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DETERMINANTS OF HOUSEHOLD FOOD SECURITY AND COPING STRATEGIES: THE CASE OF BULE-HORA DISTRICT, BORANA ZONE, OROMIA, ETHIOPIA

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ABSTRACT: *Now a day food security issues become one of the critical concern and top priority area for developing countries. Having clear picture on food security status and its major determinants helps policy makers and planners to devise new policies that enhance food security. Hence, this study was conducted to determine the status of food security in the study area, to identify the major determinants of food security among the rural household, and to identify coping strategies employed by different food security status groups to cope with food insecurity. In order to achieve these objectives biophysical; demographic and socio-economic data were collected from 140 randomly selected households in Bule-hora District of Borana Zone, Oromia Regional State. A two-stage sampling procedure was used to select 5 PAs. A survey was conducted to collect primary data from sample respondent. Secondary data were collected from various sources. The data were analyzed using descriptive statistics such as mean, standard deviation, percentage and frequency distribution. Univariate analysis such as one way ANOVA and Chi-square tests were also employed to describe characteristics of food secure, food insecure without hunger, food insecure with moderate hunger and food insecure with sever hunger categories. The survey result shows that about 23% of sampled farmers were food secure. Ordered logit regression model was fitted to analyze the potential variables affecting household food insecurity in the study area. Among 14 explanatory variables included in the logistic model, 6 of them were significant at less than 5% probability level. These are; Cultivate Land Size (LAND SIZE), Livestock holding (TLU) and Improved seed (SEEDUSE), SEX of household head, Soil fertility status (SOIL FER) and non-farm income (INCOMEON). The estimated model correctly predicted 85.2% and different recommendations were made based on the findings of the study.*

KEYWORDS: Food security, coping mechanism, logit model

INTRODUCTION

Food insecurity has become one of the defining features of rural poverty in Ethiopia, particularly in drought prone areas. The problem of food insecurity in recent years has worsened to the extent that in 2002/03 around 14 million people required food assistance (MARDFSCB, 2005). It has become apparent that due to population growth and land degradation, crop and market failures associated with droughts and other environment factors, as well as low access to assets, the prevalence of poverty and destitution has reached unacceptably high levels in Ethiopia. An estimated 47.5% of all rural households are thought to be poor, where as

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13.8% of the households in the Southern lowlands are estimated to be destitute (MEDAC, 2002; Devereux, Sharp and Yared, 2002; as cited in Yared ,2003).

Food production and population statistics in Ethiopia are notoriously unreliable, all estimates of national food availability and consumption requirements are 'guesstimates' at best (Devereux and Sussex, 2000). Given this limitation of statistics during the late 1980s, 52% of Ethiopia's population consumed less than the recommended daily allowance of 2,100 kc, Ethiopian agriculture appears to be locked into a downward spiral of low and declining productivity, caused by an adverse combination of agro-climatic, demographic, economic and institutional constraints, trends and shocks. Some observers argue that a 'Malthusian crisis' is developing as rapid population growth (almost 3% per annum) is associated with steadily falling landholdings and per capita food production (Devereux and Sussex, 2000). Between 1960 and 1990 the population doubled from 23 to 48 million, while per capita landholding shrunk from 0.28 to 0.10 hectare, and per capita food output collapsed by 41% from 240 to 142 kg (Devereux and Sussex, 2000).

Agricultural growth contributes to improve the condition of food security in the country. There are indications that expected conditions of drought, even the present extension program could have sufficed to bring about a satisfactory level of national food security. However, as it stands now drought occurs far too often and food security in all of its dimensions could not be sustained. Irrigation would have to be introduced in a significant way for a sustainable attainment of food security at the national level. However, food insecurity at the household level could still persist despite growth of food and cash crops at national level (MOFED, 2002).

Even though food self-sufficiency has remained the stated goal of the Government of Ethiopia, the problem of food insecurity has continued to persist in the country. Many rural households have already lost their means of livelihood due to recurrent drought and crop failures (Ayalneh, 2002).

The situation of Borana where Bule-hora district found is not an exception to the food insecurity problem. Therefore, in order to comprehensively address the problem of food insecurity identifying the major determinants of food security becomes crucial. Hence, the aim of this is study is to understand the food security status, coping strategies and major determinants of household food security in the study area.

Concepts and Definitions of Food Security

Concern with food security can be traced back to the world food crisis of 1972-74 - and beyond that at least to the Universal Declaration of Human Rights in 1948, which recognized the right to food as a core element of an adequate level of living. Food security as a concept emerged at the United Nations Food and Agriculture Organization (FAO) World Food Conference in 1974. It is centered on two sub-concepts; food availability and food entitlement. The first, food availability refers to the supply of food available at local, national or

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international levels. The second, food entitlement refers to the capability of individuals and households to obtain food (Majda, 1999).

According to Getahun (2003), food security is a concept that can generally be addressed to the global, regional, national, sub-national, community and household level. The concept of food security has been developing since early 1970s. The concept of food security in particular is a more recent development and the bulk of the literature dates from the 1980s. When we look into the evolution of food security, the initial concerns in the 1970s focused on the global, regional and national food supply or stocks (i.e. food security was conceived as the adequacy of food supply at global and national level). Such view favored macro-level food production and supply- oriented variables that overlooked the micro-level food access.

Household food security can be loosely defined as the ability of all individuals to access an adequate supply of food, on stable basis, and in sustainable way (Peggy, 2004). There are a number of other definitions of Household Food Security as access by all people at all times to enough food (of good quality) for an active, healthy life. Another aspect of household food security concept is the issue of vulnerability. This how household cope in terms of their ability to cope with times of shock like when there are floods, or droughts (Peggy, 2004).

Different institution and organization defined food security differently without much change in the basic concept. According to the World Bank (1996), as cited in Mulunesh (2001), food security means as access by all people at all times to sufficient food for an active, healthy life. In practical terms, this encompasses the physiological needs of individuals; the complementarities and trade-offs among food and other basics necessities (especially health care and education, but other as well); changes over time in terms of people's livelihood strategies and the assets to which they have access; and uncertainty and risk (that is, Vulnerability). Clearly, food security is about much more than just how much people have to eat. Yet, having 'enough' food to eat is clearly the most important outcome of being food secure, and while physiologically requirements differ, people largely known whether they have enough or not (CARE/WFP, 2003).

FAO has defined food security not only in terms of access to, and availability of food, but also in terms of resource distribution to produce food and purchasing power to buy food, where it is produced (SDWW, 1998; as cited in Mulunesh, 2001). Food security takes into consideration the physiological needs of individuals, the complementary and trade-offs among food and other basic necessities that households make, the dynamic nature of HH food security over time and the levels of vulnerability and response to risk (Barrett, 1999; as cited in TANGO , 2002). The stabilization of access, or of proportionate shortfalls in access, to calories to the basic food they need (Maxwell,1992). However, approximately 852 million people worldwide cannot obtain enough food to live healthy and productive lives (FAO, 2004: as cited Pedro.et.al, 2005).

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USAID defines food security as, when all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life (Riely et al., 1999). According to the same source, achieving food security requires that the aggregate availability of physical supplies of food is sufficient, that households have adequate access to those food supplies through their own production, the market or other sources, and that the utilization of those food supplies is appropriate to meet the specific dietary needs of individuals.

IFAD describes Household Food Security (HFS) as 'the capacity of households to procure a stable and sustainable basket of adequate food' (IFAD, 1992). In operational terms, this implies: (i) measures to enhance and stabilize household access to and availability of food across seasons and transitory shortages; (ii) activities that would sustain food supply in the long term; and (iii) constant attention to the adequacy of food while complying with nutrient and safety requirements, and cultural preferences.

The key characteristics in all definitions are: sufficiency, access, security and time (Maxwell and Frankenberger, 1992; as cited in Van Liere et al., 2001). The Three Pillars of Food Security (USAID, 1992; as cited in FAM, 2004) are availability, access and utilization. A sustainable livelihood means a household having a continuous access to adequate and nutritious food either through local production or purchase. This is for betterment of life of both male and female in a family (Mulunesh, 2001).

The Rome Declaration of World Food Summit (1996) described three major dimensions of food security as availability, accessibility and utilization. The implications of these three dimensions at national, household and within household level are different. Sustainability is the outcome of availability and accessibility. At all three levels it measures the standard of living and economic and social standing of the country in the world; the household within the country; and, the individual within a household (Hina, 2001).

In contrast to food security, the term food insecurity is defined as lack of access to enough food both in quantity and quality on sustainable bases. Accordingly, household food insecurity takes different forms, which requires different responses or actions. The approaches may be different depending on whether food insecurity is chronic (with household almost always short of food) or transitory (resulting from temporary adverse circumstance). Food insecurity may be seasonal; a family may have insufficient food perhaps each year, but only in certain seasons (Getahun, 2003). Food insecurity can also articulate 'limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways' (Bickel et al., 2000).

Dimension of Food Insecurity

According to food security strategy (2002), food insecurity is divided into categories of the chronic and acute. Chronic food insecurity is commonly perceived as a result of overwhelming poverty indicated by lack of assets. Acute food insecurity is viewed as more of a transitory phenomena related to man-made, and unusual shocks, such as drought. While

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the chronically food insecure population may be experience food deficit relative to need in any given year, irrespective of the impact of shocks, the acutely food insecure are assumed to require short-term assistance to help them cope with unusual circumstance that impact temporarily on their livelihood.

In theory two types of household food insecurity -Chronically and transitional - can be distinguish, but in reality they are closely intertwined. Chronic food insecurity is persistently inadequate diet caused by the continual inability of households to acquire needed food, either through market purchases or through production. Chronic food insecurity is rooted in poverty. Transitory food insecurity, on the other hand, is temporary decline in a household access to needed food, due to factors such as instability in food prices, production, or incomes (World Bank, 1986 cited by Joachim, et.al., 1992).

Melaku (1997) further considered food security, on the one hand, and famine and hunger on the other, are inversely related concepts. Ensuring food security is equated to avoidance of famine and hunger. Famine and hunger result from the lack of food security. Famine is an absolute lack of food affecting a large population for a long time period. It is a disaster of food insecurity. Hunger is not famine. It is similar to undernourishment and is related to poverty. In many poor countries there is seasonal hunger, usually in the months just before the coming harvest. People become weakened as a result of not having had adequate food for days. When hunger persists for a longer period, covering a large number of the population and resulting in mass migration and death, it then becomes famine. Famine and hunger are both rooted in food insecurity. Chronic food insecurity translates into a high degree of vulnerability to famine and hunger.

RESEARCH METHODOLOGY

The study area

Bule-hora Woreda is situated in Borana zone of Oromia region some 570 km south of Addis Ababa. The Woreda consists of 43 Peasant Associations (PAs). The total land area of the Woreda is estimated to be about 4600 km^2 of which 150 km^2 is cultivated, 538 km^2 is covered with forest, 481km^2 is bush and shrubs, and 3431km^2 is wood land (WBISPP, 2003). The altitude of the area ranges from 1000 to 1700 meters above sea level. The mean annual temperature ranges from 18 to20 and a prominent feature of the ecosystem is the erratic and variable nature of the rainfall, with most areas receiving between 238 mm and 896mm annually, with a high coefficient of variability ranging from 18% to 69%.

The total population of the Woreda is 110266 (male 55513 and female 54753). The dominant ethnicgroup is Oromo (CSA Population Projection 2010).

Livestock production is the major components of the farming system in the study area and contributes to the subsistence requirement of the population, among other, in terms of milk, and milk products and meat, particularly from small ruminants. According to the district Agricultural and Rural Development Office (2010), the Woreda's total population of livestock is estimated to

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be 413,766. Among this, cattle population accounts for 56.3% followed by goat 23.9% and the remaining was 19.8%. The proportion of sheep and camel are 14.3% and 5.5% respectively.

In general, the Woreda is designated as famine prone and frequent crop failure is a common problem usually leading to food shortage. Drought induced food insecurity has been a common recurrent phenomena exacerbating the vulnerability of resource poor rural households in the area to be food insecure.

Sampling Techniques

The data for this research was collected from rural households in five PAs in District district. A two- stage sampling procedure was employed. In the first stage, the Wereda was stratified into two based on the existing agro- ecological zone (Dega and Woina dega). Three PAs from Woina dega and two PAs from Dega were selected based on simple random sampling techniques. In the second stage, 140 household heads were drawn using simple random sampling method proportional to the size of the population of respective PA.

Data source and method of data collection

A structured survey questionnaire was designed and pre-tested before the collection of the actual primary data. As a means of verifying the data collected by the enumerators from the farmers, focus group discussion and personal observation was made with the farmers selected from the 5 PAs using different rapid appraisal methods. Secondary data were collected from published government offices and non-government offices. Eight enumerators who had experience in data collection techniques were recruited, training was given to enumerators on the content of the questionnaires and of interview techniques before the actual survey begins.

Methods of Data Analysis

Descriptive statistics, Core Food Security Module (CFSM) and econometric models were employed. After the data collection was completed, information was compiled for data processing. Compiled and coded data was analyzed using a computer program, SPSS-Version 12 (SPSS-Statistical Package for Social Science).

The Rasch model is used for the purpose of measuring the ability of individuals (in this case household heads) based on their answers to a set of questions (Bickel et.al, 2000). The model, used to create food security scale, can be written in terms of the log of the odds ratio expressed as the difference between the severity of the household's food insecurity and the level of food insecurity (difficulty) the household experienced.

The Rasch model estimates the individual abilities (household severity level) and item difficulty level parameters even in the presence of item non-response, or if different but partially overlapping sets of questions are presented to respondents (Opsomer et al., 2002 as cited in Genene, 2006). It provides framework for food security scale, by estimating the individual abilities, Ëi, and the item difficulty parameters, ·j, simultaneously, based on set of questions

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administered to a group of households. The model estimates where the household heads will fall on that scale.

The set of food security questions included in the core survey module are combined into a single overall measure called the food security scale. This continuous linear scale value is used to measure the degree of severity of food insecurity experienced by a household. A household that have not experienced any of the conditions of food insecurity covered by the core module questions will be assigned a scale value of 0, while a household that has experienced all of them is assigned scale value close to 10.

In developing the food security scale, a set of 10 questions for households with no children and 18 questions for households with children is used to calculate the household food security scale and then to estimate the prevalence of food insecurity whether a household is food insecure without hunger or with hunger (Bickel et.al, 2000).

The BIGSTEPS software was employed to calculate the scale value in which the households fall. Based on Hamilton's classification, the computed food security scale is categorized into four categories (food secure, food insecure without hunger, food insecure with moderate hunger and food insecure with severe hunger). A household with no food insecurity score is assigned a value close to zero and those with worst food insecurity severity are assigned a value close to ten (Genene, 2006; Yilema, 2005; Bickel et.al , 2000).

RESULT AND DISCUSSION

Food security status of the sampled respondents

The Core Food Security Module results showed 23%, 25%, 31 %, and 21% of respondents are food secure, food insecure without hunger, food insecure with moderate hunger and food insecure with sever hunger respectively (Table 1). The food security status categories were tested for significance by one-way ANOVA and the result was significant $p < 0.01$ mean difference among the four food security categories.

Joint research conducted by Yohannce and Peter (2000) as cited in Abi (2001) came up with similar findings, in low potential areas of Oromia Region. According to their study results only 15% of farming households are able to fulfill their basic needs from agricultural activities. Approximately, 30% are able to fulfill basic needs from farm and off-farm activities while about 70% of the households are not able to generate sufficient resource from any means to secure household food requirement.

In Bule-hora Woreda, the study area, only about 23% of sample respondents satisfied the food security conditions. However, this Woreda was traditionally considered as food secured by government based on the criteria set for differentiating food secured and non food secured Woredas in order to implement the productive safety net program in Ethiopia. The results of this study clearly indicate the need for reconsideration of past thoughts about the

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Woreda's food security status and implement integrated rural development programs with the objective of asset protection, creation and promotion of food secured farmers.

The model result

Male-headed households are in a better position to pull labor force than the female headed ones. Moreover, with regard to farming experience males are better than the female farmers. The result was found to be consistent with the hypothesis showing positive influence of sex of household head on food security status at less than five percent probability level (Table 2). This result is consistent with the findings of Guled (2006), Genene (2006) and Thewodros (2007).

Land size owned by household heads was found to have significant ($P < 0.01$) and positive relationship with food security status of households suggesting the larger the land size, the better food secure state of the household. The possible explanation is that the major source of food in the study area comes form own production and there was limited access to other means of income generating activities. So the household who have large size of cultivated land has better production which gives a better chance for the household to be food secured. This result is in agreement with the findings of Tesfaye (2005), Yilima (2005), Mulugeta (2002) and Thewodros (2007).

Livestock owned by the household head (TLU) was significant ($P < 0.01$) and positively related with householdsí food security status. The model result indicated that those who had better livestock ownership measured in TLU were food secure than those with lower number of livestock. This finding is consistent with the result of other studies (Abebaw, 2003; Tesfaye, 2005; Mulugeta, 2002; Genene, 2006; Thewodros, 2007). The possible explanation is that livestock have many socio-economic benefits to farm households and are perceived as indicators of wealth status. Livestock serves as draft power, manure source, cash income source through sale of animal product and live animals in times of food shortage to buy grains, which ultimately helps farmers not to lose productive assets which will have significant impact on subsequent year production and productivities. The household having larger size of livestock can have better food security status, and therefore the possession of more livestock imply the higher likelihood of food security.

Use of Improved seed was found to have significant positive ($p < 0.01$) effect with the food security status of households. Households using improved seed are more likely to be food secure than those who did not apply. Improved seed and other technological inputs help farmers to augment productivity and to boost production. Farmers can enhance their production by using high yielding varieties and other complementary farm.

Soil Fertility Status was also found to be significant ($p < 0.05$) and positively related with the food security status of the household. Model results show that those farmers with relatively fertile land are more food secure than. The possible explanation is that assumption was soil fertility problem is one of the physical factors affecting crop production and productivity. If farmers perceive they have fertile land, they can get more production from a given plot

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of land than.. In the model soil fertility status as perceived by farmers was positively related to food security and this result is in agreement with the finding of Genene, 2006.

Non-farm income was found to have significant ($p < 0.05$) and positive relation with the food security status of the household indicating farmers engaged in non-farm activities have better chance to be food secure. This might be due to the fact that households engaged in non-farm activities are better endowed with additional income and more likely to escap food insecurity. This finding is consisten with the finding of food secure authors (Abebaw, 2003; Yilima, 2005; Tesfaye, 2005; Mulugeta, 2002; and Thewodros, 2007).

Coping mechanism

Coping mechanisms used by farm households can be grouped in to three; production-based responses (expansion of production and improved productivities), market based responses (food grain purchase through sale of assets mainly livestockís) and non- market responses (including institutional and societal income transfer system) (Messer, 1989; Moris, 1989, Dagnew, 1994; as cited in Degefa, 2000).

Farm households coping mechanisms in the study Woreda (in Table 3) differed among the four food secure categories. Reducing number and size of meal per day was identified as the largest portion for all food security categories as coping mechanisms. Skipping and reducing food help intake farmers to maximize utilization of available food for relatively long period while they go through malnutrition. Result from focus group discussion showed, at the initial stage of food shortage only adults' practices reduction of food portions both in size and number of meals. As the time when the food shortage becomes extended children are also forced to skip and reduce food as coping strategies. Without major difference among the four food security categories, reducing number and size of meal become the common copping strategies in the study area.

Purchasing of grains from market is also the other most important coping mechanisms utilized by sampled respondents practiced by 33 % of food secure, 46 % of food in secure without hunger. 59 % of food insecure with moderate hunger and 60 % of food insecure with sever hunger used purchasing of grains as coping strategies. Result from focus group discussion point out that farmer had different sources of cash to purchase grain. Renting out land, selling livestock, pity trading, working as a laborer and borrowing from others were some source of income. Due to social bondage, blood tie and cultural influence, it is a common tradition for people to support each other during hard time.

Farmers in the study area employed different mechanisms for resilience to shocks. Borrowing cash or grains from other was one of additional coping mechanisms that farmers used to escape food deficit period. This system operates in the study area with all food security categories. 24 % food secure 28 % food insecure without hunger, 23 % food insecure with moderate hunger and 18% food insecure with sever hunger used borrowing cash or grains from other as a coping mechanism. The major problem associated with this coping mechanism was the rich money lenders highly and actively participate in the process of lending and borrowing.

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The money lender systematical forced the money borrower to paid high amount of interest rate. Usually the money lender were the only one who had power to decided the interest rate, further more; in order to access the borrowed money, farmers in most cases are expected to work on the field of these money lenders as a favor in order to get the borrowing cash without payment.

According to the Woreda office of rural development and agricultural office, among the major crops grown in the district, Teff, wheat, barley, horse bean, and potato command a relatively high price in the local market. Farmers sell the high price crops and purchase low price crops for consumption in seasons of food shortage. They also purchase low price food from market whenever they got cash for purchase. The study result revealed that 24 % food secure, 37% food insecure without hunger, 43 % food insecure with moderate hunger farmers and 54% food in secure with sever hunger eat less preferable food as coping mechanism during shortage.

In agrarian community where rainfed agriculture dominates and productivity of crops depends on the natural cycle of environment. Drought, pest, disease, hailstorm and frost are the most important factors that affect crop production and reduce productivity. Whenever most farmers encounter such problems they immediately face food shortage. To combat such problems farmers sale of animals meet purchase of grains as coping mechanisms. 60% of food secure, 45 % of food insecure without hunger, 34% of ood insecure with moderate hunger and 28 % of food insecure with sever hunger farmer used sales of animals as coping mechanism.

In the study area farmers commonly engage in the off-farm and non-farm jobs to earn additional income and in an attempt to relieve from the harsh food shortage. Besides farmers' engage in non-farm activities like petty trading, sale of fire wood e.t.c., work on the farm of other farmers. In addition to the wage payment, farmers are entitled to lunch during day work. According to Yared (2000), the availability of agricultural wage labor in rural Ethiopia is very limited due to the relatively similar economic status and low productivity of peasant households. The few employment opportunities available however, are important for the survival of some of the poorest households.

When the situation of food shortage become worse and other coping system exhausted, farmers are forced to eat inedible vegetables that were not eaten during normal time. Such coping mechanism is one of the indications for occurrence the extreme food shortage The research results indicated that non of food secure farmers consumed inedible vegetables while about 6 % of food insecure without hunger, 7% of food insecure moderately hunger and 11% of food insecure with sever hunger consume inedible vegetables as a coping mechanism.

Some coping mechanisms have negative effects on the conservation of finite natural resources. This situation hold true for the sale of fire wood and charcoal practiced by poor farmers. In the study area about 10% of the food secure, 14% food insecure without hunger, about 21 % food insecure with moderate hunger and 40 % of the food insecure with sever

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hunger used to sell fire wood and charcoal as coping mechanisms. The other commonly practiced coping mechanism was temporary migration. Especially youngsters were the one who lead using this coping mechanism. Most the farmer preferred to go Dilla area for searching temporary job. 11% of food secure, 17 % of food insecure without hunger, 13 % food insecure with moderate hunger and 17 food in secure with sever hunger utilized temporary migration to other area as coping mechanism.

As the food shortage prolonged, become sever and after farmers exhausted most other coping mechanism. The next measures in most case utilized by farmers were selling of key productive assets. Such kind of coping behaviors had extended effect on the livelihood situation of farmers. Once farmers lose their productive assets, it has negative influence for production of the coming years. The research result showed that no food secured farmers utilized sale of key productive assets. Very few food insecure with moderate hunger and food insecure without hunger used this method. Relatively more percent of food insecure with sever hunger categories used sell of key productive asset as coping mechanisms as compare to other food security categories.

The survey result indicates that receiving remittances and renting out of land were the other coping mechanisms practices by sample households. Very few sample respondents 3%, 6%, 7% and 4 % of food secure, food insecure without hunger, food in secure with moderate hunger and food in secure with sever hunger respectively got gift and remittance from relatives. While 4 % of food secure, 7 % food insecure without hunger, 9 % of food insecure with moderately hunger and food secure with sever hunger rented out land for other farmer as coping mechanisms.

The coping strategies used by different food security categories varied over time depending on the food shortage situation, the type of disaster, the individual resilience capacity of the household to shock. Some of the coping mechanisms exercised by farmers were more harmful than others. Coping mechanisms like sale of key productive assets had negative effective on subsequent period production and productivity. Understanding the coping mechanisms performed by food security categories provides clue for determination and promotion of sustainable development strategies.

CONCLUSION

Food security is one of the critical issues that need to be addressed in Ethiopia. Both government and non-governmental organization played a key role to reduce the food security problem in the country. As part of this effort, the government of Ethiopia has been implement different food security programs focusing on identified food insecure Woredas based on the criteria set under the productive safety net manuals. Bule-hora Woreda was considered as food secure woreda by the government; however, there were indication that the Woreda was not that different on food security problem issues from those identified as food insecure. The four Food security categories differed at less than one percent level in most of the hypothesized variables Consequently, sex of HH head, total livestock holding

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(TLU), total cultivated land, non-farm activities, improved seed use and soil fertility status were found to have positive influence on food security status. Therefore, concerted efforts from all actors are needed to reverse the situation through an appropriate food security strategy.

REFERENCES

Abebaw Shemelis, 2003. Dimensions and Determinants of Food Security among Rural Household in Dire Dawa, Eastern Ethiopia. An M.Sc. Thesis presented to the school of Graduate student of Alemaya University.

Abi Masefield, 2001. Chronic Food Insecurity in Ethiopia: looking Through a Livelihood lens PP. 37-59, Proceedings of the Symposium of the Forum for Social Studies, 10-11 march 2000, Addis Ababa, Ethiopia

A yalew Yimer, 2002. Identification and Intensity of Food Insecurity and Coping Strategies of Rural Household in the North Shewa , the Case Of Lalomama. Thesis presented to the school of Graduate student of Alemaya University.

A yalneh Bogale (2002). Land Degradation, Impoverishment and Livelihood Strategies of Rural Households in Ethiopia: Farmers' Perceptions and Policy Implication. Vol. 8. Shaker Verlag, Germany.

Bickel, Gary, Mark Nord, Cristofer Price, William Hamilton, and John Cook 2000. Guide to Measuring Household Food Security, Revised 2000. U.S. Department of Agriculture, Food and Nutrition Service, Alexandria VA. March, 2000.

CARE/WFP, 2003. The coping strategies index: Field Methods Manual. Nairobi: CARE and WFP

Debebe Habetewold, 2001, 'Food Aid and its Impact on Peasant Livelihood Strategies', Addis Ababa.

Dereje Kebede, 2006. Analysis of Gender Based Household Food Security in Kurfa Chale Woreda of Oromia, Ethiopia. An M.Sc. Thesis presented to the school of Graduate student of Alemaya University.

Dereje Muluneh, 2008. Women Empowerment through Microfinance, The case of Village saving and loan association in Grawa district of Easter Oromiya, Ethiopia. An M.Sc. Thesis presented to the school of Graduate student of Alemaya University.

Devereux, D. and I. Sussex, 2000, Food security in Ethiopia: A discussion paper for DFID, Addis Ababa, Ethiopia

DFID,2002 Better livelihood for poor people: the role of Agriculture, Abercrombie house, Eagle sham Road, East Killbride , UK

Elizabeth, Cromwell, 2004. Food Security and Social protection: 111 Westminster Bridge Road, SE1 7JD, UK

FAO, 2002. Building partnership for Food security, Addis Abeba, Ethiopia Food aid management (FAM), 2004. Guide for Measuring Food Access, Addis Abeba, Ethiopia

Food security program, 2003. The New Coalition for Food Security in Ethiopia. Vol. 1, Addis Ababa

Food security strategy, 2002. The Federal democratic republic of Ethiopia, Addis Ababa, Ethiopia

Genene Tsegaye, 2006. Farmers' Perceptions of Land Degradation and Determinants of Household Food Security Status at Middle Catchments of Bilate Watershed. A Thesis Prepared to the School of Graduate Studies, Alemaya University.

ISSN 2056-5798(Print), ISSN 2056-5801(online)

Getahun Bikoara, 2003. The Food security challenge in Ethiopia pp.15-39, Proceedings of the Food security conference.UNCC, 13-15 August 2003, Addis Ababa. Gujarati,D.N., 2004. Basic econometrics.4 th edition, McGraw Hill, Inc., New York

Guled Abdullahi, 2006. Food Insecurity and Copping Stategies of Agro-pastoral Household in Awbare Woreda, Somali Region,Etihipia. An M.Sc. Thesis presented to the school of Graduate student of Alemaya University. 93p

Hina Nazli, 2001. Concern of Food Security, Role of Gender , and intra Household dynamics, Pakistan

Hoddinott J., 1999. Operationalzing Household Food Security In Development Projects: An Introduction, Washington, D.C. 20006 U.S.A

Hune Nega, 2003. Rain water Harvesting Technologies and their contribution to Household food security in dry land areas of Ethiopia pp. 284-291, Proceedings of the Food security conference. UNCC, 13-15 August 2003, Addis Ababa.

IFAD, 1992. Household Food Security and Gender Issues in Program and Project Design, Presidentís Bulletin No. 99/06)

Joachim, V.B., Howarth, B.,Shubh,K., and Rajul , P.,L 1992. Improving the Food Security of the poor: Concept , Policy and programesí: International Food Policy research Institute, Washgtone , USA

Majda, B.S., 1999. Food Security for The Food insecure: New challenge and renewed commitments, center for development studies, university Collage of Dublin, Ireland Basic econometrics. 4th edition, McGraw Hill, Inc., New York

Maxwel D., 1995. Measuring Food Insecurity: The Frequency and severity of ‘coping Strategies’, Washington, D.C.20036-3006 U.S.A.

Maxwel.S., R.F. Timothy, 1992. Household Food Security: Concept, Indicators, and Measurement: A technical review, UNICEF, New York.

Melaku, Ayalew, 1997. What is Food Security, famine and Hunger? : Internet Journal for African Studies, Issue No.2

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Tables

Table 1: Percentage distribution of HH food security status (N=140)

Categories	Number	Percentage (%)	Mean	S.D	F	P
Food secure	33	23	0.9	0.9		
Food insecure with out hunger	35	25	5.6	1.2		
Food insecure with moderate hunger	44	31	9.8	1.1		
Food insecure with sever hunger	28	21	14.9	1.7		
	140	100	7.7	5.0	703.661	.000

Source: Own Survey result (2012)

Table 2: Parameter Estimates of Ordinal Logit Regression model

Variables	Estimate	Wald	Sig	Exp (β)
[Cut-point = 0]	11.149	9.076	.003	
[Cut-point = 1]	8.392	5.444	.020	
[Cut-point = 2]	4.137	1.462	.227	
Independent				
AGE	.053	2.557	.110	1.05
SEX	2.037	3.858	.050**	7.67
FAMSIZE	-.457	2.183	.140	0.62
DEPENRAT	-.082	.002	.967	0.92
HHHEDU	.383	1.953	.162	1.47
LANDSIZE	1.653	7.673	.006***	5.22
IRRIGLAND	.528	.251	.616	1.70
TLU	1.012	9.229	.002***	2.75
FERTUSE	.313	.189	.663	1.37
SEEDUSE	3.707	7.862	.005***	40.73
DISTMARK	-.088	.656	.418	0.92
SOILFER	1.268	6.406	.011**	3.55
DACONTACT1	.075	1.542	.214	1.08
INCOMEON	1.928	5.295	.021**	6.88

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Model-2Loglikelihood = 200.729, Chi-square = 102. 185, df = 14, p =0.000
Goodness-of-fit χ^2= 102.185, p = 1.000
Nagelkerke Pseudo R^2=0.852
Restricted LL χ^2 = 81.632, df = 28, p= 0.395
Significant at 1% probability level*** and 5% probability level**

Table 3: Household coping Mechanism employed by different food security status groups (percent)

Mechanisms	Food secure (N= 33)	Food insecure with out Hunger (N=35)	Food insecure With moderately Hunger (N=44)	Food insecure with sever Hunger (N=28)
Purchasing grains	33.33	45.7	59	60
Borrowing cash or grains from others	24.24	28.57	22.72	17.85
Ate less preferred food	24.24	37.14	43.18	53.57
Sales of animals to meet purchase of grain	60.60	45.71	34.09	28.57
Reducing number and size of meal	63.63	65.71	70.45	78.57
Ate wild food	0	5.7	6.81	10.71
Involve in off-farm and non -farm job	51.51	45.71	59.09	67.85
Sales of fire wood and charcoal	10.1	14.1	20.5	40
Temporary migration to other area	11.12	17.14	13.63	17.85
Sales of key productive assets	0	2.85	2.272	7.14
Receiving gifts and remittances	3.03	5.71	6.81	3.57
Rent out land	4.05	6.7	8.71	14.28

Source own survey result (2012)

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