

Assessments of Household Coping Strategies toward Food Insecurity in Hawi Gudina District, Oromia National Regional State, Ethiopia

Fekede Gemechu Tolera

Oromia Agricultural Research Institute, Mechara Agricultural Research Center, P.O.Box 19, Mechara, Ethiopia

Abstract

This study was aimed to assess households' coping strategies toward food insecurity in Hawi Gudina District of West Hararghe zone. A multi-stage random sampling technique was employed to select sample households randomly from six Kebele Administrations of the district by using Probability Proportional to Size. Both primary and secondary data were used. The required data set for the study were collected from 140 households through interview schedule. Household calorie acquisition was analyzed to measure the status of household food security. Out of 140 households 32.9% and 67.1% were food secure and insecure, respectively. Coping strategies practiced by households in the study area were collected and analyzed by using descriptive statistics. The result of the study revealed that, reducing size of meals (86.4%), sale of cattle (80%), borrow grain/cash from relative (74.3%), work as daily laborer (60.7%) and sell of firewood and charcoal (58.6%) were the top five strategies that were practiced by sampled households during food insecurity situation. The study recommends the need to assist farming households regarding the negative impact of applied strategies on their future asset and natural resource aspect of study area through awareness creation and provision of other option which are suitable to the environments of the study area.

Keywords: Coping strategies, Household, Calorie intake, Food insecurity, Hawi Gudina district

INTRODUCTION

Agriculture is the predominant and an important economic sector in Ethiopia. Agricultural sector accounts for roughly 43 % of GDP, 90 % of exports and 80% of total employment in the country. Cereals dominate Ethiopian agriculture, accounting for about 70% of agricultural GDP. Livestock production accounts for about 32 % of agricultural GDP and draught animal power is critical for all farming systems. Over the past decade, cereal production has more than doubled to nearly 15 million tonnes, as a result of horizontal expansion and increased yields. Nevertheless, food security remains a critical issue for many households and for the country as a whole (Demese *et al.*, 2010).

In Ethiopia food insecurity is highly prevalent in moisture deficit highlands and in the low-lying agro pastoral areas. Even in years of adequate rainfall and good harvest, the people, particularly in lowland agro-pastoral areas, remain food insecure and in need of food assistance. This clearly reflects the deeply entrenched poverty and food insecurity situation in the country (Workneh, 2004). The deteriorating situation is compounded by high food prices, the cost of cereals has more than doubled in many markets since the beginning of the 2008, hampering the ability of many people to meet their most basic food needs and impoverishing them further (WFP, 2011). Land degradation coupled with erratic rainfall, drought and poverty problems pose a serious threat on households' food security in Ethiopia (Genene and Wegayehu, 2010).

In arid and semi-arid lands, where resource-poor households are dependent on rainfall and productivity of the land (often determined by the degree of aridity or soil fertility), these households are by definition "structurally vulnerable, implying that the coping strategies become permanently incorporated into the rural resource-poor households' normal cycle of activities (Rani and Dodia, 2000). Agriculture, which is the main source of livelihood of the people, is totally dependent on rain fed, and the pattern of rainfall is erratic and insufficient. In the absence of rainfall farmers constantly faced with food shortages and crises..

According to CSA and World Bank, (2013), households respond to shocks in different ways and there are also many households who do not have any means of coping to shocks. Change eating pattern, sold livestock, sold durable asset, sold land, reduce expenditure, search credits and sent children to live elsewhere were the major strategies employed by household in Ethiopia toward shock like food insecurity. Coping strategies are employed to mitigate the effects of not having enough food to meet the household's needs. Some coping strategies are positive means of overcoming food shortages, for example off-farm employment, savings that can be called upon and family networks for sharing. However, for many poor people, coping strategies are negative, that is, they have long-term detrimental effects (Adegbenga, 2009).

The strategies pursued by households differ in several aspects, that is, within the household and between households (Maxwell *et al.*, 2003). Coping strategy practiced by vulnerable communities are not similar everywhere and differ with variation in the socio-economic, socio-cultural, demographic and geophysical conditions of an area. Study by Eshetu (2000) and Yared (2001) indicate different coping strategies used by

household in Ethiopia include livestock sales, agriculture employment, migration to other area, requesting grain loans, sales of wood or charcoal, small scale trading, selling dung and crop residues, consuming wild food,, reliance on relief assistance, small scale trading, borrowing of cash and/or food from better-off neighbors and/or relatives, and reducing number and size of meals.

West Hararghe zone is one of the food deficit zones of Oromia regional state, which falls in the second drought prone belt. In Hararghe, there have been very few years without famine relief distribution since the 1970's even during moderately dry or non-drought years. From this zone about 53% of the population is food insecure (Tesfaye, 2003). Hawi Gudina district is one of pastoralist area in west Hararghe zone which is characterized by recurrent drought, shortage of rain fall, marginal land, moisture stressed area & livestock loses and consequently people are facing food security problem. Various attempts have been made to overcome problems of declining agricultural productivity which have direct causal effect on food insecurity. However, problems have been more serious and critical than ever before and threat many of the people at the study area.

On the other hand various attempts have been made to overcome problems of food crisis by government and non-governmental organization and also local pastoralist households practiced their own coping mechanism to fulfill their family consumption. However, information concerning coping strategies practiced by pastoral households in the study area was not available. Therefore, this study was intended to assess coping strategies practiced by pastoral households in Hawi Gudina district of west Hararghe zone.

METHODOLOGY

Description of the Study Area

Hawi Guddina district is one of pastoral district of west Hararghe zone of Oromia National regional state. The district is situated between 7°52'15" and 9°25'43" N and 40°34'13" and 41°9'14" E. The topography of the district is mainly flat lowland with altitudes ranging from 976 to 2077 m.a.s.l. Annual rainfall of the district is 500 to 900 mm/year whereas minimum and maximum temperatures reach 14 to 35°C, respectively with average of 25°C. The pattern of rainfall is bimodal and its distribution is mostly uneven. Generally, there are two rainy seasons: the short rainy season 'Belg' lasts from mid-February to April whereas the long rainy season 'kiremt' is from June to September. The rainfall is erratic; onset is unpredictable, its distribution and amount is also quite irregular. The black and red soils are the dominant soil types of the district. The soil types vary with the topography mainly red soils are observed in the lowland areas while black soil observed in the midland areas (HGPDO, 2011).

The District is characterized by low and erratic rainfall, lack of agricultural input and service, disease, shortage of water & feed and infertility of soil are major constraints that reduces the productivity of crop and livestock which exposed households to be food insecure. The major livelihood of the population of the district is subsistence agriculture (producing both mixed farming), which is entirely depend on seasonal rainfall performance. About 32% and 68% of the population of the district are Agro-pastoralist and Pastoralist, respectively (Fekede *et.al*, 2014).

Livestock production is one of the major components of the farming systems in the study area as well and contributes to the subsistence requirement of the population, among other, in terms of milk and milk products and meat and draft power. According to the Pastoral and development office of the district livestock population of the district is composed of cattle, shoats, equines, camel and chicken. The major livestock production constraints are disease, shortage of water and lack of feed. Shortage of animal feed is closely associated with the wide spread of resource degradation and drought problem in the study area. In addition to livestock production, crop like sorghum, maize, groundnut are major crop produced in the area.

Table 1: Livestock population of Hawi Gudina district

Number	Type of livestock	Livestock number
1	Cattle	225,199
2	Sheep	4301
3	Goat	149,991
4	Donkey	6451
5	Mule	305
6	Camel	53,978
7	Poultry	30,535

Source: HGPDO, 2011

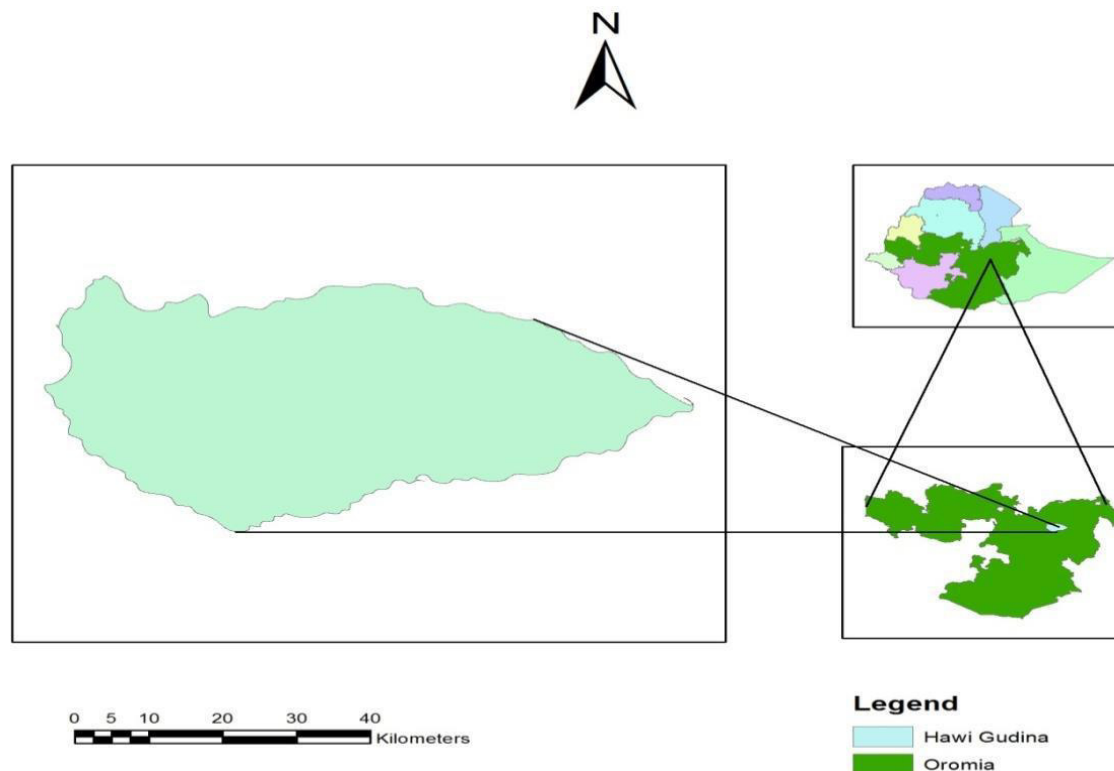


Figure 1: Map of study area.

Sampling Methods and Source of Data

The study was employed three-stage sampling techniques. In the first stage, the district was stratified based on agro- ecology of the district (midland and lowland). In the second stage, one Kebele was selected from midland and five Kebeles were selected from lowland by using probability proportional to size (PPS) and random sampling technique (lottery method). Finally, as the household was considered as basic sampling unit, 140 households were selected randomly by using PPS from the sampled Kebele Administration of the district. A structured questionnaire was designed and pre-tested to collect the primary data while secondary data were collected from journals, reports, books and the like. Coping strategies practiced by households were collected through household interview. On the other hand, to determine food security status of households, amount of food eaten by the household in a specific period (seven days in this case) were collected.

Methods of Data Analysis

Household caloric acquisition is a measure of the number of calories, or nutrients available for consumption by household members over a defined period of time. Data on available food for consumption include all sources; own farm production, purchase and /or gift/loan/wage in kind were collected for the last seven days before the survey day from the household. The most used recall period for measuring household food security status is two weeks or less. A one-week period may have an advantage over two weeks in that it is easier for households to remember what has happened since the same day last week. The day of the week can help to set up a specific memory post of the beginning of the recall period in respondents' minds, bounding the period (Smith and Ali, 2007).

After the data were collected using seven days recall period, the data were converted to kilocalorie using the food composition table manual (Ethiopian Health and Nutrition Research Institute/EHNRI, 1997). The household's daily caloric intake per adult equivalent was calculated by dividing the household's daily caloric intake by the family size after adjusting for adult equivalent using the consumption factor for age-sex categories (Zegeye, 2009). Then the results were compared with the minimum subsistence requirement per AE per day (that is, 2100 kcal). Households who consume below this minimum requirement (2100 kcal per AE per day) were categorized as food insecure and those households who consume above the threshold were considered as food secure.

The local coping strategies practiced by the Pastoral household in the study area, differs since food insecurity conditions were different among households. Therefore, different coping strategies were collected to identify coping strategies practiced in the study area. Finally, simple descriptive statistics (percentages and frequencies) were employed in addressing the local food insecurity coping strategies of Pastoral households in the

study area.

RESULT AND DISCUSSION

Household's Socio-Economic Characteristics

The study result showed that the overall mean family size of sample households was 6.88 with minimum and maximum of 1.75 & 15.3, respectively. According to CSA & Word Bank, 2013, the national average family sizes of Ethiopia were 5.1 per household in which the figure of this study were greater than national average. The minimum and maximum age of sampled household is 18 and 59 with average of 36.3 years. Ownership of livestock has great implication on the food security status of pastoral households in the study area. The minimum and maximum livestock herding size in TLU in the study area were 0 & 20 with mean of 4.95 (Table 1).

The distribution of household regarding educational status indicates that 42.1% of them found to be literate, while 57.9% of the respondents were illiterate. The majority of the households (75%) are married followed by Widowed (13.6%), Divorced (8.5%) and unmarried (2.9%). Regarding religion of the households, 84.3%, 21.1% and 3.6% are Muslims, orthodox and Protestants, respectively. According to household response, food source for their family was from own production (17.1%), purchase from market (47.1%) and gift/food aid (35.7%) which indicated that most of the households satisfy their family consumption through purchasing food/food item from market (Table 1).

Table 2: Distribution of households by socio economic characteristics (N=140)

Characteristics		Minimum	Maximum	Mean
Household size(AE)		1.75	15.3	6.88
Age(No.)		18	59	36.3
Livestock herding size(TLU)		0	20	4.95
		Frequency	Percentage	
Education status	Illiterate	81	57.9	
	Literate	59	42.1	
Sex	Male	112	80	
	Female	28	20	
Religion	Orthodox Christian	17	12.1	
	Protestant	5	3.6	
	Muslim	118	84.3	
Marital status	Married	105	75	
	Widowed	19	13.6	
	Divorced	12	8.5	
	Unmarried	4	2.9	
Source of food for HHs	Own produce	24	17.1	
	Purchase from Market	66	47.1	
	Gift/ food aid	50	35.7	

Source: Survey result, 2013

Food Security Status of Households in Hawi Guddina District

Food secure and insecure households were identified based on the calorie intake extracted from the size and pattern of food consumption of each household based on seven day data. The results of the study showed that 32.9 and 67.1% of sample households were food secure and food insecure, respectively (Table 1). The average per capita calorie intake in the area was found to be 2069.55 kcal which is lower than the national average of 2,100 kcal. Tests of mean difference between food insecure and food secure households shows that there was statistically significant difference between the two groups at one percent probability level which indicated that most of households in the study area were considered as food insecure.

Table 3: Energy available per AE per day among sample households

Energy available per AE in(kcal)	Food secure (n=46)	Food insecure (n=94)	Total sample (n=140)	t-value
Minimum	2152	1304	1304	
Maximum	2995	2089	2995	48.67***
Mean	2703.45	1759.35	2069.55	
Standard deviation	233	241.35	504.5	

***Significant at 1 percent probability level

Source: survey result, 2013

Farming Households Coping Strategies during Food Insecurity

Pastoral households in the study area practiced various coping strategies in a different manner during food insecurity problem. Households coping strategies are more diversified as a means to minimize possible shocks from food crisis. The way a household cope up of food insecurity depends on the options available in terms of capabilities, assets and activities.

According to the response of households both groups practiced different coping strategies at household level during food crisis. Reducing size of meals (86.4%), sale of cattle (80%), borrow grain/cash from relative (74.3%), work as daily laborer (60.7%) and sell of firewood & charcoal (58.6%) were the top five strategies that were practiced by sampled households during food insecurity situation (Table,4). The result of the study revealed that reduce size of meals, sale of cattle, borrow grain / cash from relatives, reduce number of meals, sale of firewood & charcoal, work as daily laborer were the major strategies practiced by both groups against food insecurity problem which the result of this study is consistence with study of (Idiris & Adem, 2013, Mokonen, 2011 and Wilhemina, 2008).

According to respondent response 84.9% food secure and 77.7% of food insecure households were practiced selling of cattle as major coping strategies in the study area. However, the price of livestock didn't become stable due to poor infrastructure and lack of potential market in the district. Borrowing grain / cash from relatives was also another coping strategies that both categories of food security status undertaken during food insecurity. Both of food secure (73.9%) and insecure (74.6%) households, respectively borrow grain / cash from relatives to cope with food deficit problem. In the beginning, the poor and disadvantaged people knock the door of neighbors, friends and relatives to borrow food grains/cash. In extreme cases they go to local merchants and neighbors district to borrow grain / cash.

Collection and selling of firewood and charcoal are common practices in the study area. The community has access to use forest resources which facilitate deforestation and main cause of drought. So, forest access has both direct and indirect impact on the household's food security status. Some coping strategies have negative effects on the conservation of natural resources which is hold true for sale of firewood and charcoal practiced by households in the study area. Households collect directly firewood and prepare charcoal for home consumption and selling purpose. In the study area 65% and 55.3% of food secure and food insecure households, respectively collect firewood and charcoal for selling purpose in order to satisfy food demand of his/her family.

The result of the study also indicate that working as daily laborer, seasonal migration and consuming wild food were other option that household used as coping strategies during food insecurity. Working as a daily laborer is widely adopted in the study district, particularly resource poor households are engaged in daily labor for their livelihood. Working as daily laborer includes agricultural laborer during the agriculture season and non-agricultural laborer such as house construction and work in government constructing infrastructures were the common activity that households undertaken specially by moving to neighbor's district.

As the food shortage prolonged, become sever and after households exhausted most of other coping strategies, the households practiced seasonal migration and consume wild food. Temporary migration to neighbor's district and neighbor's zone are other coping strategies practiced by households in the study area. According to the response of the respondent out of food secure and insecure households 34.8% and 42.6%, respectively undertake seasonal migration to nearest town, district and rarely to nearby zone to search food for family consumption.

The use of wild plants as sources of food for humans seems more common and widespread in food insecure areas. Local people, from their own experience, know about the importance and contribution of these plants to their daily diet, as well as being aware of possible health and environmental hazards (Direess *et al.*, 2007). Among the wild food plants found in the district, cactus is mostly used locally by households for consumption. About 43.6% of the food insecure households collect wild foods for home consumption. During food insecurity households were depend on collection of cactus by moving far distance from their residence to fulfill household's food demand

Table 4: Coping strategies practiced by households during food crisis in the study area

Coping strategies practiced by pastoral households	Food secured (n=46)		Food Insecure (n=94)		Total sample (n=140)	
	Number	Percent	Number	Percent	Number	Percent
Reduce number of meals	31	67.4	46	48.9	77	55
Reduce size of meals	42	91	79	84	121	86.4
Reduce adult meals	22	47.8	35	37	57	40.7
Sale of small ruminant	28	60.8	51	54.3	79	56.4
Sale of cattle	39	84.9	73	77.7	112	80
Sale of fire wood and charcoal	30	65	52	55.3	82	58.6
Participate in food for work	11	23.9	28	29.8	39	27.9
Borrow grain or cash from relatives	34	73.9	70	74.6	104	74.3
Work as daily worker	25	54.3	60	63.8	85	60.7
Food aid	17	37	29	30.9	46	32.9
Seasonal migration	16	34.8	40	42.6	56	40
Child laboring	7	15.2	15	16	22	15.7
Consume wild food	0	0	41	43.6	41	29.3

Source: own survey result, 2013

CONCLUSION AND RECOMMENDATION

The study set out to assess household coping strategies during food insecurity situation in Hawi Gudina districts of west Hararghe zone of Oromia region. According to the result of the study out of total interviewed households, only 32.9 % of them are food secured while 67.1% of households are food insecure. Households in the study area employed different coping strategies during food insecurity problem. The result of the study revealed that both food secure and food insecure groups practiced coping strategies toward food insecurity at household level. Reducing size of meals (86.4%), sale of cattle (80%), borrow grain/cash from relative (74.3%), work as daily laborer (60.7%) and sell of firewood and charcoal (58.6%) were the major strategies that sampled households practiced during food insecurity situation in the study area. In addition to the above, the household experienced with coping strategies like reduce adult meals, participate in food aid program, child laboring, consume wild food and seasonal migration when the condition was very severe.

Even though households employed different coping strategies, some of the strategies have indirect/negative impact on future household's asset and natural resource of the study area. Out of the sample households 80% of them employed sale of cattle and 56.4% sale of small ruminant as coping strategies to toward food insecurity which threaten their livestock asset in the future. On the other hand 58.6% of the household practiced sale of fire wood and charcoal as coping strategy during food insecurity situation. However, as the community continues with sale of firewood and charcoal as coping strategy the natural resource of the study will be under question and facilitate climate change which creates another problem to the community. Therefore, government, non-governmental organization and other concerning body should give attention to save households asset and natural resource of the study area through creating awareness creation on strategies they employed and provision of other option for the community which are suitable to the environments of the study area.

REFERENCES

- Adegbenga E.A., 2009: Food insecurity and coping strategies among rural households in Oyo State, Nigeria. *Journal of Food, Agriculture & Environment Vol.7 (3&4)*.
- CSA (Central Statistical Agency) & World, 2013. Ethiopia Rural Socioeconomic Survey of Ethiopia. Survey report, 2013.
- Demese Ch, Berhanu A, John M., 2010. Ethiopian's Agricultural Sector Policy and Investment Framework: Ten year Roadmap (2010-2020).
- Diress Ts., Mulubrhan B., Kindeya G., Mitiku H., Girmay G., Mohammed T., and Ermais A., 2007. The role of Garsa for household food security at times of food shortage in Aba'ala Woreda, North Afar: Ecological Adaptation and socio-economic Value. Study from Ethiopia, DCG report No. 49.
- EHNRI (Ethiopian Health and Nutrition Research Institute), 1997. Food composition table for use in Ethiopia. Part III, from 1968-1997.
- Eshetu Bekele, 2000. The root causes of food insecurity and coping mechanisms of rural households: A case study of Wereilu Woreda. MSc.Thesis, AAU, Ethiopia.
- Fekede G., Lemma Z. and Jemal Y., 2016. Determinants of farm household food security in Hawi Gudina district, West Hararghe zone, Oromia Regional National State, Ethiopia. *Journal of Agricultural Extension and Rural Development, Vol.8(2)*

- Genene T, Wegayehu B (2010). Farmers' perceptions of land degradation and determinants of food security at Bilate Watershed, South Ethiopia. *EJAST* 1(1):49-62.
- HGPDO (Hawi Gudina Pastoral Development Office), 2011. Report of Hawi Gudina district pastoralist development office, Annual report 2011.
- Indris S. and Adam B., 2013. Assessment of Food Insecurity and Coping Mechanisms among Pastoral Households of Afar National Regional State: The Case of *Chifra* District, Ethiopia. *Ethiop. J. Agric. Sci.* 23:145-156 (2013).
- Maxwell, D., B. Watkins, R. Wheeler and G. Collins, 2003. The Coping strategies index: A tool for rapid measurement of household food security and impact of food aid programs in humanitarian emergencies. CARE and WFP.
- Mokonen W/Yesus, 2011. Household Food Security, Constraints and Strategies among Borana Pastoral Communities of Ethiopia. An M.sc. Thesis Presented to the School of Graduate Studies of Addis Ababa University.
- Yared A., 2001. Livelihood Strategies and food security Policy in Ethiopia, Proceedings of the Symposium of the Forum for Social Studies, 10-11 march 2000, Addis Ababa.
- Smith LC, Ali S., 2007. Measuring Food Security Using Household Expenditure Surveys. Food Security in Practice technical guide series. Washington, D.C.; International Food Policy Research Institute.
- Tesfaye L., 2003. Livelihood strategies in context of population pressure. A case study in Hararghe Highlands, East Ethiopia. Ph. D. Dissertation. University of Pretoria. South Africa.
- Uma R. and Minu D., 2000. Understanding Household Coping Strategies in Semi-Arid Areas: A Review of Empirical Literature.
- Wilhemina Q., 2008. Food security situation in northern Ghana, coping strategies and related constraints. *African Journal of Agricultural Research* Vol. 3 (5).
- Workneh N, (2004). Reasons for Food Insecurity of Farm Households in South Wollo, Ethiopia: Explanations at Grassroots. Institute of Development Research (IDR), Addis Ababa University CRSP (Collaborative research support programme).
- WFP (World Food Program), 2011. Food Security Situation in Ethiopia, Especial Issue. April 8, 2011.
- Zegeye Tirfe, 2009. Farm Household Food Insecurity, Determinants and Coping Strategies: The Case of Fadis District, Eastern Oromia, Ethiopia. An M.sc. Thesis Presented to the School of Graduate Studies of Haramaya University.