired labour to a considerable extent. According to them, while 10 per cent of the CBOs had not hired labour for cultivation; they did all the operations by themselves whereas rest 90 per cent of CBOs hired labour for farming activities at one or the other stage of the crop. Hiring of labour is reportedly the major factor that increases the cost of cultivation. Since the proportion of CBOs that hire labour is high, profitability of the enterprises undertaken by the CBOs would be affected adversely. This warrants promotion of own labour and gender sensitive and ergonomically efficient mechanisation that can help the CBO members take up farm operations on their own.

Subscription to security schemes

It was also observed that only 15 per cent of the CBOs under study had insured their crops under the State Crop Insurance Scheme of the Department of Agriculture. The remaining CBOs had not thought of crop insurance scheme, which implies that awareness and facilitation on such protection measures is extremely important for these small groups of cultivators to ward off prospective uncertainties in farming.

Marketing

With regard to marketing, it was observed that while 40 per cent of the CBOs preferred to sell rice to The Kerala State Civil Supplies Corporation (SUPPLYCO), 25 per cent sold their produce in the local market, 20 per cent to private companies, and 15 per cent used the products for self consumption (See Fig. 5). Queries on the profitability of CBOs' ventures showed that 55 per cent had Benefit Cost Ratio less than 1.50 for farming and 45 per cent had a better BC Ratio of more than 1.5 ranging to 2.00.

4.1.3. Skills possessed by CBO members

In response to the queries as to whether the CBO possess adequate skills to perform farming, keep accounts, document various events, formulate projects and manage finance, it was found that the CBOs are suitably skilled to handle many of their important functions. The responses explain the presence of at least one person in the CBO with the required skill. See Table 4.2 for details

Table 4.2 Skills possessed by CBOs

Sl No:	Presence of Skills	Frequency	Per cent
1	Technical knowledge	19	95
2	Accounting skills	20	100
3	Documentation skills	9	45
4	Project formulation skills	5	25
5	Financial management skills	18	90

While 95 per cent of the CBOs reported to possess technical knowledge about farming, all CBOs had accounting skills, 45 per cent had documentation skills, 25 per cent of had project formulation skills, and 90 per cent had financial management skills. This indicates that each CBO in these categories had at least one member who could

perform these skills to manage the organisation. The lack of skilled members in areas like project formulation and documentation is worthy of serious intervention. Since the capability for independent decision making and formulation of new projects is very important, the CBOs might be compelled to depend on various agencies and other individuals including political leaders to formulate ideas and pursue them. This will certainly act as a constraint in developing the CBOs based on their own aspiration and course of action. Training of CBOs should include more elements of simple project formulation and documentation techniques so that they can involve more proactively and come up with more innovative proposals.

4.1.4. Relation with Local Self Government Institutions

The relation of CBOs with LSGIs and developmental agencies such as the Department of Agriculture were assessed based on the qualitative scores given by the respondents as given below (Table 4.3). The CBOs judged their relationship with these agencies based on the overall assistance received by them in their activities, technical guidance provided, monitoring and supply of inputs and other incentives.

Table 4.3 Relationship of CBO s with LSGIs and development agencies

Score	Based on overall assistance		Based on technical guidance		Based on monitoring		Based on supply of inputs and other incentives	
	N	Per cent	N	Per cent	N	Per cent	N	Per cent
Very good	17	85	13	65	12	60	12	60
Good	2	10	6	30	7	35	6	30
Poor	1	5	1	5	1	5	2	10
Total	20	100	20	100	20	100	20	100

While 95 per cent CBOs reported that they had good relation with LSGIs with respect to their overall assistance, five per cent rated it as poor. Similarly, when 65 per cent maintain very good relation with Krishi Bhavan with regard to technical guidance and 30 per cent maintained good relation while five per cent rated the relation as poor.

Regarding monitoring, 60 per cent rated the relationship as very good and 35 per cent as good. Five per cent rated it as poor. Based on the input supply, 60 per cent found the relation as very good and 10 per cent saw it as poor (See Fig. 6).

The relationship with LSGIs and development agencies are crucial for the CBOs to work in food security programmes as the activities are formulated and implemented by these agencies as part of a policy initiative of the government to make more people share the concerns on food security and involve them in the action plan to produce more. The results show that the development agencies maintain appreciably positive relationship with the CBOs in matters related to their activities. This also shows the impact of decentralised decision making which directly facilitate community efforts at the grassroots level. Food security programmes with community mobilisation would not have been possible if the development agencies had not maintained good relationship with CBOs. This also points to the possibility of designing and implementing more innovative community level initiatives towards food security. Observations by Ardakani (2007) that these CBOs have to be further empowered seems to be relevant at this juncture.

4.1.5 Constraints faced by CBOs in implementing food security programmes

Though the CBOs involved in food security programmes reported good relationship with the agencies that are officially responsible for implementing the programmes, they face several constraints, many of which could be solved by the joint efforts of the local self government institutions and development agencies. At the same time there are several socio economic and political factors that deter efficient implementation of food security initiatives by CBOs. The constraints have been reported on the basis of their experience in formulating and implementing food security projects. All the important components of these projects right from availability of land and operations thereafter including credit, marketing, and storage had been reported to be encountered with problems. The major constraints faced by CBOs are provided below in Table 4. 4 based on ranks assigned according to frequency of reporting by CBOs. The severity of a constraint is indicated by the frequency of the constraint reported.

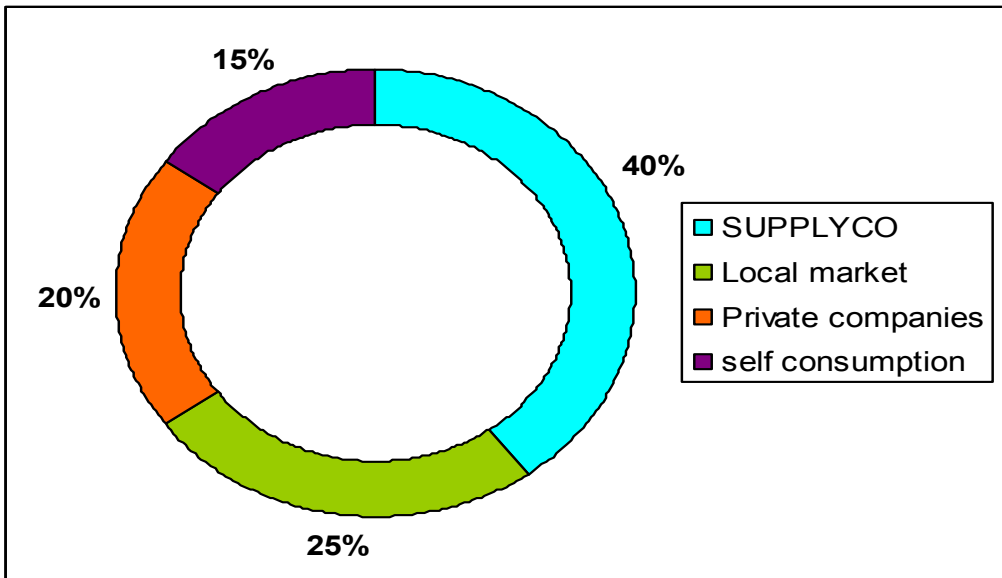


Fig. 5 . Distribution of CBOs based on the agencies to which produces are sold

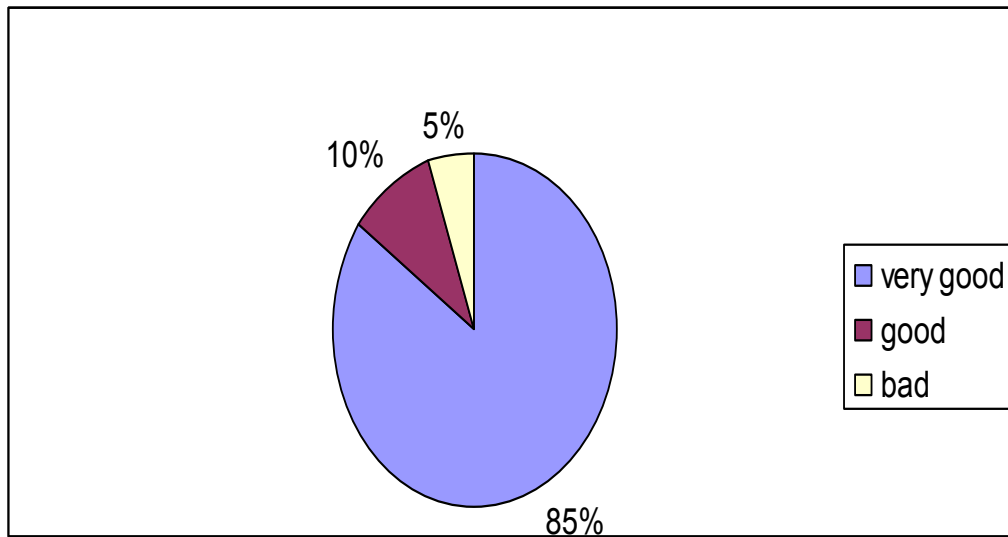


Fig. 6. Distribution of CBOs based on their opinion on the relationship with LSGIs and development agencies

Table 4.4 Constraints faced by CBOs in food security programmes

SI No:	Difficulties encountered	Frequency	Per cent	Rank
1	Unavailability of land	4	20	V
2	Unavailability of quality inputs	2	10	VII
3	Pests, diseases and weeds	9	45	II
4	Absence of processing and value addition facilities	3	15	VI
6	Absence of procurement and marketing facilities	10	50	I
7	Management of CBO	3	15	VI
8	Labour shortage	5	25	IV
9	Irrigation	6	30	III
10	Clay mining	1	5	VIII
11	High cost of production	2	10	VII

The most important constraint with regard to implementation of food security programmes is reportedly procurement and marketing as 50 per cent of the CBOs had to face problems in this respect. Second important constraint is pertained to pests and diseases as 45 per cent CBOs experienced difficulties in this regard. Third important issue is with regard to irrigation as 30 per cent had to face problems related to availability of irrigation facilities in cultivating vegetables. While quarter of the total CBOs surveyed had experienced labour shortage, 20 per cent CBOs reported unavailability of land for cultivation as a difficulty since land in their localities was extensively being used for various commercial purposes. Ten per cent reported the unavailability of quality inputs and complained that the vegetable seeds provided by Krishi Bhavans didn't even sprout. With regard to processing and value addition, 15 per cent reported difficulty. An impressive 15 per cent CBOs had problems with management of the organisation mainly due to the non co-operation of the members. Surprisingly only 10 per cent of CBOs found high cost of production as a difficulty to proceed with food security programs, reaffirming the observation on B:C ratios, which established that majority of the CBOs had undertaken farming profitably. As a special local case, clay mining was reported to be a burning environmental problem that retard food security programmes in Nenmanikkara panchayat.

It is evident from these observations that the major constraints are procurement and marketing. Being community level food security programmes, the major thrust should be on creating networks of CBOs that can exchange products and services with each other on a commercial basis. This points to the fact that unless the key component of distribution and marketing are addressed, community food security programmes would wither and fail to accomplish their objectives. The existing market networks of Kudumbasree have to be effectively utilised for this purpose. The second major constraint is the issue of pests and diseases. Management of pests and diseases in an eco-friendly manner and at the same time ensuring profit is a challenge faced by every farmer. The CBOs should develop community pest management protocols with the help of research institutions and development agencies, by employing latest technology solutions for integrated pest management. Knowledge and skills on such aspects need to be enhanced through exclusive extension programmes for CBOs involved in food security initiatives. This would certainly widen the adoption of such technologies as they are followed by groups rather than individuals and the results are directly demonstrated to the farming community. Similarly, efficiency of labour management can be enhanced only by means of mechanisation. However, this warrants establishing community mechanisms for ownership and maintenance of machines and equipments. CBOs are yet to get proper orientation in this regard, as understood from field observations. Similarly, availability of land also is an issue that has to be addressed at the community level, with proactive intervention of the people's representatives and LSGIs. This can be resolved only if absentee land lords are motivated to spare their land for a greater and noble purpose of food production instead of keeping them fallow. Since legislations in this regard are on the anvil, these constraints would be overcome soon. However, mechanisms for a more lucrative incentive structure could be thought of to attract landowners.

Analysis of various constraints listed by CBOs reiterate the observations made by Murwira (1994) and Briggs and Mueller (1997), who maintained that community participation help people work with local institutions to identify and develop technology options while building on existing knowledge and to influence agricultural policies to

take into account the production needs of small scale farmers. These inferences also underline the fact that community participation is the central component of problem solving strategies as it connects neighbourhood people to each other and to the community improvement programmes.

4.1.6 Level of aspiration of CBO members

In response to the questions on the future plan of action of the CBOs involved in food security programme, a variety of aspirations were expressed by the members. Majority of the CBOs preferred to retain farming enterprises as they have proved it to be profitable. However, unavailability of land is expected to be overcome in future as more land owners would come forward to lease out their land for cultivation (Table 4. 5)

Table 4.5 Future programmes envisaged by CBOs

SI No:	Future Programmes envisaged	Frequency	Per cent
1	Area expansion	10	50
2	Product diversification	7	35
3	Increase sales outlets	10	50
4	Door to door services	9	45
5	Infrastructure development	10	50
6	Organic cultivation	12	60
7	Linkage with other CBOs	7	35
8	Development of marketing channels avoiding middlemen	20	100
9	Value addition process	10	50
10	Exporting products	5	25

Fully in line with the observation made in the earlier section, all the CBOs wanted to develop direct marketing channels avoiding middlemen. Organic agriculture appeared to be a major future programme, probably because of the premier prices organic product could fetch and the comparatively lesser cost of cultivation. Half of the CBOs were

interested in expanding area under present crops, increasing the sales outlets, infrastructure development and value addition process. Thirty five per cent of the groups wanted to focus on product diversification and interested in linkage with other CBOs. Forty five per cent of groups aspired to start door to door services. Half of them were thinking about infrastructure development. About 60 per cent of the organizations were keen in taking up organic cultivation, and about half of the CBOs wanted to take up value addition along with production and one fourth of them thought of exporting their products in future. The nature of the aspirations aired by the CBOs is indicative of their commitment to farming and the profits derived out of it. However, this alone would not suffice as expansion of present activities warrant concerted efforts to overcome the constraints listed above.

4.2 Profile of stakeholders involved in food security programmes

Following are the results of the analysis of the personal and socio economic profile of the stakeholders involved in food security programmes, which is believed to enable a deeper understanding of the dynamics of implementation of community food security programmes, particularly by involving CBOs. The distribution of various stakeholders involved in food security programmes based on their attributes are examined to find out whether these attributes have any influence of the dependent variable namely, awareness of the stakeholders on the food security concerns of the community.

4.2.1 Age

As operationalised for the purpose of this study, age would reflect the mental maturity of an individual to take decision for achieving the needs at various stages of ones life. Hence age has been considered as one of the factors that would determine the awareness and perception of the stakeholders regarding food security.

The distribution of various categories of stakeholders based on their age is presented in Table 4.6.

Table 4.6 Distribution of stakeholders based on their age (n=160)

SI No	Categories	Frequency (%)			Total
		Young	Middle-aged	Old	
1	Farmers	0 (0)	10 (25)	30 (75)	40
2	Extension agents	4 (10)	24 (60)	12 (30)	40
3	CBO members	4 (10)	27 (67.5)	9 (22.5)	40
4	People's representatives	1 (2.5)	21 (52.5)	18 (45)	40
	Total	9 (5.62)	82 (51.25)	69 (43.13)	160

It could be inferred from the table that 51.25 per cent of the stakeholders were middle aged and 43.13 per cent old aged and a very small proportion were young. Considering each of the stakeholder category, three fourth of the farmers were old aged and the rest one fourth were middle aged. Out of a total number of stakeholders, 60 per cent of the extension agents, 67.5 per cent of the CBO members and 52.5 per cent of the people's representatives belonged to the middle age category. Similarly in all the categories youngsters were less in number (See Fig.7)

It was observed that the young people were not interested in farming and even those who had farming as their traditional occupation were not interested in getting their children toil in the field. This is a trend seen across the state, and this could be the reason for greater frequency of old aged people to be found involved in agriculture. This scenario presents a grim picture as the human resources in agriculture are fast decreasing and agriculture is no longer an attractive option for the younger generation.

4.2.2 Gender

Gender being an important aspect in community food security programmes as established by experiences from across the world (FAO, 2010), the analysis of the participation of stakeholders based on gender seemed relevant. Following is the distribution of stakeholders based on gender (Table 4.7).

Table 4.7 Distribution of stakeholders based on gender (n=160)

SI No	Respondents	Frequency (%)		Total
		Male	Female	
1	Farmers	33 (82.5)	7 (17.5)	40
2	Extension agents	17 (42.5)	23 (57.5)	40
3	CBO members	4 (10)	36 (90)	40
4	People's representatives	26 (65)	14 (35)	40
	Total	80(50)	80(50)	160

As seen from table, half of the respondents (50 per cent) were males and the rest were females. However, 82.5 per cent of the farmers and 65 per cent of the people's representatives were males. It was also found that 57.5 per cent of the extension agents and 90 per cent of the CBO members were females. Predominance of women in CBOs is noteworthy as any knowledge input for these initiatives should target women with equal importance (See Fig.8).

Almost comparable to what Wanner (2009) observed, the increasing role of women in community initiatives show a positive sign of social transformation with gender mainstreaming possible in every aspect of social development, particularly in accomplishing food security.

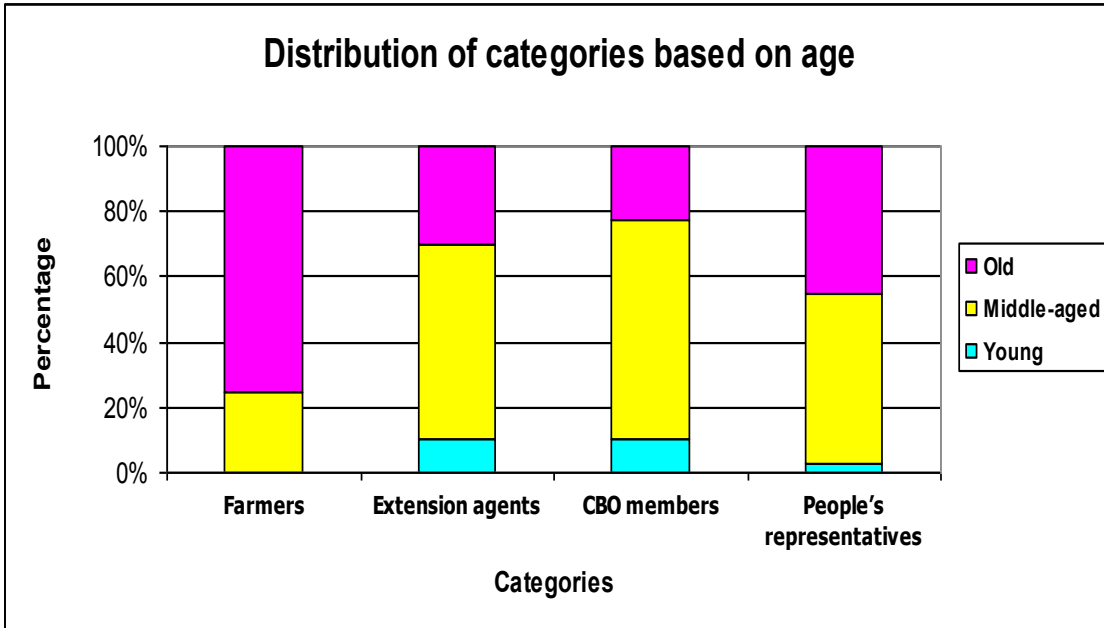


Fig.7. Distribution of stakeholders based on age

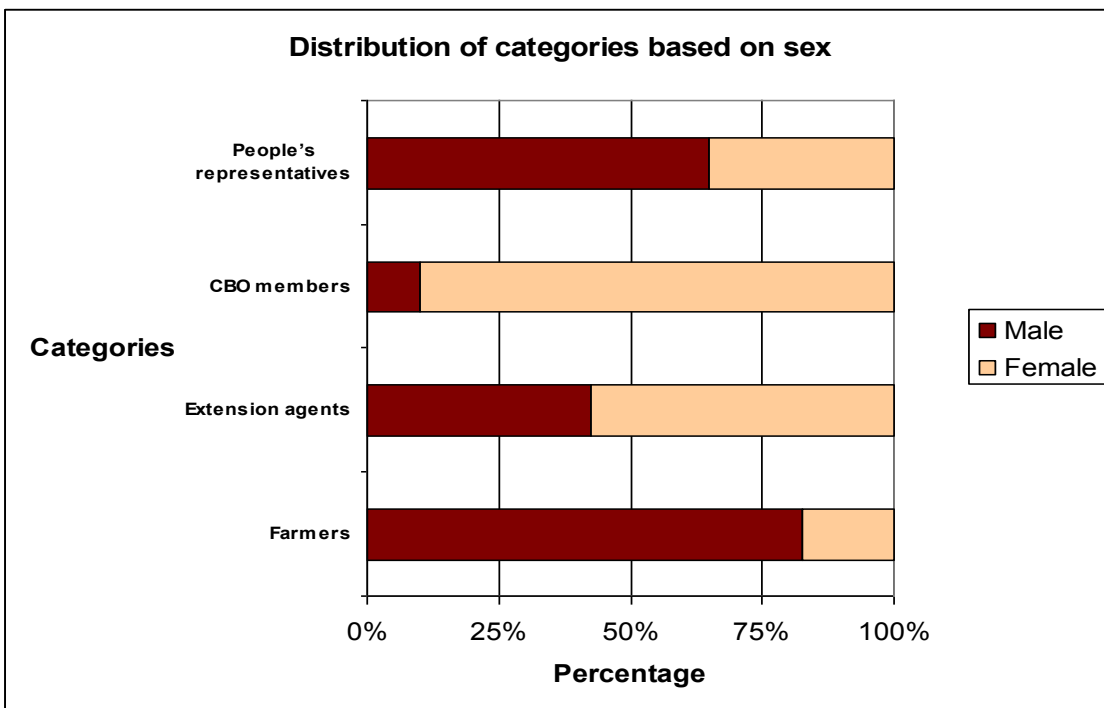


Fig.8. Distribution of stakeholders based on gender

4.2.3 Education

Educational status is a crucial factor that influences an individual while taking rational decision as understood from the reviews cited. Hence the educational status of the different categories of stakeholders were analysed and results of which are presented in Table 4. 8.

Table 4.8 Distribution of stakeholders based on their educational status (n=160)

Sl No	Respondents	Frequency (%)					
		Illiterate	Can read only	Functionally literate	Primary education	High school	Collegiate Education
1	Farmers	0 (0)	0 (0)	2 (5)	5 (12.5)	24 (60)	9 (22.5)
2	Extension agents	0 (0)	0 (0)	0 (0)	0 (0)	9 (22.5)	31 (77.5)
3	CBO members	0 (0)	0 (0)	1 (2.5)	2 (5)	20 (50)	17 (42.5)
4	People's representatives	0 (0)	0 (0)	1 (2.5)	4 (10)	27(67.5)	8 (20)
	Total	0 (0)	0 (0)	4 (2.5)	11(6.87)	80(50)	65(40.63)

As evident from the table, half of the total number of stakeholders has obtained high school education and 40.63 per cent had collegiate education. The respondents who were functionally literate formed only 2.5 per cent and there were no respondents who could only read or who were totally illiterate. This observation once again reiterates the excellent achievement of the state in adult literacy and reinforces the worth of training programmes (See Fig.9)

Majority of farmers (60 per cent) possessed high school education and 22.5 per cent had undergone collegiate education. Extension agents were found to be comparatively highly educated with 77.5 per cent having collegiate education and 22.5 per cent with high school education. While 42.5 per cent of the CBO members and 20 per cent of the people's representatives had collegiate education, as much as 50 per cent of the CBO members and 67.5 per cent of the people's representatives had high school

education. The comparatively high status of education of people involved in developmental initiatives is a unique feature of Kerala and this trend has been overtly expressed in the observations made with respect to education. This shows that human resource development with sufficient technical inputs is very much possible in the programmes towards food security.

4.2.4 Monthly income

Socio economic status of the stakeholders is an important factor that determines the awareness and approach towards food security initiatives as understood from the reviews done so far. This is also found to affect the readiness of the individual to involve in farming as it is widely seen in Kerala that individuals with high income belong to other enterprises as farming is considered to be risky and less profitable. The distribution of stakeholders based on the monthly income is provided in Table 4.9.

Table 4.9 Distribution of stakeholders based on monthly income (n=160)

Sl. No.	Respondents	Frequency (%)			Total
		Low income	Middle income	High income	
1	Farmers	30 (75)	6 (15)	4 (10)	40
2	Extension agents	0 (0)	3 (7.5)	37 (92.5)	40
3	CBO members	39 (97.5)	1 (2.5)	0 (0)	40
4	People's representatives	38 (95)	2 (5)	0 (0)	40
Total		107(66.85)	12(7.5)	41(25.625)	160

Distribution of stakeholders based on monthly income shows that 66.8 per cent belonged to the low income group, with 7.5 per cent belonging to middle income group and rest 25.62 per cent to high income group. Three fourth of the farmers were having low monthly income. Analysing the group of stakeholders, it was found that 92.5 per cent of the extension agents were belonging to high income category while 97.5 per cent of the CBO members and 95 per cent of the people's representatives belonged to the low income category (See Fig.10). It is evident from the income status of CBO members that

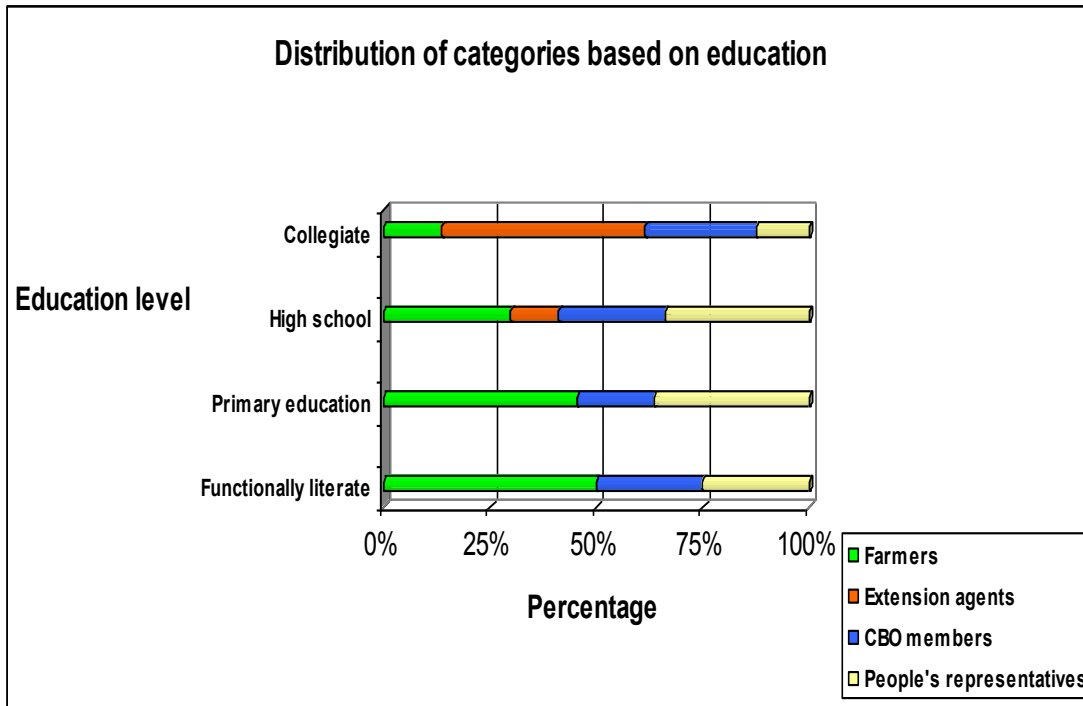


Fig.9. Distribution of stakeholders based on education status

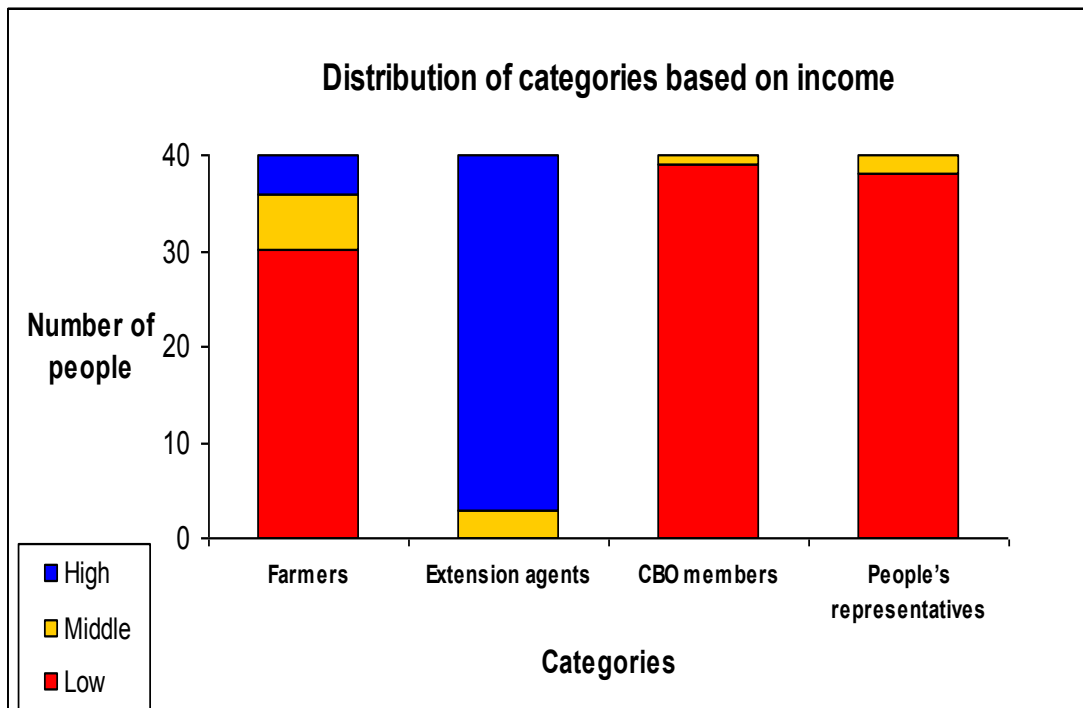


Fig.10. Distribution of stakeholders based on income

activities related to local economic development as envisaged in food security programmes had been able to involve only people belonging to lower economic classes.

4.2.5 Farm size

Size of the farm would possibly influence the decisions on cultivation practices and choice of crops as seen in earlier studies. It is presumed that the size of farm owned by the individuals would in turn influence their awareness towards food security. Pattern of distribution of various stakeholders based on farm size is given in Table 4.10

Table 4.10 Distribution of stakeholders based on farm size (n=160)

Sl No:	Respondents	Frequency					Total
		Marginal farmers	Small farmers	Semi-medium farmers	Medium farmers	Large farmers	
1	Farmers	28(70)	12(30)	0 (0)	0 (0)	0 (0)	40
2	Extension agents	17(42.5)	0 (0)	1(2.5)	0 (0)	0 (0)	40
3	CBO members	23(57.5)	0 (0)	1(2.5)	0 (0)	0 (0)	40
4	People's representatives	16(40)	0 (0)	0 (0)	0 (0)	0 (0)	40
	Total	84(52.5)	12(7.5)	2(1.25)	0 (0)	0 (0)	160

The table makes it clear that 52.5 per cent of the stakeholders were marginal farmers with a farm size less than 2.5 acre, 7.5 per cent were small farmers with a farm size of 2.5 -5 acre and 1.25 per cent were semi medium farmers with farms of size 5-10 acre (See Fig.11). There were no medium or large farmers among the categories. It is also interesting to note that 38.75 per cent of the respondents did not possess any farm.

Interestingly as much as 70 per cent of the farmers 42.5 per cent of extension agents, 57.5 per cent of CBO members and 40 per cent of people's representatives were found to possess only marginal holdings. The analysis show that vast majority of people involved in food security programs had only marginal land below 2.5 acres. Food

security programmes assume more relevance in the context of fragmented holdings and very small holding size, which is a characteristic of Kerala as seen above.

4.2.6 Farming experience

Farming experience acquired over a period would help the farmers to take concrete decisions in farming activities and it will certainly influence their awareness on food security. Distribution of stakeholders based on farming experience is presented in Table 4.11

Table 4.11 Distribution of stakeholders based on their farming experience (n=160)

Sl No.	Respondents	Frequency (%)			Total
		Low	Medium	High	
1	Farmers	0 (0)	4 (10)	36 (90)	40
2	Extension agents	2 (5)	4 (10)	29 (72.5)	40
3	CBO members	16 (40)	8 (20)	15 (37.5)	40
4	People's representatives	4 (10)	7(17.5)	16 (40)	40
	Total	22(13.75)	23 (14.375)	96 (60)	160

It was found that 60 per cent of the stakeholders had more than 10 years of experience in farming, followed by 14.38 per cent having medium experience of 5-10 years and 13.75 per cent had low farming experience of less than 5 years. It was already seen under Table 4. 6 that majority of the respondents were middle-aged followed by old age group. This might reflect on the individual experience in farming and similar results have been observed as well. The fact that 40 per cent of the CBO members had only less farming experience is to be viewed seriously as these stakeholders require intensive training on scientific aspects of farming.

Ninety per cent farmers had high experience and the rest had medium experience while 72.5 per cent of extension agents had high experience and 12.5 per cent of

extension agents didn't have any farming experience at all. Similarly, 32.5 per cent of people's representatives and 2.5 per cent of the CBO members were found to have no farming experience (See Fig.12).

4.2.7. Information seeking behaviour

Since information source utilization influences the awareness level of an individual on a particular technology, the extent to which farmers make use of various information sources helps the development workers choose the information sources best suited for them. Along with this, the frequency, adequacy and usefulness of the information obtained from agencies Krishi Bhavan and Kerala Agricultural University (KAU) were also assessed (See Table 4.12)

Table 4.12 Frequency of information seeking from Krishi Bhavan/KAU

Respondents	Regular	Often	Rarely	Never
Farmers	31 (77.5)	5 (12.5)	3 (7.5)	1 (2.5)

It was found that 80 per cent of the farmers had engaged in farming based on their experience supplemented by the information from Krishi Bhavan and KAU, where as the rest 20 per cent utilized information from other farmers. About 77.5 per cent of the farmers sought information from Krishi Bhavan or KAU on a regular basis.

Along with the frequency of information seeking, adequacy of information obtained from the extension agencies contacted by the stakeholders were also examined. Altogether the information obtained by those engaged in farming was found to be adequate as 42.5 per cent found it as very adequate and 7.5 per cent found it as adequate as given in Table 4.13.

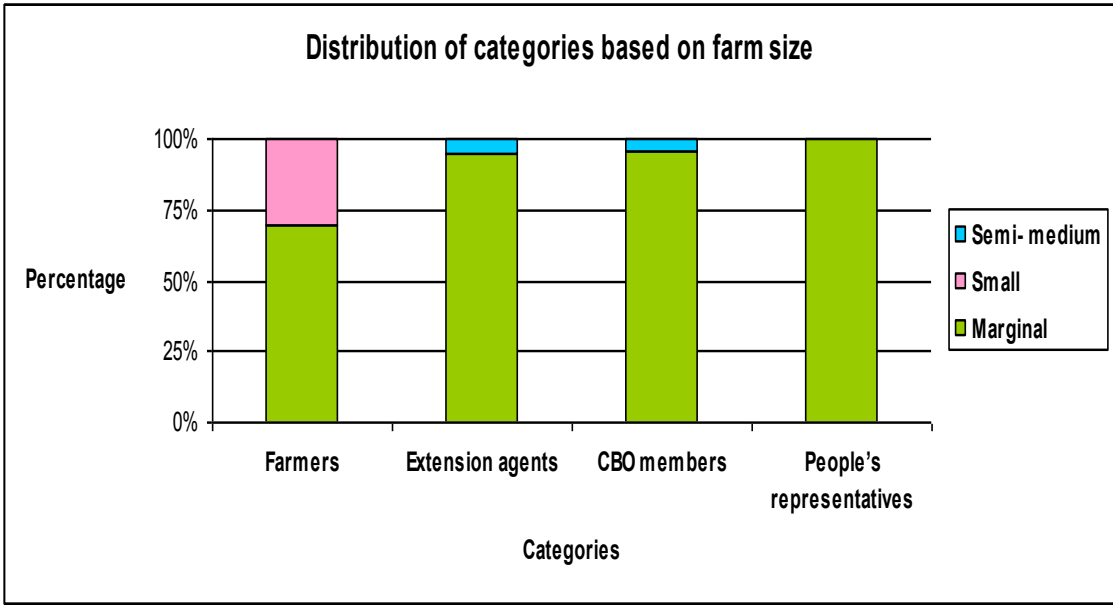


Fig.11 Distribution of stakeholders based on farm size

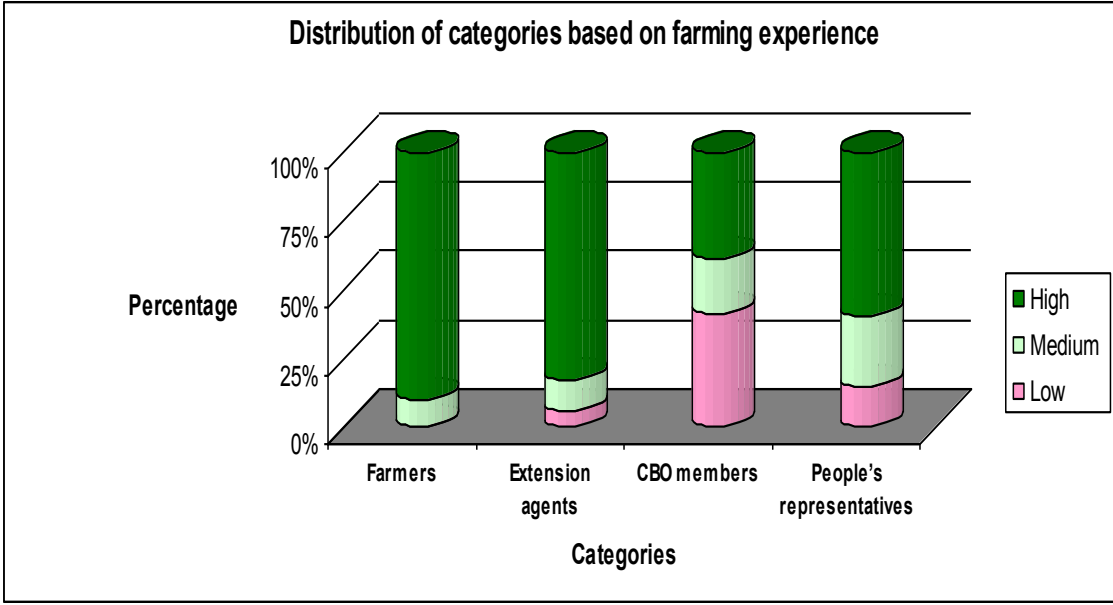


Fig.12 Distribution of stakeholders based on farm size

Table 4.13 Adequacy of information obtained from extension agencies (n=40)

Respondents	Very adequate	Adequate	Inadequate
Farmers	17(42.5)	20(50)	3(7.5)

4.2.8 Innovativeness of farmers

Innovativeness has been defined as the degree to which an individual is relatively earlier in adopting the new ideas than other members of his social system. It shows the desire and interest of an individual to seek change. The data on innovativeness of farmers are presented in Table 4. 14

Table 4. 14 Distribution of farmers based on their innovativeness

Sl No:	Categories	Frequency(%)
1	High	20 (50)
2	Medium	17 (42.5)
3	Low	3 (7.5)

It was found that 50 per cent of the farmers had high level of innovativeness, followed by 42.5 per cent having medium innovativeness and the rest (7.5 per cent) with g low innovativeness. (See Fig.13)

That majority had high innovativeness could be due to the fact that majority were literate and possessed high farming experience and high information source utilization behaviour which might have made them aspire for the use of new and latest technologies in farming. Innovativeness of the stakeholders in food security programmes would definitely be helpful in designing human resource development activities with more technical inputs. This behaviour opens up the possibilities for innovative interventions in the entrepreneurship development of CBO members and farmers who are directly involved in farming. The process of innovation and learning which is emerging as the major activity of farmer organisation and CBOs can takeoff well in this context. From the

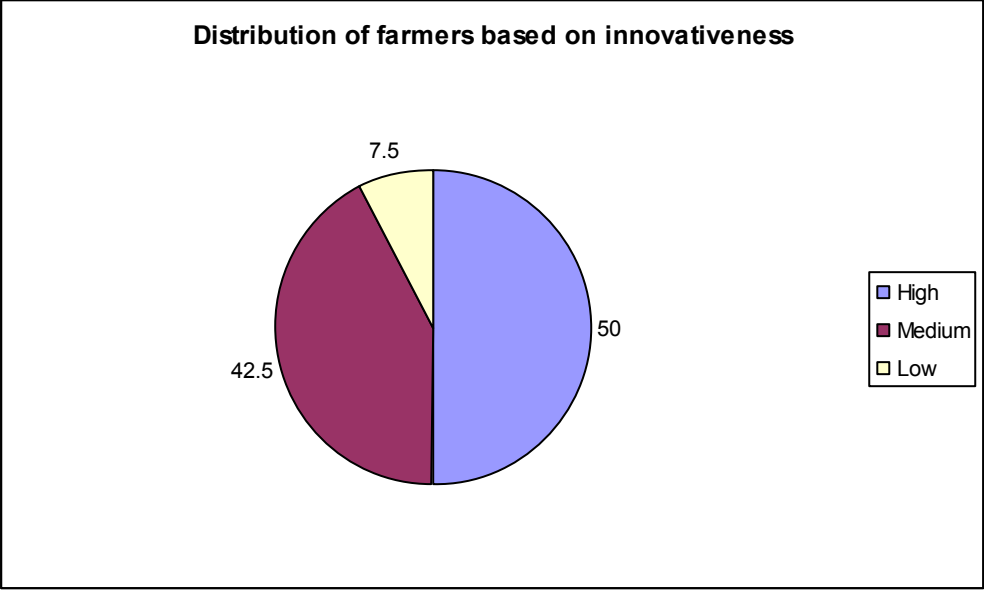


Fig.13. Distribution of farmers based on innovation level (percentage)

point of view of food security, innovativeness of stakeholders would lead to adoption of new technologies and practices which would help enhance production and productivity.

4.3 Awareness of stakeholders on the food security concerns of the community

The awareness levels of different categories were assessed and compared based on the mean rank of Kruskal Wallis test obtained for each dimension which is discussed below. The statistic of Kruskal Wallis test showed that there was significant difference among the stakeholders with respect to their levels of awareness on the food security concerns of the community. The items of the questionnaire included statements that address various dimensions on food security as understood and felt by the community. This has been done with the objective of finding out whether the stakeholders identify with the community's concern on food security. The respondents with highest mean rank are the most aware on the dimension under study.

Table 4. 15. Mean rank of Kruskal Wallis test on the production dimension of food security

SI No:	Respondents	Mean rank
1	Farmers	99.55*
2	Extension agents	56.36*
3	CBO members	81.68*
4	People's representatives	84.41*

(n=160)

**Sig. at 1% level of significance*

It was found that farmers were the most aware group regarding the production dimension of food security followed by people's representatives and CBO members. The extension agents had the least awareness about the concerns on the production dimension of food security. It can be concluded that the farmers being the most experienced category regarding the agricultural production, they have better awareness in this regard (See Fig.14). Moreover, the farmers being explicitly concerned about production of food grains and other crops, they are likely to have more awareness on the concerns of the community on the production dimension of food security. Though it is surprising that

extension agents have expressed less awareness on the concerns, it is likely to be so as the concerns of the bureaucrats might not match with the innermost concerns of the farming community on declining production. Strikingly, the mean rank scores on the distribution dimension also show similar trends as evident from Table 4.16.

Table 4. 16 Mean rank of Kruskal Wallis test on distribution dimension of food security (n=160)

Sl. No.	Respondents	Mean rank
1	Farmers	76.16*
2	Extension agents	61.23*
3	CBO members	99.53*
4	People's representatives	85.09*

**Sig.at 1% level of significance*

The awareness on the distribution dimension was comparatively higher among the CBO members followed by people's representatives and farmers. Here also the extension agents were found to be the least aware group. Majority of the stakeholders found public distribution system (PDS) as an effective strategy for poverty eradication and wished a stable supply of food grains at all times (See Fig.15). The explanation cited above seems to be appropriate in this context as well. Since CBO members almost entirely hail from low socio economic category as seen from their distribution based on income in Table 4.9, they are more dependent on the public distribution system, which is the key dimension of food security. The concerns expressed by them with regard to curtailing of PDS would have been more intense than that of extension agents, who hail from a fairly high socio economic class. The people's representatives also are likely to share the concerns on limiting the distribution of food items equitably among the members of a community as they directly deal with the day to day issues of common people.

The awareness on the nutrition dimension of food security also show the trends observed in the case of production dimension. Farmers were the most aware group about nutrition dimension, followed by CBO members and people's representatives. Again surprisingly, extension agents were observed to be the least aware about this. Though

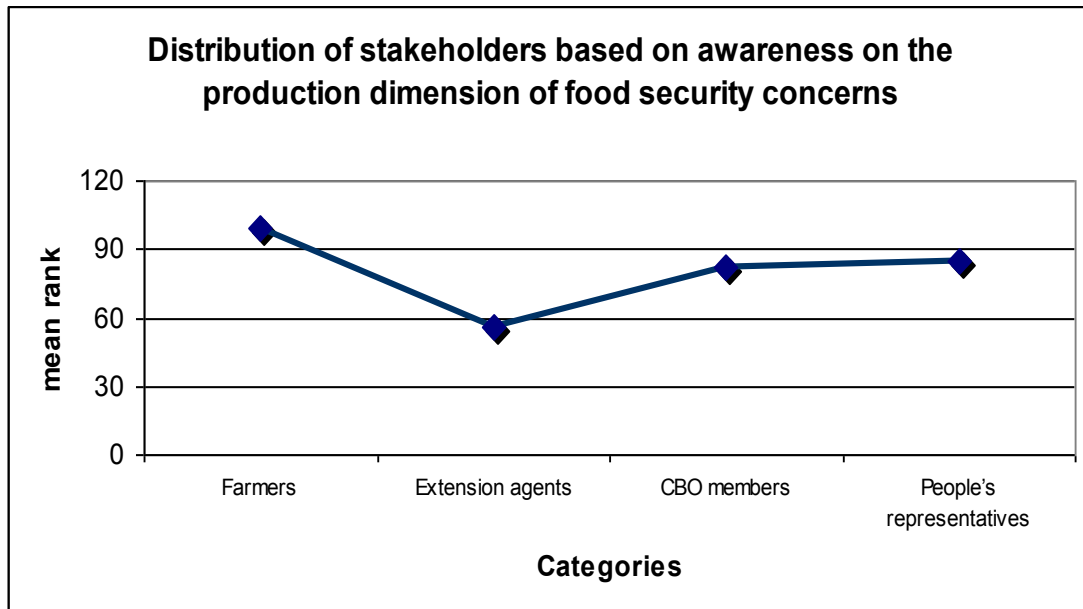


Fig 14. Distribution of stakeholders based on awareness on the production dimension of food security concerns

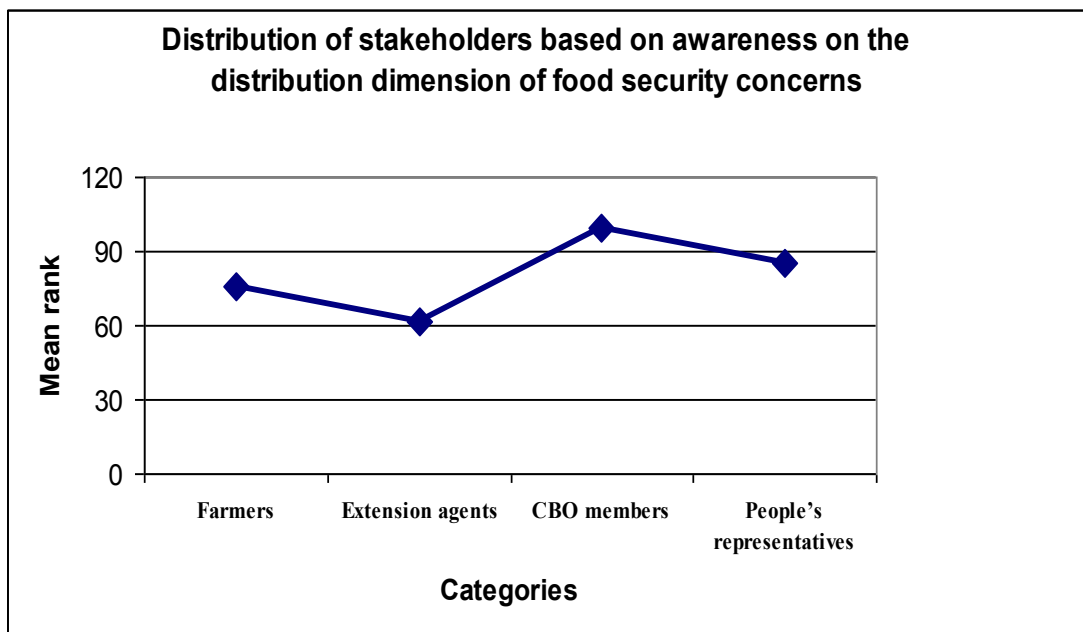


Fig. 15. Distribution of stakeholders based on awareness on the distribution dimension of food security concerns

most of the stakeholders were aware about the need of a balanced diet for the comprehensive growth of the individual (See Table 4.17).

Table 4. 17 Mean rank of Kruskal Wallis test on nutrition dimension of food security

(n=160)		
SI No:	Respondents	Mean rank
1	Farmers	94.60*
2	Extension agents	65.21*
3	CBO members	87.91*
4	People's representatives	74.28*

**Sig. .at 1% level of significance*

The trends in the level of awareness on nutrition dimension of food security concerns show the higher level of concern of farmers and CBO members in this regard (See Fig.16). This seems to be natural as the nutritional dimension of food security is related to the diversity of crops and other enterprises owned by farmers and the issue of ensuring balanced diet at home. Extension agents for this matter might not be so concerned about the nutritional security at the domestic level, which has reflected in the response of the extension agents. This however does not reflect that the extension agents are not ignorant of these dimensions categorically.

Similarly, as the socio economic dimension of food security mostly deals with the purchasing power of the individual, which is in turn a reflection of the socio economic status of the CBO members, this category was found to have the highest level of awareness on food security, with regard to socio-economic dimension (Table 4.18)

Table 4. 18 Mean rank of Kruskal Wallis test on the socio-economic dimension of food security (n=160)

SI No:	Respondents	Mean rank
1	Farmers	81.26*
2	Extension agents	66.83*
3	CBO members	93.83*
4	People's representatives	80.09*

**Sig. at 1% level of significance*

CBO members were followed by farmers and people's representatives. Extension agents had the lowest rank in this regard too. Since majority of the stakeholders found that food security is directly linked with the purchasing power or income they believed that those families which had regular wage workers and less members were more food secure (See Fig.17). The differences among stakeholders regarding the perception on household food security as a function of purchasing power and socio-economic conditions might have reflected in these results. The category with low socio-economic are more concerned about food security.

Awareness of stakeholders on all the dimensions of food security put together, showed significant differences with respect to each other. Here, the awareness level regarding food security concerns was found to be highest among CBO members, closely followed by farmers and people's representatives as shown in Table 4.19.

Table 4. 19 Mean rank of Kruskal Wallis test on overall awareness on food security concerns

(n=160)

SI No:	Respondents	Mean rank
1	Farmers	81.26*
2	Extension agents	66.83*
3	CBO members	93.83*
4	People's representatives	80.09*

**Sig. at 1% level of significance*

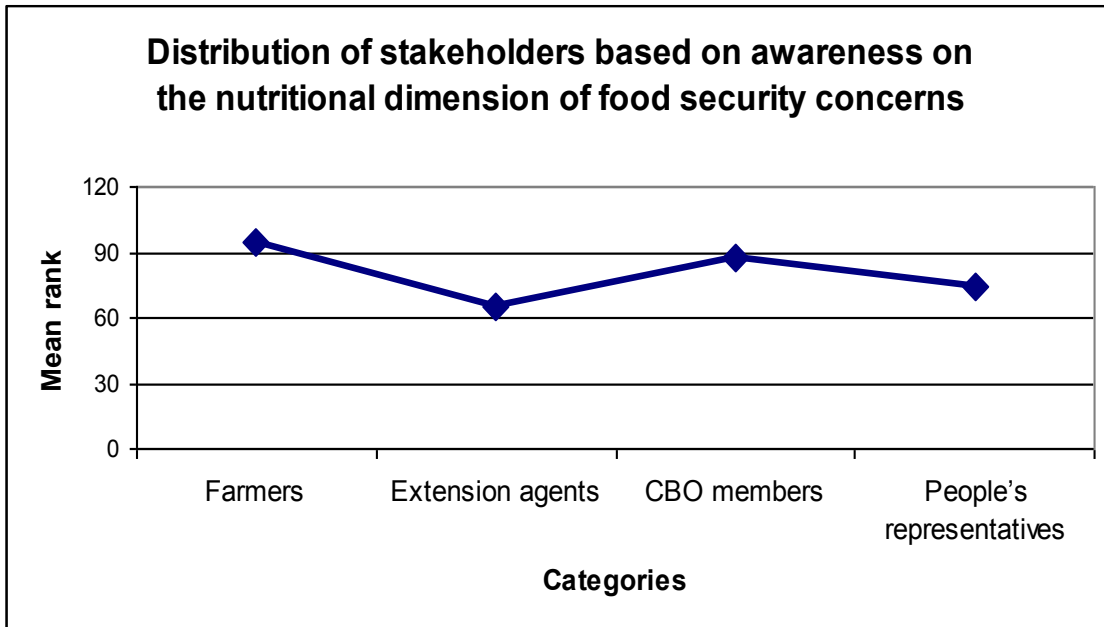


Fig 16. Distribution of stakeholders based on awareness on the nutritional dimension of food security concerns

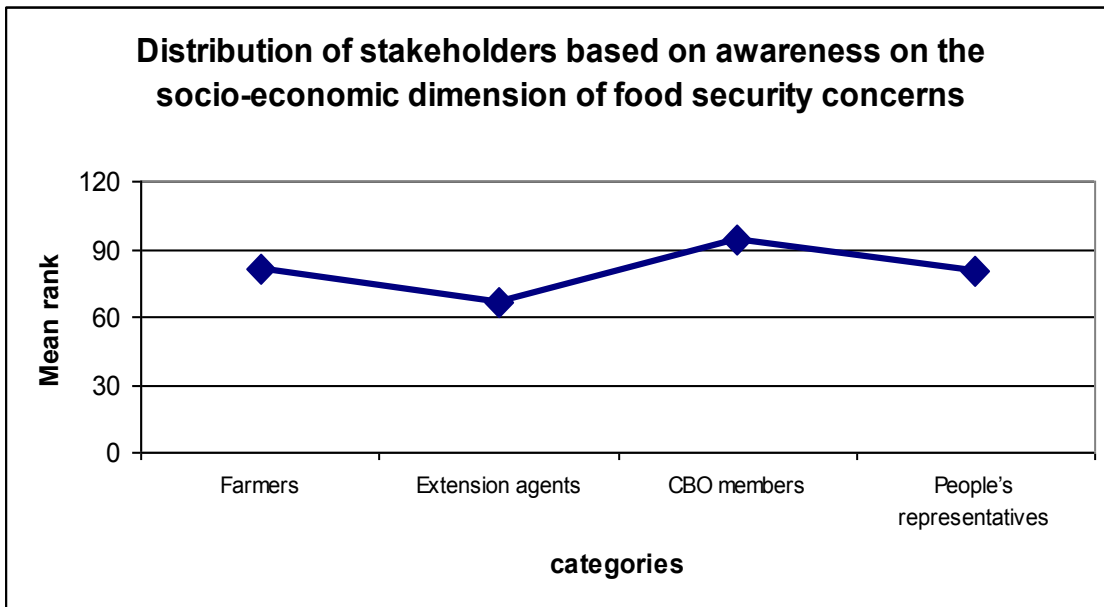


Fig 17. Distribution of stakeholders based on awareness on the socio-economic dimension of food security concerns

Strikingly, as a summation of the trends observed above, extension agents were found to be the least aware group (See Fig.18). Extension agents in spite of being the most educated as well as economically progressive group did not have as much awareness on the concerns of the community on food security as the remaining stakeholders. This skewed interpretation would have contributed to low scores and hence lesser levels of awareness on food security. Their socio economic status might not have matched with that of the other categories who have expressed more concern on being food insecure.

4.3.1 Relationship between awareness on food security and the psycho graphic characteristics of stakeholders

This section gives the relationship between the independent variables and the dependent variable selected for the study. For this simple correlation analysis was made.

4.3.1.1 Relationship of the psycho graphic variables of stakeholders with awareness on food security concerns

The relationship of the independent variables namely age, gender, education, income, farming experience, farm size, innovativeness, and information source utilization with the dependent variable namely ‘awareness towards food security’ was studied and the results are provided in Table 4.20.

As seen from the table, the correlation between farmer’s awareness on food security and age was 0.19 at 23.9 per cent probability level of significance whereas the correlation between awareness and gender was negative ($\rho = -0.21$) at 18.5 per cent level of significance. This denotes that older as well as male farmers were more aware about the food security concerns of the community than female farmers. There was no significant correlation between their awareness and education, farm size, income, innovativeness and information source utilization.

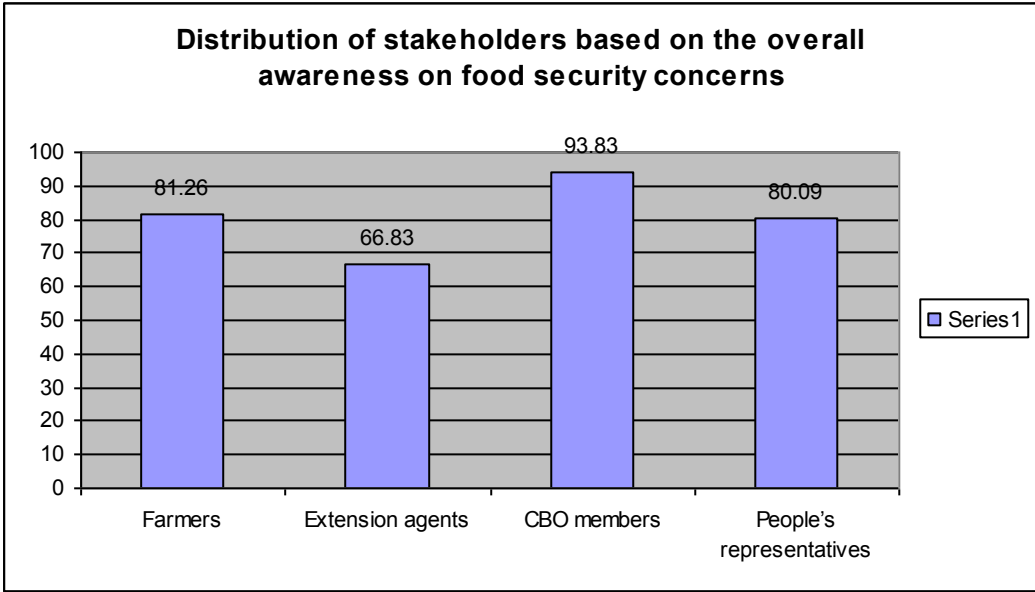


Fig 18. Distribution of stakeholders based on the overall awareness on food security concerns

Table 4.20. Correlation between awareness of stakeholders on food security concerns and psychographic variables

Independent Variables	Age	Gender	Education	Farming Experience	Farm size	Income	Innovativeness	Information seeking behaviour
Awareness								
Farmers	.190 (.239)	-.214 (.185)	.017 (.919)	-.098 (.549)	.075 (.645)	-.006 (.969)	.008 (.960)	.110 (.500)
Extension agents	-.268 (.094)	-.086 (.599)	-.138 (.396)	-.252 (.116)	-.121 (.458)	-.246 (.126)	-	-
CBO members	.389(*) (.013)	-.159 (.327)	-.285 (.074)	.206 (.202)	.288 (.072)	-.006 (.972)	-	-
People's representatives	.085 (.603)	-.075 (.645)	-.118 (.470)	-.039 (.813)	-.249 (.122)	.032 (.842)	-	-

* - Sig.at 5% level

There was no correlation between extension agent's awareness and attributes like gender, education and farm size. The correlation between age, experience and income with awareness were negative, $\rho = -0.27$, -0.25 , -0.25 with 9.4 per cent, 11.6 per cent and 12.6 per cent probability level of significance respectively, which points to the fact that extension agents who were older having more farming experience and income had less awareness on food security. This must be because of their orientation to the concept of food security of the community, which is only of recent origin. Sometimes they might have even overlooked the different dimensions other than production and productivity.

There was significant, positive correlation between CBO member's awareness and their age ($\rho = 0.389$) at 1.3 per cent level of significance which denotes with the increase in CBO member's age, awareness about food security also increases. There was positive correlation between awareness and farm size, ($\rho = 0.29$) and negative correlation between awareness and education ($\rho = -0.28$) at 7.4 per cent probability level of significance. No correlation was found between their awareness and sex, experience and income.

There was also negative correlation between the awareness of people's representatives and their farm size ($\rho = 0.25$) at 12.2 per cent probability level of significance. No correlation was found between their awareness and age, gender, education, experience and income.

4.2 Gap in food production in the selected Grama Panchayat

The participatory methodology for rapid assessment of food requirement in an area was developed as part of the study in Kodakara panchayat so that agricultural production strategy could be reoriented based on an estimate of food required by the people inhabited in the area on the basis of their present consumption level. Based on that, the daily requirement of major food items for different socio economic categories of household was found out as given in Table 4.21

Table 4.21 Daily requirements of food items for households of different socio economic classes

Item	Rich	Middle class	Poor
Food grain (Rice)in grams	1160	1090.8	1138
Vegetables in grams	470	406.8	456.8
Pulses in grams	169.2	129.88	155.6
Tubers in grams	300	338	360

As understood from the above table, a household of the rich class require an average amount of 1160 gms of food grains, 470 gms of vegetables, 169 gms of pulses and 300 gms of tubers for a day. This daily requirement is 1090 gms, 406 gms 130 gms and 338 gms for a middle class household ,while it is 1138 gms, 456 gms 155gms and 360 gms for a poor household. It was an interesting not note that the food requirements of the poor class households were more than that of middle class households, even though the number of members was more or less the same. It may be because the middle class group are better conscious about the calorie intake and they may be taking in a moderate level where as for the poor people, more food would be required and that they spend a major share of their income on primary needs such as food.

The estimate of the household requirement of food based on the consumption level at the time of study was multiplied with the total number of households in each category in the panchayat to find out the total quantity of agricultural products that is required to meet the current daily consumption of the people inhabiting in the area (See Table 4.22).

Table 4.22 Existing gap between production and requirement in Kodakara Panchayat

Item	Requirement (primary data) in tonnes	Production (secondary data) 2008-2009 in tonnes	Gap in tonnes
Food grain (Rice)	2500	1440	960
Vegetables	350	290	60
Pulses	50	35	15
Tubers	130	90	40

Comparing it with the status of production of these crops estimated by the gramapanchayat in a socio economic survey conducted in 2008-09, it was found that there was a considerable gap of 960 tonnes between the production and requirement of rice, 60 tonnes in case of vegetables, 15 tonnes in the case of pulses and 40 tonnes in the case of tubers.

This wide gap between the requirement based on normal consumption and production of food grains (rice), vegetables, pulses and tubers in Kodakara panchayat points to the fact that production wise, the place is *food insecure*, though people are getting adequate food through PDS and other private outlets. This necessitates the need for formulation and implementation of strategies that would lead to the increased production and productivity of the above items from the household level in order to achieve food security. Each household must be encouraged to intensify production in the available area which would provide at least some of the food items for the family.

4.5 Constraints in implementing food security programs as given by extension agents

In response to queries as to what are the factors that deter the efforts of the local bodies towards food security, the extension agents reported the following constraints they

faced while implementing food security programmes. They were ranked based on the frequency of reporting by the respondents, as given in Table 4.23.

The most important problems according to extension agents were labour shortage, lack of interest towards rice cultivation, inadequate irrigation facilities and commercialization of land, which included wet land filling and clay mining. Labour is not at all available and those who are available demand high wages. Together with high cost of other essential inputs, cost of production gets escalated considerably, decreasing the producer's income. This prompts the farmers to quit rice cultivation and take up cultivation of high income crops that give them better profit. Irrigation problems pose a great threat in rice crops and some CBOs have to hire labour for carrying water from distant places in order to water their vegetables.

Table 4.23 Constraints faced by extension agents in implementing food security programmes based on rank order

Constraints	Rank
Labour shortage	I
Lack of interest towards rice cultivation	II
Problems related to irrigation viz. schedule, amount of water etc	III
Commercialization of land-wet land filling and clay mining	IV
Reluctance of owners to lease out fallow land	V
Marketing problems	VI
Pest, diseases and natural disasters	VII
Difficulty in completing programs within time limit	VIII
Fragmentation of land	IX
Increased wages	X
High cost of inputs	XI
Non co-operation of farmers	XII
Political interferences	XIII

In spite of the recent legislations that restrict reclamation of paddy lands, filling of wet lands and clay mining are taking place at an alarming rate which lead to the disappearance of rice fields in many places of the district mainly in the name of development. Many farmers and CBO members find it very difficult to market their produce and the middle men are benefited in most cases. Pest and diseases and weeds are a problem in some areas. Non co-operation of farmers and political interferences were reported as constraints by the extension agents.

Though the constraints reported by the extension agents are not very unique in Kerala's context, the initiatives by CBO's can be facilitated much more efficiently than that of individual farmers as the former enables participatory approaches in all the stages of production, processing and marketing. Social issues such as hesitation of land owners to lease out land can be resolved through greater stakeholder consultation mediated by the local government. At the same time, production related issues can be addressed to a great extent by means of building consensus among various agencies under the aegis of people's representatives. Timely supply of inputs and irrigation water etc can be ensured by mutual agreements drawn by different CBOs. Likewise, marketing can also be improved by establishing vibrant local networks of producer organizations. The local government institutions have a greater role to play, as there are innumerable opportunities to formulate exclusive projects for food security at the household level. The study sheds light to the need for intensification of local efforts towards food security.

SUMMARY AND CONCLUSION

CHAPTER V

SUMMARY AND CONCLUSIONS

Food security is gaining importance day by day. According to FAO, the number of people without enough food to eat on a regular basis remains stubbornly high, at over 800 million, and is not falling significantly. Over 60% of the world's undernourished people live in Asia, and a quarter in Africa. In general the countries that succeeded in reducing hunger were characterized by more rapid economic growth and specifically more rapid growth in their agricultural sectors. As such, addressing agriculture and population growth is vital to achieving food security. Many organizations have come to this conclusion and advocate improvements in agriculture.

If left unaddressed, hunger sets in motion an array of outcomes that perpetuate malnutrition, reduce the ability of adults to work and to give birth to healthy children, and erode children's ability to learn and lead productive, healthy, and happy lives. This truncation of human development undermines a country's potential for economic development—for generations to come. There are strong, direct relationships between agricultural productivity, hunger, and poverty. Increased agricultural productivity produce more food, which translates into better diets and, under market conditions that offer a level playing field, into higher farm incomes. The entry of Community based initiatives into agricultural production cultivating food grains, vegetables, tubers etc plants appears to be an efficient alternative method of subsistence which may play a role in poverty alleviation ensuring food security. Keeping this in mind the present study entitled “**Accomplishing food security through community based initiatives in Thrissur: A participatory analysis**” has been formulated with the following objectives.

- To appraise the nature and relative role of community organizations involved in ensuring food security
- To explore the extent of awareness of various stakeholders in agricultural development process and factors contributing to it

- To identify the gaps in food grain production in a selected *Grama panchayat*
- To assess the possible interventions to ensure food security through community based initiatives.

The present study was conducted in Thrissur district of Kerala. A sample of 160 respondents, 40 each from farmers, extension agents, CBO members and people's representatives were selected from 20 randomly selected *Grama panchayats*.

The independent variables taken for the study included age, gender, education, income, farming experience, farm size, innovativeness and information seeking behaviour of farmers, where as awareness about food security was taken as the dependent variable.

5.1 Salient Findings

5.1.1 Profile of Community Based Organizations (CBOs) under study

- 80 per cent of CBOs were commenced after the year 2000. The sponsoring agency of Kudumbasree units were the respective *Grama Panchayats* and that of *Padasekara samithis* were the respective Krishi Bhavan.
- While 2.45 per cent of the CBOs had more than 20 members, the rest had less than 20 members.
- It was seen that middle aged people are more active in these CBOs.
- All the CBOs under study had female participation. Among them, 16 were Kudumbasree units which had 100 per cent female participation. The female membership in the remaining four *Padasekara samitis* ranged from 5-30 per cent.
- Sixty five per cent of the CBOs had SC-ST participation
- While 45 per cent of the CBOs were having marginal holdings (Below 2.5 acre), 100 per cent were having small holdings (2.5 – 5 acre), 20 per cent CBOs had

- semi medium holdings (5-10 acre), 5 per cent had medium holdings (10-25 acre) and 20 per cent had large holdings (more than 25 acre).
- Almost 45 per cent of CBOs were involved in rice production alone for food security, 25 per cent were cultivating vegetables alone, 15 per cent were growing rice and vegetables, 10 per cent CBOs were growing rice and tubers, whereas 5 per cent were growing all the three, viz. rice, vegetables and tubers under food security programmes.
- Thirty per cent of the CBOs had taken up organic cultivation. Majority of them were marginal holdings (less than 1 ha) and 33.33 per cent had small holdings (1-2 ha) under organic cultivation.
- About 55 per cent of the CBOs had enterprises other than farming which included bakery, tailoring, soap powder making, nutritional food production, book binding, livestock rearing, poultry, fish culture, rabbit rearing etc. Nine groups were solely depending on farming.
- While 65 per cent of the CBOs opined that land was available for cultivation in their localities, but seven CBOs reported about the unavailability of land for cultivation in their localities due to different reasons including commercialization of agricultural lands.
- Ten per cent of the CBOs didn't hire labor for the cultivation; they did all the operations by themselves whereas rest 90 per cent of CBOs hired labor for farming activities at one or other stages of the crop.
- Only 15 per cent of the CBOs under study insured their crops under the State Crop Insurance Scheme of the Department of Agriculture and the rest of the CBO members were unaware of it.
- While 40 per cent of the CBOs were selling their product (rice) to The Kerala State Civil Supplies Corporation (SUPPLYCO), 25 per cent were selling in the local market, 20 per cent were giving to the private companies, and 15 per cent were using the products for self consumption.
- While 55 per cent of the CBOs had a Benefit Cost Ratio less than 1.50 for farming and 45 per cent had a better BC Ratio of more than 1.3 ranging to 2.00.

- Majority (85 per cent) had very good relation with local bodies regarding their overall assistance and five per cent rated it as poor.
- While 65 per cent had very good relation with Krishi Bhavan with respect to technical guidance and 30 per cent maintained good relation while five per cent rated the relation as poor.
- Regarding monitoring, 60 per cent rated it as very good and 35 per cent as good. Five per cent rated it as poor.
- Based on the input supply, 60 per cent found the relation as very good and 10 per cent opined it as poor.
- A vast majority (95 per cent) of the CBOs have technical knowledge about farming, all CBOs had accounting skills, 45 per cent CBOs had documentation skills, 25 per cent of CBOs had project formulation skills, and 90 per cent had financial management skills.
- Twenty per cent CBOs reported unavailability of land for cultivation as a difficulty. Ten per cent reported the unavailability of quality inputs. Forty five per cent CBOs found difficulty in production process, mainly due to the pest and disease problems, 15 per cent had difficulty with processing and value addition, 50 per cent of the CBOs had to face problems in procurement and marketing of their products, 15 per cent CBOs had the problems with the management mainly due to the non co-operation of the members, 25 per cent CBOs reported laborer shortage and 30 per cent had problems related to irrigation.
- Half of CBOs were interested in the area expansion of present crops. About 35 per cent of the groups wanted to focus on product diversification. Half of them wanted to increase the sales outlets in urban and rural areas. Three fourth of the initiatives were not interested in liaising with farmers or farmer organizations. While 45 per cent of groups aspired to start door to door services, half of them were thinking about infrastructure development. About 60 per cent of the organizations were keen in taking up organic cultivation, at least in future and 65 per cent of them were not interested in forming linkage with other groups and wanted to stay independent. Half of the CBOs wanted to take up value addition

along with production and one fourth of them thought of exporting their products in future.

5.1.2 Profile of stakeholders as a whole

- It was found that 51.25 per cent of the respondents were middle aged followed by 43.13 per cent as old aged and 5.62 per cent as young aged.
- Half of the respondents (50 per cent) were male and the rest were female.
- Half of the respondents were having high school education and 40.63 per cent were with collegiate education. There were no illiterate people among the stakeholders.
- About 66.88 per cent of respondents belonged to the low income group, with 7.5 per cent belonging to middle income group and rest 25.62 per cent belonged to high income group.
- More than half (52.5 per cent) of the respondents were marginal farmers with a farm size of less than 2.5 acre. There were no medium or large farmers among the respondents. 38.75 per cent of the respondents didn't possess any farm.
- Sixty per cent of the total respondents had more than ten years of experience in farming. 12.5 per cent of extension agents, 32.5 per cent of the people's representatives and 2.5 per cent of the CBO members also didn't have any farming experience.
- Eighty per cent of the farmers were doing farming based on their experience as well as information from Krishi Bhavan and KAU, whereas the rest 20 per cent utilized the information from other farmers only for cultivation.
- About 77.5 per cent of the farmers sought information from Krishi Bhavan or KAU on a regular basis.
- About 92.5 per cent of farmers found the information from Krishi Bhavan or KAU as adequate and 7.5 per cent found it as less adequate.
- It was found that 92.5 per cent of the farmers were innovative and rest were less innovative.

5.1.3 Awareness level of stakeholders on food security

- It was found that farmers were the most aware group regarding the production dimension of food security followed by people's representatives and CBO members. The extension agents had the least awareness about production dimension of food security.
- The awareness about the distribution dimension was maximum for the CBO members followed by people's representative farmers and extension agents were the least aware group.
- Farmers were the most aware group about nutrition dimension followed by CBO members and people's representatives. Again extension agents were the least aware category.
- CBO members were having better awareness about socio economic dimension of food security closely followed by people's representatives and farmers. Extension agents had the least awareness.
- Overall awareness regarding food security was found out and CBO members were the most aware group, closely followed by farmers and people's representatives and extension agents were the least aware group.

5.1.4 Relationship between the independent and dependent variables

- The results denote that older farmers had better awareness as well as male farmers were more aware about food security than female farmers. There was no correlation between their awareness and education, farm size, income, innovativeness and information source utilization.
- There was no correlation between extension agent's awareness and sex, education and farm size. There was negative correlation between age, experience and income with their awareness which points to the fact that extension agents who were older having more farming experience and income had less awareness about food security.

- There was significant, positive correlation between CBO member's awareness and their age. Positive correlation between awareness and farm size and negative correlation between awareness and education was also found. No correlation was found between their awareness and sex, experience and income.
- There was a negative correlation between awareness of people's representatives and their farm size. No correlation was found between their awareness and age, sex, education, experience and income
- A methodology for quick assessment of food requirement of a locality was developed through participatory method of wealth ranking in Kuzhikany North watershed of Kodakara Panchayath. The daily requirement of food grain, vegetables, pulses and tubers for individuals of each class was found out through memory recall method and the gap in the food grain production and food grain requirement based on the consumption pattern was found. A considerable gap of was observed between requirement and production.

5.1.5 Constraints faced by extension agents in implementing food security programs

- Labour shortage, lack of interest towards rice cultivation, problems related to irrigation and commercialization of land, which included wet land filling and clay mining were the most important problems reported by the extensionists.
- Difficulties in marketing, occurrence of pest, diseases and weeds, non co-operation of farmers and political interferences were some of the other prominent constraints faced by the them.

5.2 Recommendations

- Grassroots level plan formulation in agriculture to be reoriented on the basis of food requirement of the locality
- Reiterates the need for focused and customised programmes for building awareness on food security for all the stake holders
- Intensification of household production of vegetables and tubers

- Exclusive programmes for food security, involving CBOs, covering more areas with focus on food grains, vegetables and tubers to be launched
- Standardise the procedure for leasing out land in a participatory mode
- Mediating the process of leasing out private paddy lands for food production to be made mandatory function of LSGIs
- LSGIs to facilitate gender sensitive farm mechanization for CBOs to operate effectively in food security programmes
- Indigenous processing and marketing methods and channels to be explored
- Food security programmes of the LSGIs to focus more on training on scientific crop production practices, CBO management and marketing
- *Padasekhara samithis* to be facilitated for local level infrastructure for maintaining small machinery, storing and processing harvested produces etc
- Macro level networking for block level and district level consolidation of produces and profitable pricing to be established

5.3 Future line of research

- As the study has confined only to Thrissur District, generalisation of the inferences warrant replication of similar studies elsewhere
- Cases of successful CBOs should be studied in detail to find out the dynamics of their operations and to delineate factors contributing to success
- The efficacy of the new participatory methodology suggested for quick appraisal of food requirement in a locality has to be statistically tested

REFERENCES

References

Agricultural Census .1990-91. Government of India [On–line]. Available <http://agricoop.nic.in/budget/PBudget01-02/Census.pdf> [28 May 2010]

Agricultural Census. 2005-2006. Government of India [On –line]. Available: <http://agcensus.nic.in/> [1st June 2010].

Ajani, O.I.Y. 2009. *Gender dimensions of agriculture, poverty, nutrition, and food security in Nigeria*. Nigeria Strategy Support Programme Brief 5. International Food Policy Research Institute (IFPRI), Nigeria.3p.

Akwiwu ,C. D., Nwajiuba, C. U.and Nnadi, F. N. 2005. Harnessing the potentials of youth for rural household food security in Nigeria. *Animal Production Research Advances*. 1(2):104-110.

Alderman, H .1993. Issues of Food Security in Rural Pakistan. In: Haider, A. S; Hussain, Z; McConnen, R. and Malik, S. J. (eds.), *Agriculture Strategies in the 1990s: Issues and Policies*. Pakistan Association of Agricultural Social Scientists, Islamabad.

Alderman, H., and M. Garcia .1993. *Poverty, Household Food Security,Nutrition in Pakistan*. Research Report No. 96, International Food Policy Research Institute,Washington, D.C.

Anandaraja, N., Chandrakandan, K. and Ramasubrahmaniam, M. 2008. *Extension of Technologies: From Labs to Farms*. New India Publishing Agency, New Delhi.481p.

Ardakani, M. A. 2007. Community-based initiatives and their relation to poverty reduction and health development: experiences in the Eastern Mediterranean Region. *Eastern Mediterranean Health Journal*. 13(6):1242-1248.

Arunachalam, R. 2003. Awareness about environmental issues and management of natural resources by farmers for sustainable agriculture. Unpub. Ph.D.(Ag). thesis, AC & RI, TNAU, Madurai.

Audinet, J. P. and Haralambous, S. 2005. *Achieving the Millennium Development Goals: Rural Investment and Enabling Policy*. Panel Discussion Paper. International Fund for Agricultural Development (IFAD). 58p.

Azad, N. 1996. *Household food security, poverty and women: Experiences from IFAD's projects in South Asia*. International Fund for Agricultural Development(IFAD) Rome.

Baldwin, J. R. and Hunt, S. K. 2006. *Information-Seeking Behavior in Intercultural and Intergroup Communication*. Human Communication Research. 28 (2):272 - 286

[Bamji, M. S.](#) and [Murthy, P. V.](#) 2006. Promotion of the feeding minds and fighting hunger initiative in selected rural schools in Andhra Pradesh, India. *Food Nutr Bull.* 27(2) : 105-113.

Belal, A. M and Al-Hinai, H.G. 2009. Community-Based Initiatives for prevention of non-communicable diseases. *Sudanese Journal of Public Health.* 4(1) : 225-228.

Booth, S. and Smith, A. 2001. Food security and poverty in Australia - challenges for dietitians. *Australian Journal of Nutrition and Dietetics.* 58(3):150-156.

Briggs, X. D. and Mueller, E. J. 1997. *From Neighbourhood to Community: Evidence on the Social Effects of Community Development*. Community Development Research Centre, New School for Social Research, New York.

Brink, S. 2001. *Lack of Food Security: Focussed Literature Review and Research Framework*. Human Resources Development Canada Publications Centre, Canada. 79p.

Burchi, F. 2006. Education, Human Development, and Food Security in Rural Areas: Assessing Causalities. In: *Abstracts, International Conference of the Human Development and Capability Approach*; 29 August - 1 September, 2006, Groningen, 28p.

Canadian Community Health Survey. 2004. *Income-Related Household Food Security in Canada*. Health Canada. Canadian Community Health Survey, Cycle 2.2, Nutrition (2004) Ministry of health, Canada. 108p.

CFSC [Community Food Security Coalition]. 2009. Community Food Security Programs: What Do They Look Like?. Community Food Security Coalition Paper. Available: http://www.foodsecurity.org/CFS_projects.pdf [Accessed on 16th May 2010]

Chaturvedi, P. 2003. *Food security in South Asia (chapter)*. *Food security in South Asia (book)*. Concept Publishing Company, India. 274 pp.

Chechetto-Salles, M and Geyer, Y. 2006. *Community-Based Organisation Management*. Institute for Democracy in South Africa (IDASA), South Africa. 24p.

Christensen, G. 1991. *Towards Food Security in the Horn of Africa: The Private Sector in Domestic Food Markets*. Working paper No. 4, Food Studies Group, International Development Centre, University of Oxford.

Cook, B. 2008. *Food Security Issues in a Public Health Context*. National Collaborating Centre for Determinants of Health (NCCDH), Canada. 23p.

Cook, J. T and Frank, D.A. 2008. Food security, poverty and human development in the United States. *Ann N Y Acad Sci*. 1136:193-209.

Cook, J. T., Frank, D. A., Levenson, S. M, Neault, N. B., Heeren, T. C., Black, M. M., Berkowitz. C., Casey, P. H., Meyers, A. F., Cutts, D. B., and Chilton, M. 2006. *Child Food Insecurity Increases Risks Posed by Household Food Insecurity to Young Children's Health*. *J. Nutr.* 136:1073-1076.

Croome, D., Nyanguru, A., and Molisan, M. 2007. *The impact of the old age pension on hunger vulnerability*. Institute of Southern African Studies .National University of Lesotho, 50p.

Diouf, J. 2002. World food summit: five years later. *News and Views*. International Food Policy Research Institute, Rome.

Economic Research Service .2009. United States Department of Agriculture. [On-line]. Available : <http://www.ers.usda.gov/Publications/GFA20/GFA20fm.pdf> [12 July 2010]

FAO [Food and Agriculture Organization]. 1996. *Report of the World Food Summit, 1996*. FAO, Rome.

FAO [Food and Agriculture Organization]. 2000. [On-line]. Available: http://www.foodsec.org/DL/course/shortcourseFA/en/pdf/P-01_RG_Concept.pdf [2 April 2010].

FAO [Food and Agriculture Organization]. 2003. *The state of food insecurity in the world, 2003*. FAO, Rome. 40p.

FAO [Food and Agriculture Organization]. 2005. *The State of Food Insecurity in the World 2005*. FAO, Rome

FAO [Food and Agriculture Organization]. 2008. *The State of Food and Agriculture 2008*. FAO, Rome. 138p.

FAO [Food Security Organization]. 2010. [On line]. Available: <http://www.fao.org/gender/gender-home/gender-programme/gender-food/en/> [3 May 2010]

FFSSA [Forum for Food Security in Southern Africa] . 2004. *Achieving Food Security in Southern Africa: Policy Issues and Options*. FFSSA Synthesis Paper, Forum for Food Security in Southern Africa.109p.

*Finck A. 1970. Möglichkeiten de Nahrungs produktion in Landon. *Ernahrungs Umschau*. 2: 47-52.

Fisher, K. E. 2004. Information behaviour of Migrant Hispanic Farm Workers and Their Families in the Pacific Northwest. *Information Research*. [on line]. 10(1) Paper 199. Available: <http://InformationR.net/ir/10-1/paper199.html> [3 May 2010]

Fustera, M., Mutonyib, M., Houserb, R. F. and Coates, J. 2008. Factors Associated with Food Security Optimism in Bangladesh. *Journal of Hunger & Environmental Nutrition*. 3(1): 84 – 99.

Glewwe, P. 1997. *How does Schooling of Mothers improve Child Health? Evidence from Morocco*. *Living Standards Measurement Study Working Paper 128*. World Bank Publications, Morocco. 44p.

Gorman, M. 2004. *Age and Security: How social pensions can deliver effective aid to poor older people and their families*. Help Age International, London. 8p.

Government of India. 2008. *Economic Outlook 2008-09*. Economic Advisory Council to the Prime Minister, New Delhi.

GOI [Government of India]. 2008-2009. [on line]. Available : <http://indiabudget.nic.in/es2008-09/chapt2009/chap71.pdf> [20 may 2010]

Government of India. 2010a. *India 2010*. Ministry of Information and broadcasting Government of India, New Delhi. 1286p.

GOI [Government of India]. 2010b. [Guidelines for Community Based Organizations \(CBOs\)](#). Small Grants Programme, GOI. [On line]. Available: www.sgpindia.org/.../Guidelines%20for%20Community%20Based%20Organizations.doc. [27 May 2010].

Government of Kerala. 2007-2008. [on line]. Available :<http://www.ecostat.kerala.gov.in/> [24 May 2010]

Government of Kerala. 2008. *Kerala Economic Review 2008 and Kerala Development Model*. State Planning Board, Thiruvananthapuram. 542p.

Government of Kerala. 2010. *Kudumbasree: State Poverty Eradication Mission*. Local Self Government Department, Kerala. [Online]. <http://www.kudumbashree.org> [15 May 2010]

Grandin, B E. 1988. *Wealth Ranking in Smallholder Communities: a Field Manual*. IT Publications, London.50p.

Gross, R. 2002. *Food and nutrition security in poverty alleviation: Concepts, strategies, and experiences at the German agency for technical cooperation*. [Asia Pacific Journal of Clinical Nutrition](#). *Volume 11 (s1)*: S341 - S347.

Hali, R. 2007,Oct. Rice for All : All for Rice.*Kerala Calling*. pp. 6-8.

Hamilton, W. L., Cook, J. T., Thompson, W. W., Buron, L. F., Frongillo, E. A., Olson C. M. and Wehler, C. A. 1997. *Household Food Security in the United States in 1995: Executive Summary*. USDA Food and Consumer Service, Alexandria, VA. 11p.

Hamm, M and Bellows, A. 2002. US-based community food security: influences, practice, debate. *J.Stud.Fd Soc.* 6(1): 31- 44.

Handy,C.B.,1985.*Understanding Organisations*.Penguin Business,Harmondsworth. 496p.

Henderson, E. and Van En, R. 2007. *Sharing the Harvest*. Chelsea Green Pub Co, US. 303p.

Herbinger, W. 2010. May 14. Need for raising awareness about food security stressed. *Dawn.com*. [on line]. Available: <http://www.dawn.com/wps/wcm/connect/dawn-content-library/dawn/the-newspaper/local/need-for-raising-awareness-about-food-security-stressed-450> [25 May 2010].

Hopkins, R. F. 1986. Food security policy options and the evolution of state responsibility. In: Tullis, F. L. and Hollist, W. L.(eds.), *Food, the state and International Political Economy:Dilemmas of developing countries*.University of Nebraska Press, London. 351p.

Hubbard, M. 1993. *Rural food security systems: assessing local food security in rural areas*. Papers in the Administration of Development Administration Group, University of Birmingham. 52, pp.30.

Hunter, J. 2006. *Community gardening in SA: project report*. Community and neighbourhood houses and centres association, Adelaide, SA.[on line].Available :http://www.communitygarden.org.au/publication/sa/cg_sa_report_22nov06.pdf [6th May 2010].

IFPRI [International Food Policy Research Institute]. 2007-2008. Gender, Food Security and AIDS in Internally Displaced People's Camps in Uganda. [on line]. Available : <http://programs.ifpri.org/renewal/pdf/RFbrief17.pdf> [24 June 2010]

Jayasree, R. 2004. Impact of TANWA: training in farm women. Unpub. MSc.(Ag). thesis, AC & RI, TNAU, Madurai.

Jerome, A. 2004. *A survey of macro economic models for policy analysis and forecasting in South Africa*. National Institute for Economic Policy. Johannesburg, South Africa. 33p.

Jha, M. K. 2009. Food security in perspective: the significance of social action. *Community Development Journal*. 44(3): 351-366.

Jiby, K. 2010. Better prospects for Kudumbasree. *The Hindu ePaper* [online]. Available: <http://www.thehindu.com/2010/04/24/stories/2010042459750300.htm> [10 June 2010]

Kanakasaba, G. S. 2002. Use of eco friendly technologies among the cotton growers –an analysis. Unpub. M.Sc.(Ag). thesis, AC & RI, TNAU, Madurai.

Kerala State Planning Board. 2008. Economic Review- 2007-08. State Planning Board, Thiruvananthapuram.

Kerlinger, F. N. 1979. *Behavioural Research: A Conceptual Approach*. Holt, Rinehart, and Winston, New York. 336p.

Kirkpatrick, S. I. and [Tarasuk, V.](#) 2009. Food insecurity and participation in community food programs among low-income Toronto families. *Canadian Journal of Public Health*. 100(2): 135-139.

Klein, B.W. 1996. Food security and hunger measures: promising future for state and local household surveys. *Family Econ Nutr Rev*. 9:31-37.

Koffio-Tessio, E. M.; Tossou, Y. H. and. Homevor, K. A 2005. *Impact of Education on Agricultural Productivity in Sub-Saharan Africa*. In: Abstracts, Global Conference on Education Research in Developing Countries, 31 March-2 April,2005, Prague, Czech Republic

Lawal, B. O. and Jibowo, A. A. 2005. Utilization of Improved Practices for Household Food Security and Nutrition by Rural Women in Oyo State of Nigeria. *Journal of Agricultural and Food Information*, 1540-4722. 6(4): 63 – 76.

Lionberger, H. F.1960. *Adoption of New Ideas and Practices*. The Iowa State University Press, Iowa.164p.

Lomborg, B. 2004. *Global Crises, Global Solutions*. Cambridge University Press,United Kingdom, 710p.

Malik, N. and Malik, S. J. 1993. Reporting on the World Nutrition Situation: The Case of Pakistan. In: *Second Report of World Nutrition Situation. Vol. II*. UN/ACC/SCN, Geneva, 122p.

Martin, K. S. 2001. *Food Security and Community: Putting the pieces together*. Hartford Food System, 28p.

Martin, K. S., Rogers, B. L., Cook, J. T. and Joseph, H.M. 2004. Social capital is associated with decreased risk of hunger. *Soc Sci Med*. 58(12): 2645-2654.

Matheson, D. M., Varady, J., Varady, A. and Killen, J. D. 2002. Household food security and nutritional status of Hispanic children in the fifth grade. *Am. J. Clin. Nutr.* 76: 210–217.

Maxwell, S. 1996. Food Security: A post modern perspective. *Food Policy*.21(2):155-170.

Maxwell D. 1999. Urban food security in sub-saharan Africa. In: Koc, M., MacRae, R., Mougeot, L. J. A. and Welsh, J. (eds.), *For hunger-proof cities: sustainable urban food systems* . International Development Research Centre (IDRC),Ottawa. pp. 26-29.

[Mayberry, R. M.](#), [Daniels, P.](#), [Akintobi, T. H.](#), [Yancey, E. M.](#), [Berry, J.](#)and [Clark, N.](#) 2008. Community-based organizations' capacities to plan, implement, and evaluate success. *Journal of Community Health*. 33(5):285-292.

Mehra, R.and Rojas, M. H. 2009. Women, Food Security and Agriculture in a Global Marketplace. International Center for Research on Women, USA. 20p.

[Mitra, S.](#) and [Gupta, G.](#) 2009. The logic of community participation: experimental evidence from West Bengal. *Economic and Political Weekly*. 44(20):51-57.

*Mohamud, K.B. 2001.The basic development needs concept “community solutions to community problems”. *Healthy cities, healthy villages*, 3 .Ministry of Health and Medical Education, Islamic Republic of Iran.

Mokros, H. B. and Aakhus, M.2006. From Information-Seeking Behaviour to Meaning Engagement Practice. Implications for Communication Theory and Research. [Human Communication Research](#). 28(2) : 298 – 312.

Mooney, P. H. and [Hunt, S. A.](#) 2009. Food security: the elaboration of contested claims to a consensus frame. *Rural Sociology*. 74: 4, 469-497

Morris, S., Cogill, B., and Uauy, R. 2008. Effective international action against under nutrition: why has it proven so difficult and what can be done to accelerate progress?. *The Lancet* .371(9608) :608–621.

Mougeot, J. A. 2000. 'Urban agriculture: Definition, presence, potentials and risks. In: Bakker, N., Dubbeling, M., Gundell, S., Sabel-Koschella, U. and de Zeeuw, H. (eds.), *Growing Cities, Growing Food Urban Agriculture on the Policy Agenda: A reader on Urban Agriculture*, Deutsche Stiftung für Internationale Entwicklung (DSE), Germany.

Mugunieri, G. L. and [Omiti, J. M.](#) 2007. Decentralization, community-based organizations and access to agricultural extension services in Eastern Kenya. In: [Barrett, C. B.](#), [Mude, A. G.](#), and [Omiti, J. M.](#)(eds.), *Decentralization and the social economics of development: lessons from Kenya*. CABI, UK .pp.64-83.

Mukherjee, N. 1997. *Participatory appraisal of natural resources*. Concept Publishing Company, New Delhi. 186p.

Mukudi, E 2003. Education and nutrition linkages in Africa: Evidence from National level Analysis. *International Journal of Educational Development* 23:245-256.

Munyua, H. and Stilwell, C. 2009. A mixed qualitative-quantitative- participatory methodology: A study of the agricultural knowledge and information system (AKIS) of small-scale farmers in Kirinyaga district, Kenya. *Library Management*, 31 (1/2) : 5 – 18.

Muralt, J. V. 1993. Self-help organizations, rural infrastructure and food security - an ILO approach. Regional food security and rural infrastructure (Volume II): *International Symposium Giessen Rauischholzhausen*. 3-6, May ,1993. International Labour Office, Geneva, Switzerland.

Muro, P. D. and Burchi, F. 2007. *Education for Rural People and Food Security: Across country analysis*. FAO, Rome. 68p.

Murwira, K. 1994. Community-led agricultural initiatives. *Appropriate Technology*. 21(3): 25-27.

Ngutu, M. N. and Recke, H. 2006. *Exploring Farmers' Innovativeness: Experiences with the Adaptation of Water-Saving Technologies for Small-Scale Vegetable Production around Marsabit Mountain in Northern Kenya*. *Experimental Agriculture*.42 (4): 459-474.

Njogu , W. 2008. Household Food Security among Urban Farmers in Nairobi, Kenya. In: Redwood, M.(ed.), *International development research centre*,Canada.pp.21-33.

Nord, M. 2002. *A 30-Day Food Security Scale for Current Population Survey Food Security Supplement Data*. E-FAN No. 02015. Economic Research Service, United States Department of Agriculture, Alexandria, VA. [on line]. Available: www.ers.usda.gov/publications/efan02015 [18 May 2010].

Nwanze, K. F., Mohapatra, S., Kormawa, P., Shellemiah, K., and Bruce-Oliver, S. 2006. Rice Development in Sub-Sahara African. *J Sci Food Agric*.86:675-677.

Nyanguru, A.C. 2003. Income support and the promotion of the rights of the elderly in Lesotho. *The African Anthropologist*. 10(2):154-179.

Nyanguru, A. C. 2005a. The Rights of Older People in Lesotho *Journal of Social Development in Africa*. 20(2): 65-86.

Nyanguru, A. C. 2005b. Elderly women as caregivers to relatives affected by HIV/AIDS in Urban Lesotho. In: Kalabamu, F. T., Mapetla, M. M. and Schlyter, A. (eds.), *Gender, Generations and Urban Living Conditions in Southern Africa*. Institute of Southern African Studies (ISAS), National University of Lesotho, Roma, pp. 219-235.

Nyangweso, P. M., Odihiambo, M. O., Odunga, P., Korir, M. K., Kipsat, M. J., and Sareme, A. K. 2007. Household food security in Vihiga district,Kenya:Determinants of dietary diversity. In: *African Crop Science Proceedings, 2007*, Egypt. African Crop Science Society, pp.1383-1389

Obamiro E.O., Doppler W., and Kormawa P.M. 2003 .*Pillars of Food Security in Rural Areas in Nigeria*. Food Africa. Internet forum. 31st March – 11 April 2003. Internet paper accepted for Food Security Theme. [On line]. Available: <http://foodafrica.nri.org/security/internetpapers/ObamiroEunice.pdf> [30 March 2010].

OECD [Organisation for Economic Cooperation and Development]. 2009. *Innovation to Address Food Security*. Business and Industry Advisory Committee to the OECD, France. 6p.

Ojo, S. O. 2009. Backyard farming: a panacea for food security in Nigeria. *J hum ecol*, 28(2): 127-133.

Olumakaiye, M. F. and Ajayi, A.O.2006. Women’s Empowerment for Household Food Security: The Place of Education. *J. Hum. Ecol.* 19(1): 51-55.

Oluyole K. A., Oni, O. A., Omonona, B. T. and Adenegan, K. O.2009. Food security among cocoa farming households of Ondo State, Nigeria. *ARPJ Journal of Agricultural and Biological Science*. 4(5):7-13.

Organisation for Economic Co-operation and Development (OECD).2009.Paper of Business and Industry Advisory Committee to the OECD,France.pp-1-6.

Osmani, S. R. 1998. *Food Security, Poverty and Women: Lessons from Rural Asia, Part I*. International Fund for Agricultural Development (IFAD) Rome. [On line].Available: http://www.ifad.org/gender/thematic/rural/rural_2.htm [4 May 2010]

Oteng J. W. 1997. *Rice production and development in Ghana*. International Rice Commission Newsletter, FAO Rome. 46:38-43.

Oya, C., 2009. La crisis alimentaria mundial y sus implicaciones para África (The world food crisis and its implications for Africa). In: *Claves de la Economía Mundial*. Instituto de Comercio Exterior (ICEX), Madrid, pp.447-454.

Paudel, P., Shrestha, A. K and Matsuoka, A. 2009. Socio-economic Factors Influencing Adoption of Fertilizer for Maize Production in Nepal: A Case Study of Chitwan District. [83rd Annual Conference; March 30-April 1, 2009, Dublin, Ireland. Agricultural Economics Society](#). No 51066.

Pettigrew, K., Fidel, R. and Bruce, H. 2001. Conceptual framework in information behaviour. *Annual Review of Information Science and Technology*.35: 43-78.

Piaseu, N. and Mitchell, P. 2004. Household Food Insecurity among Urban Poor in Thailand. *Journal of Nursing Scholarship*. 36(2): 115 – 121.

Piessea, J., Thirtle, C., 2009. Three bubbles and a panic: An explanatory review of recent food commodity price events. *Food Policy* 34(2), 119-129.

Pinstrup-Andersen, P., Pandya-Lorch, R. and Rosegrant, M. W. 1999. *World food prospects*. International Food Policy Research Institute (IFPRI), USA. [on line]. Available: <http://www.ifpri.org/publication/world-food-prospects-0> [22 April 2010].

Planning Commission. 2003-2004. *Annual report 2003-2004*. Government of India, New Delhi.149p.

Pothukuchi, K. 2007. Building Community Food Security: Lessons from Community Food Projects, 1999-2003. Community Food Security Coalition, Venice, CA. 63p

Prasad, G. R. 2009. India's food production: review and paradigm shifts desired. *Indian J. of Fertil.* 5(12):55-61.

Pudasaini, S. P. 1983. The Effects of Education on Agriculture: Evidence from Nepal. *Am J Agric Econ.* 65(3): 509-515.

Quaye, W., Ivy, Y., Tawiah, M. J. and Joseph, G. 2010. Building the Capacity of Farmer Based Organisation for Sustainable Rice Farming in Northern Ghana. *J Agric Sci.* 2(1): 93-106.

Radhakrishna, R., K., Subbarao, S., Indrakant, S. and Ravi, C. 1997. India's public distribution system: A national and international perspective. Discussion Paper No. 380. World Bank, Washington, D.C.98p.

Rahman, M. A. and Choudhury, S. A. 2009. Food security in Bangladesh : A macroeconomic review and analysis. *Journal of Socio Economic Research and development* .6(4) : 651-657.

Ramani. 2004. Yield gap analysis and constraints in grape cultivation. Unpub. MSc.(Ag).thesis, AC & RI, TNAU, Madurai.

Ravallion, Martin. 1987. Markets and Famines. Oxford: Clarendon Press.

Ravallion, Martin. 1997. 'Famines and Economics'. *Journal of Economic Literature*. Vol.35, No.3 (September), p.1205-1242

Reutlinger, S. 1982. Policies for food security in food improving developing countries. In: Chisholm, A. H. and Tyers, R. (eds.), *Food Security : Theory, Policy and Perspectives from Asia and the Pacific Rim*. Lexington Books, Massachusetts, pp.21.

Rezvanfar, A., Moradnezhai, H. and Vahedi, M. 2007. Information needs of farm women related to dairy farming and home management in Ilam State of Iran. *Livestock Res. Rural Dev.* 19 : 8.

- Rogers, E. M. 1983. *Diffusion of Innovations*. Free Press, New York. 512 p.
- Rosen, S. and Shapouri, S. 2009. Global economic crisis threatens food security in lower Income countries. *Amber Waves*. 7(4):38-43.
- Ross, J. 2002. *Building Partnerships for Food Security*. UN System Network on Rural Development and Food Security, Rome. 52p.
- Palestinian central bureau of statistics.2009. *Socio-Economic And Food Security (Sefsec)Survey Report 2 – Gaza Strip*. FAO[on line].Available : http://unispal.un.org/pdfs/SEFSECRpt2-GS_Nov09.pdf [4 May 2010]
- Sasikala, N. 1997. Knowledge and adoption of soil health management practices in dry farming. Unpub. M.Sc.(Ag).thesis, AC & RI, TNAU, Madurai.
- SEFSEC [Socio-Economic and Food Security Assessment survey report 2]. 2009. WFP / FAO, Ghaza. 43p.
- Sen, A. K. 1964. “Size of Holdings and Productivity”, *The Economic Weekly*, Annual No.1964.
- Sen, A.K .1981. *Poverty and Famines: an essay on entitlement and deprivation* Oxford; Oxford University Press, New York.215p.
- Sen, A. K.1998. Mortality as an indicator of economic success and failure. *The Economic Journal*.108:1-25.
- Sen, A. K. 1999. *Development as Freedom*. Oxford University Press, NewYork, 353p.
- Sen, A. K. 2003. Development as capability Expansion. In: Fukuda-Parr, S. and Shivakumar, A. K (eds.), *Readings in Human Development* .Oxford University Press, New York. pp.3-16.

*Shaikh, F. M. 2007. Household Food Security and Consumption Pattern in Rural Sindh: Non-Separable Agricultural Household Model. *IUB Journal of Social Sciences and Humanities*. 5(2):1-3.

Shapouri, S., Rosen, S., Meade, B. and Gale, F. 2009. *Food Security Assessment, 2008-09*. report of Economic Research Service, United States Department of Agriculture, Washington, D.C. 50p.

Sheeran, J. 2008. The challenge of hunger. *The Lancet*. 371(9608): 243-260.

Shruthi, C., Vishishta, S. and Naomi, J. 2008. *The PDS System in Kerala: A Review*. CCS Working Paper No. 204, Summer Research Internship Programme, Centre for Civil Society.17p.

Singh, R. B., Kumar, P. and Woodhead, T. 2002. *Smallholder farmers in India: Food security and agricultural policy*. FAO Regional Office for Asia and the Pacific Thailand. 55p.

Singh, S. 1998. Food security and sustainability under internationalization of agriculture: some reflections and scope for action with reference to India. *Asia-Pacific Journal of Rural Development*. 8(2): 47-63.

[Srivastava](#), N. 2003. The paradox of food security in a food surplus state: the case of Uttar Pradesh. In: [Dev, S. M.](#); [Kannan, K. P.](#), and [Ramachandran, N.](#) (eds.), *Towards a food secure India: issues and policies*. Institute for Human Development; Centre for Economic and Social Studies, New Delhi and Hyderabad: pp.254-277.

SSWA [Secretariat of State for Women's Affairs]. 1995. *Women: Key to National Reconstruction*. Secretariat of State for Women's Affairs, Phnom Penh, March.

Tarasuk, V.S. 2001. *Household Food Insecurity with Hunger is Associated with Women's Food Intakes, Health and Household Circumstances*. *J Nutr.* 131: 2670-2676.

Tarasuk, V.S. and Davis, B. 1996. Responses to food insecurity in the changing Canadian Welfare State. *J Nutr Educ.* 28:71-75.

Tickner, V. 1996. *Food Security in Cambodia: A Preliminary Assessment*. United Nations Research Institute for Social Development, Geneva. 96p.

Tomlins, K., Manful, J., Gayin, J., Kudjawu, B., and Tamakloe, I. 2007. Study of sensory evaluation, consumer acceptability, affordability and market price of rice. *J Sci Food Agric.* 87:1564-1575.

Tschirley, D. L. and Weber, M. T. 1994. Food security strategies under extremely adverse conditions: The determinants of household income and consumption in rural Mozambique. *World Development*. 2 (2):159-173.

Udoh, E. J. and Etim, N. A. 2009. Measurement of Farm level efficiency of broiler production in Uyo, Akwa Ibom state, Nigeria. *World Journal of Agricultural Sciences*. 5(S):832-836.

UN ACC/SCN [United Nations Administrative Committee on Coordination Subcommittee on Nutrition]. 1992. *Second report on the world nutrition situation, Vol. 1, Global and regional results*. Geneva. 122p.

United Nations Secretariat. 2009. *World Population Prospects: The 2008 Revision*. Population Division of the Department of Economic and Social Affairs of the New York, United Nations. 71p.

USDA [United States Department of Agriculture]. 1996. *The U.S. Contribution to World Food Security*. Position Paper for the World Food Summit. United States Department of Agriculture Washington, D.C. pp.2.

USDA [United States Department of Agriculture]. 2000. *Agriculture Fact Book 2000*. United States Department of Agriculture, Washington, D.C. 314p.

USAID [United States Agency for International Development] .2010. *DJIBOUTI Food Security Outlook Update*. USAID, Djibouti.3p.

Vilas, A. V. 2005. A study on integrated management practices adopted by paddy farmers. Unpub. M.Sc.(Ag). thesis, AC & RI, TNAU, Madurai.

Viswanath, V. 2001. Women's micro-enterprises for food security in India.(Special issue: Food security and livelihoods). *Development* .44(4): 90-92.

Wakwabubi, E. W. 2006. Engendering participatory development in the analysis of household food security: small-scale farmers in the Vihiga District of Kenya. In: Behera, M. C. (ed.), *Globalising Rural Development: Competing Paradigms and Emerging Realities*. Sage Publications India Pvt. Ltd., New Delhi .pp.332-349

Wanner, T. K. 2009. Men-streaming food security: Gender, biodiversity and ecological sustainability. *International Journal of Environmental, Cultural, Economic and Social Sustainability*. 5(3): 97-110

Weingärtner, L. 2004. The Concept of Food and Nutrition Security. Background Paper No. I, Food and Nutrition Security Assessment Instruments and Intervention Strategies.[online]. Available: http://www.foodsec.org/tr/fns/BP_I_Concept_Definitions.pdf [26 March 2010].

WFP [World Food Programme]. 2005. *Food insecurity and vulnerability analysis Timor Leste*. The United Nations World Food Programme, Timor Leste.98p.

WHO [World health Organisation]. 2006. *Community based initiatives; Success stories from Eastern Mediterranean Region*. WHO, Egypt. 63p.

WHO [World health Organisation].2009.Community Based Initiative (CBI).[online].Available : <http://www.emro.who.int/cbi/index.htm> [2 June 2010]

Wikipedia 2010. [online]. Available: http://en.wikipedia.org/wiki/Community_organization [4th May 2010].

Winne, M. 2010. *Community Food Security: Promoting Food Security and Building Healthy Food Systems*. Community Food Security Coalition, Mexico, 11p.

Wooden, J. and Oakland, M. J. 2003. Food Insufficiency among Older Americans. Newsletter of the Hunger and Environmental Nutrition Dietetic Practice Group, American Dietetic Association. pp.1- 4.

Woolcock, M. and Narayan, D. 2000. Social Capital: Implications for Development Theory, Research and Policy.” *World Bank Research Observer*. 15(2): 225–249.

World Bank.1986. *Poverty and Hunger: Issues and Options for Food Security in Developing Countries*. Policy Paper, Washington DC. 82p.

*- Originals not seen.

APPENDICES

APPENDIX -1

KERALA AGRICULTURAL UNIVERSITY
DEPARTMENT OF AGRICULTURAL EXTENSION
COLLEGE OF HORTICULTURE, VELLANIKKARA, THRISSUR

Dr.Jiju P Alex
Associate Professor

Vellanikkara
10-02-2010

Dear Sir/Madam,

Miss Mridula N, M.Sc student of this department is undertaking a study titled "Accomplishing food security through community based initiatives in Thrissur: A participatory analysis" under my guidance for her research work. One of the important objectives of the study is to measure and compare the awareness and attitude of stakeholders (community based organizations, extension agents, people's representatives and farmers) towards food security. On the basis of review of relevant literature and discussion with experts in the field, the following four dimensions have been identified for measuring the awareness and attitude on food security:

- 1) Production dimensions
- 2) Distribution dimensions
- 3) Nutritional dimensions
- 4) Socio-economic and political dimensions

Considering your rich experience in the field, you have been identified as a judge for rating the relevancy of the items identified under each dimension. Kindly rate the items by putting a tick (√) mark against the appropriate column in the five point continuum provided. Kindly add other items you feel appropriate under the dimensions and rate them accordingly. You may also rearrange the statements according to the suitability of including them under various dimensions. Statements that appear to be unsuitable for being included under a given dimension shall be shifted to another category by pointing out the same on the side of the statement.

Kindly return the completed schedule to the researcher at your earliest convenience, in the self addressed stamped envelop enclosed.

Thanking you,

Yours sincerely,

Jiju P Alex

Scale to measure the awareness and attitude of stakeholders regarding food security

HR-Highly Relevant R-Relevant UD-Undecided
LR-Less Relevant NR-Not Relevant

In case it appears that a statement should have been included under another category, kindly mention your suggestion using the following notation in the last column.

**P-Production dimension, D-Distribution dimension, N- Nutritional dimension,
S-Socio economic and political dimension**

Awareness on food security

SI No:	Item	HR	R	UD	LR	NR	Suggestion
		1	2	3	4	5	7
	Production dimensions						
1	Maintaining a kitchen garden helps a family to remain food secure.						
2	Food security is not based on purchasing power alone but on the production and productivity of food grains.						
3	High yielding varieties of food grains must be grown in order to increase the production and to ensure food security.						
4	Food security can be achieved only if the agricultural fields are used exclusively for food production.						
5	All the available and cultivable land in the state must be used for food grain production.						
6	Food grain cultivation taken up by the community based organizations contributes to the food security of a region.						
7	Increasing food production is the corner stone for increasing food security.						
8	Livestock production enhances food security directly and indirectly.						

Sl No:	Item	HR	R	UD	LR	NR	Suggestion
		1	2	3	4	5	7
9	Improvements in livestock production can contribute to food security in numerous ways.						
10	Every individual must be encouraged to grow food grains and vegetables needed for their						
11	Every individual has the responsibility to produce as much food as possible in his premises.						
12	Emphasis on cash crops has adversely affected food security.						
13	Homestead farming with traditional crop varieties can address the issue of food security to a great extent.						
14	Conversion of paddy lands has made our state food insecure.						
15	Cultivation of tubers and vegetables should be promoted to make the country food secure.						

	Distribution dimensions	HR	R	UD	LR	NR	Suggestion
		1	2	3	4	5	7
1	Public Distribution System (PDS) is an important strategy to eradicate poverty and ensure household food security.						
2	PDS has an effective mechanism to reach food to all people at all times at affordable prices.						
3	When ever food prices rise, poor people have to face food insecurity.						
4	Food prices should be						

	Distribution dimensions	HR	R	UD	LR	NR	Suggestion
		1	2	3	4	5	7
	stabilised to ensure food security.						
5	Apart from PDS, quality food grains must be distributed through other outlets at affordable prices to the APL group.						
6	Stable and affordable supply of quality food grains must be assured in PDS.						
7	Expensive inputs, infrastructure and low availability of micro-finance make the cultivation of food grains a difficult business.						
8	The amount of food supplied through PDS must be increased to ensure food security.						
9	Government should take appropriate measures to prevent seasonal fluctuations or shortages in food supply through PDS.						
10	Private shops have an important role in ensuring food security of common man by the stable supply of quality food grains.						
11	The central government should enhance subsidies for food grains.						
12	The central government should take up the responsibility to ensure stable and cheap supply of food grains to states that produce less food grains.						
13	Dependency on few multinational suppliers for the inputs makes food crop production less profitable.						
14	The central government should strengthen the mechanism to produce food grains at the national level.						

	Distribution dimensions	HR	R	UD	LR	NR	Suggestion
		1	2	3	4	5	7
15	Producers of food grains have to be linked to domestic processing units and marketing mechanisms to ensure food security.						
16	Lack of post harvest processing facilities is the main reason for local level food insecurity.						

	Nutritional dimensions	HR	R	UD	LR	NR	Suggestion
		1	2	3	4	5	7
1	Food security is same as nutritional security.						
2	Diverse food is to be included in the daily diet						
3	Skipping meals make the people unhealthy and weak.						
4	A balanced diet is needed for a healthy life.						
5	A balanced diet is not essential for living						
6	People who don't take balanced diet suffer from weight loss, deficiency diseases and malnutrition.						
7	Nutritional security should be emphasised as food security.						
8	Everyday diet need not include diverse food						
9	comprehensive growth of the individuals need inclusion if diverse food in the diet						
10	Including diverse food helps to attain nutritional security						

SI No:	Item	HR	R	UD	LR	NR	Suggestion
		1	2	3	4	5	7
	Socio economic and political dimensions						
1	Food security includes the availability of food grains, access to food grains and affordability						
2	Food security is eating three meals a day.						
3	If a family possess enough money to buy food, it is said to be food secure.						
4	Food security means the purchasing power to buy food.						
5	Community based organisations and other SHGs have a key role in ensuring food security of a						
6	Food security means eating any food at least once a day.						
7	The female members of the family seldom get square meals.						
8	Households with higher income are never food insecure						
9	Food security exists in small families.						
10	Large families are less food secure.						
11	Households with low per capita income usually suffer from hunger.						
12	People who own homes are more food secure than homeless people.						
13	Families headed by educated (graduate) people are food secure than those headed by illiterate						
14	People who are poor regularly face food insufficiency.						
15	Families with elderly people are generally food secure.						

SI No:	Item	HR	R	UD	LR	NR	Suggestion
		1	2	3	4	5	7
16	People dwelling in rural areas are more food insecure than those in urban areas.						
17	The female headed houses are less food secure than male headed families.						
18	Unemployed people contribute to food insecurity.						
19	Programs like NREGS help to ensure food security						
20	High income families are food secure and low income families are food insecure.						
21	Mid day meal program in schools ensure food security						
22	Households headed by regular wage workers are more food secure than self employed						
23	Food security programs should be seen as an opportunity for employment generation through						

APPENDIX-2

PG Thesis “Accomplishing food security through community based initiatives in Thrissur: A participatory analysis” Questionnaire

Questionnaire for CBO members

1. Age
Less than 35- 0
35-50- 1
51 and above- 2
2. Gender
Male-1
Female-2
3. Education
Illiterate-0
Can read only-1
Can read and write-2
Primary education-3
High school-4
Collegiate-5
4. Occupation
5. Income
6. Agricultural Background
6. a. Experience in farming
Less than 5 years-1
5-10 years-2
More than 10 years-3
6. b Farm size

7. Production

Crops	Area	Production (in kg)
Food grains		
Rice		
Pulses		
Vegetables		
Roots and tubers		
Fruits		

8. Awareness Regarding Food Security

Questionnaire for Extension agents

1. Age

Less than 35- 0
35-50- 1
51 and above- 2

2. Gender

Male-1
Female-2

3. Education

Illiterate-0
Can read only-1
Can read and write-2
Primary education-3
High school-4
Collegiate-5

4. Occupation

5. Income

6. Agricultural Background

6. a. Experience in farming

Less than 5 years-1
5-10 years-2
More than 10 years-3

6. b Farm size

7. Production

Crops	Area	Production (in kg)
Food grains		
Rice		
Pulses		
Vegetables		
Roots and tubers		
Fruits		

8. Awareness regarding food security

9. Constraints in implementing food security programs

<u>1.</u>
<u>2.</u>

Questionnaire for People’s representatives

1. Age

Less than 35- 0
 35-50- 1
 51 and above- 2

2. Gender

Male-1
 Female-2

3. Education

Illiterate-0
 Can read only-1
 Can read and write-2
 Primary education-3
 High school-4
 Collegiate-5

4. Occupation

5. Income

6. Agricultural Background

6. a. Experience in farming

Less than 5 years-1
 5-10 years-2
 More than 10 years-3

6. b Farm size

7. Production

Crops	Area	Production (in kg)
Food grains		
Rice		
Pulses		
Vegetables		
Roots and tubers		
Fruits		

8. Awareness regarding food security

9. Details of the ongoing food security programs

Projects name	
Outlay	
Area Beneficiaries	
Envisaged physical target	

7. Production

Crops	Area	Production (in kg)
Food grains		
Rice		
Pulses		
Vegetables		
Roots and tubers		
Fruits		

8. Awareness regarding food security concerns

9. Innovativeness (put tick mark in appropriate column)

When would you prefer to adopt an improved practice in farming that helps to increase the production, and thereby contributing to food security?

As soon as we come to know about it 3	After seeing other farmers using it successfully 2	Wait and take our own time 1

10. Information seeking behaviour

1. We cultivate based on our own experience.

Strongly agree 4	Agree 3	Disagree 2	Strongly disagree 1

2. We seek information about cultivation aspects of crops from Krishi bhavan, Kerala Agricultural University etc.

Strongly agree 4	Agree 3	Disagree 2	Strongly disagree 1

3. We follow all the latest technologies adopted by other farmers or friends.

Strongly agree 4	Agree 3	Disagree 2	Strongly disagree 1

4. We seek information regarding food grains either from AO/KAU information centers.

Regularly 4	Sometimes 3	Rarely 2	Never 1

5. Technical guidance received from AO/KAU is

Very Adequate 3	Adequate 2	Not adequate 1

6. Technical guidance received from AO/KAU is

Very much useful 3	useful 2	Least useful 1
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APPENDIX -3

**Kerala Agricultural University
College of Horticulture
Vellanikkara
Department of Agricultural Extension**

Questionnaire

PG Thesis: *“Accomplishing food security through community based initiatives in Thrissur:
A participatory analysis”*

Questionnaire for CBOs

- 1. Name of the organization**
- 2. Type of the organization** (Tick Mark the appropriate category)

Sl	Type of the SHG	√ Mark	Name Sponsoring
1	SHGs of Kudumbasree		
2	SHG of any other organization(specify the name		
3	SHG of the Centrally Sponsored Programe		
4	SHG of the State Sponsored Programe		
5	SHG of the LSGI sponsored Programe under		
6	Padasekhara Samithi		
7	Others (Specify)		
8			

3. Details of membership of the CBO

Total number of members	
Number of male members	
Number of female members	
Average age of members	
Date of start of the group	
Seed money/ Revolving fund of the organization	

Rate of withdrawal/replacement	
Other conditions if any (Specify)	

3.a Method of maintaining the seed money or revolving fund

4. Details of enterprises in which the CBO has been involved since its inception

Year	Name of the enterprise	Start date	End date of the enterprise

5. Details of diversification of enterprises , if any

Year	Name of the enterprise	Stage of diversification	Details of diversification	Subsidiary Enterprises

6. Total number of years of experience in farming:

7. Details of farming

Year of start	Crops	Area under each crop	Production	Productivity	No of years of experience

8. Ownership of land used for farming (put tick mark in appropriate column)

Own land	
Leased land	
If leased, criteria of lease (specify)	
Details of the owners of land (Tick mark)	1. NRI
	2. NRK
	3. Unemployed resident of the village
	4. Employed resident of the village
	5. Others (specify)
whether land is readily available for farming (tick mark):	YES NO
(If no, specify reasons)	
1.	
2.	
3.	

9.a. Details of *current* Food Security projects undertaken by the CBO

Name of the project	Total project outlay	Major objectives

9. b. Details of support/incentives/subsidy

Name of the project	Inputs required	Type of incentives	Items of incentives/ subsidy	Rate

9 .c. Details of physical and financial targets of the projects

Name of the project	Details of credit	Details of physical target	Details of financial target

9. d. Details of Beneficiaries

Name of the project	Details of Beneficiaries					
				Women		
	General	SC	ST	General	SC	ST

10. a. Details of operations from seed to seed

Name of project	Whether Mechanized		If yes, operations	Labour hired	Labor contribution	Amount saved by
	No	Yes				

*1. Land preparation 2. Sowing 3. Fertilizer application 4. Plant protection 5. Harvesting 6. Post harvest Operation (specify) 7. Others (Specify)

10. b. Details of the source of inputs*

Name of project	Seeds	Plant protection chemicals	Bio-control agents	Fertilizer (organic)	Fertilizers (inorganic)	Others

*1. CBO itself, 2. Other CBO/SHG 3. DoA (KB), 4. Co-operative Society 4. Other Agency (Specify)

10.c Details of credit

10. d.

Name of project	Amount of credit	Rate of interest	Source of credit	Repayment period

Technical assistance

Name of the project	Source of technical assistance/trainings	Frequency of technical assistance	Average no of hours spent	Major content of training programmes

11. Details of organic cultivation if any

Whether taking up organic cultivation	Yes	No	Area
Any quality control mechanisms, if taken up(details)			

12. Specify the details of the existing marketing channels-Product wise

Name of the Product	Whether having some market information facilities	Distance between Production and sales centers	Mode of transport from production centers to outlets	Agency to which it is sold*

1. Middle men 2. Wholesalers 3. Retailers 4. Directly to consumers

13. Specify the details of payment made

Name of the product/ Enterprise	Frequency of Payment (How the CBO is paid for their product)*	Type of value addition	Agency that does value addition	If sold to middle men/ wholesalers/ retailers/ directly to consumers

* 1-Daily, 2-Weekly, 3-Monthly

14. Details of Lean Period Management

Duration of lean period		Main source of income during lean period	Mean of loan repayment if any	Subsidiary vocations adopted	Average income during lean period
From	To				

15. Profitability of enterprises

Name of the product/ Enterprise	B:C Ratio	Monitoring mechanism to improve profitability	

16. Details of project management

Name of the product/ Enterprise	Methods of review/ Monitoring	Periodicity of review	Focal points of review
			1.
			2.
			3.
			4.
			5.
			6.

17. Details of managerial skills/core competencies in the group

Managerial Skills	Details of skills	Deficiency in skills
Technical knowledge on the enterprise		
Accounting skills		
Documentation skills		
Human resource development skills		
Liaisoning skills		
Project formulation skills		
Financial management skills		
Learning skills		

18. Details of organizational structure and division of labour

Name of organizational positions	Duties	Specific duties with respect to Food Security Project	Evaluation <i>Satisfactory/Unsatisfactory</i>

19. Details of insurance

State whether the crops/are insured	Yes	No
-------------------------------------	-----	----

If yes,

Crop	Insurance Scheme	Agency	Premium	Period

20. Relation with local bodies

Aspects of relationship	Very good 4	Good 3	Bad 2	Very Bad 1
Overall assistance				
Technical guidance				
Monitoring				
Supply of inputs				

21. Difficulties encountered in managing the programme by the CBO

Statements	Rank	Description
In getting the land		
In the purchase of quality inputs		
In the production process		
In the processing		
In the value addition process		
In the procurement and marketing		
In management of the organization		
Others(if any)		

22. Level of aspiration expressed by the members of the

Statements	Strongly Agree	Agree	Disagree	Strongly Disagree
We intend to expand the area under present crops so that production increases				
We would like to focus on diversification of products presently produced by our unit				
As the production increases more sales outlets will be opened in rural as well as urban areas				
We would like to enter into contracts with farmers/farmer organizations so that during lean periods they will supply the raw materials for us at reasonable and prefixed rates				
Door to door services will be provided by our unit in near future				
We would like to modify our infrastructure so that all the processes carried out are more efficient with less labor using machineries in food grain production, processing as well as transportation				
We would like to take up organic cultivation so that products help to fetch premium prices				
All our activities will be linked with nearby community based organizations units which are involved in similar activities				
We would like to develop marketing channels avoiding intermediaries/middlemen				
We are interested in taking up value addition processes along with production				
Some of us are thinking of exporting quality crops/products collecting from all producer units				

Signature

Date:

Place:

ABSTRACT

**ACCOMPLISHING FOOD SECURITY THROUGH COMMUNITY
BASED INITIATIVES IN THRISSUR: A PARTICIPATORY
ANALYSIS**

By

MRIDULA N

Abstract of the thesis

**Submitted in partial fulfillment of the
requirement for the degree of**

Master of Science in Agriculture

Faculty of Agriculture

Kerala Agricultural University

Department of Agricultural Extension

COLLEGE OF HORTICULTURE

VELLANIKKARA, THRISSUR-680656

KERALA, INDIA

2010

ABSTRACT

Food security has become a matter of serious concern the world over. Recently in Kerala there is an increased emphasis on community-based organizations (CBO) as a means of increasing agricultural production and thereby food security. The study intended to appraise the nature and relative role of CBOs involved in ensuring food security, explore the extent of awareness of various stakeholders in agricultural development process and factors contributing to it, identify gaps in food grain production in a selected *Grama Panchayat* and assess possible interventions to ensure food security through community based initiatives.

Observations on the basic details of CBOs included the details of members, year of start, production and market details, subsidiary enterprises, marketing of products, relation with local bodies, skills and aspirations of CBO members and difficulties encountered. The different constraints faced by the extension agents in implementing food security programmes were also noted.

The awareness level of stakeholders on the different dimensions of food security concerns of the community was assessed. Farmers were found to have better awareness on production and nutrition dimension; CBO members had better awareness on the distribution and socio economic dimensions as well as food security as a whole. The extension agents had the least awareness on all the four dimensions.

Positive correlation between farmer's awareness on food security and age was found and negative correlation was found between their awareness and sex. Negative correlation between age, farming experience and income of extension agents and awareness was observed. Significant, positive correlation between CBO member's

awareness and their age was noted. Positive correlation between awareness and their farm size and negative correlation between awareness and education were also observed . It was also found that negative correlation existed between awareness and farm size of the people's representatives.

A methodology for quick assessment of food requirement of a locality was developed through participatory method in Kuzhikany North watershed of Kodakara Panchayath. A synthesis of wealth ranking and survey and recall method was employed. The daily requirement of food grain, vegetables, pulses and tubers for individuals of each class was found out through memory recall method. This tool can be used in any place for rapid estimation of food requirement.

The requirement and production of different food items in the above panchayath was found out and considerable difference was noted. The major policy implications of the findings of the study include reorientation of agricultural development planning on the basis of location specific food requirement, intensification of household production of vegetables and tubers, formulation of exclusive programmes for food security, standardizing the procedure for leasing out land in a participatory mode, and mediating the process of leasing out private paddy lands for food production. LSGIs should facilitate gender sensitive farm mechanization for CBOs to operate effectively in food security programmes and organise focused and customized programmes for building awareness on food security for all the stake holders.