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Assessing the Degree of Food Insecurity among Farming Households: Evidence from the Central Region of Ghana

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Abstract
This study seeks to determine the level of food insecurity among farming household in the Central Region of Ghana. A multistage sampling technique was used to select the respondents that were interviewed using a structured questionnaire. In all 240 households were interviewed for the study (i.e., 120 farming households in each of the Forest Communities and Coastal Communities). Data was obtained from 1690 individuals for the analysis of the food security status of the households. The empirical results reveal that majority of the respondents were food insecure. Though majority of the households were food insecure, the level of food insecurity was not severe. The months of April and May are the periods in which households experience severe food shortage. The immediate food insecurity coping strategies households adopt when faced with food insecurity are eating less preferred food, food rationing and skipping meal within a day. Most of the food insecurity coping strategies used by farming households are moderate, and only employed to temporarily minimize the impact of food insecurity. These results have implications for agricultural food policy in developing countries.
Key words: Food insecurity, farming households, copping strategies, Ghana

1. Introduction

The challenge facing world leaders today is how to reduce poverty and ensure food security. This challenge is necessitated due to the over growing population of the world, coupled with worsening climatic conditions as well as the high poverty rate among people. Though the world has made significant strive in the area of improved technology of farming leading to the improvement in the food production and food storage, this has not translated to ensuring food security to all people. Evidence available indicates that the number of people suffering from chronic hunger has hit 1.2billion in 2009 (FAO, 2009). The term "food security" became conspicuous after the World Food Conference in 1974 and was further highlighted by the commitment of world leaders to eradicate extreme poverty and hunger by 2015.

Food security has therefore been defined by various organizations and researchers, however, notable among the definitions is the one provided by World Bank 1986 which defined food security as "access by all people at all times to enough food for an active and healthy life" (World Bank, 1986 -p8). This definition was subsequently augmented by FAO to include the nutritional value and food preferences. Thus, FAO (1996) defined food security as a situation when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for a healthy and active life.

Food insecurity is the absence of food security and applies to a wide range of phenomena ranging from famine to periodic hunger to uncertain food supply (Bokeloh *et al.,* 2009). Food insecurity also refers to the inability of a household or individuals to meet the required consumption levels in the face of fluctuating production, price and income (Moharjan and Chhetri, 2006). The effects of food insecurity on individuals and a nation cannot be over emphasized since no country can develop with food insecure citizenry. Scientific evidences linking food insecurity to the deterioration in human, social, cultural and political wellbeing has been established in the literature. For instance, food insecurity is linked with wide range of poor health and nutritional outcomes in adolescents, adults, and Children (Campell, 1991; Pinstrup-Andersen, 2009; Belachew *et al.,* 2011). Food insecurity also affects both psychosocial and physical health outcomes (Hadley and Patil, 2006; Hadley *et al.,* 2008) and leads to overall poorer health among members of food-insecure households (Hadley *et al.,* 2008; Chilton *et al.,* 2009), poor pregnancy outcomes, including low birth weight and gestational diabetes (Borders *et*

al., 2007; Laraia *et al.,* 2010), increase maternal depression and anxiety (Whitaker *et al.,* 2006; Casey, 2004), as well as reduced self-esteem (Laraia *et al.,* 2006).
Weiser *et al.,* (2007) revealed that food insecurity was linked to high-risk sexual behavior among women in Botswana and Swaziland. According to Victora *et al.,* (2008) inadequate nutrition before the age of two years could result in permanent effects on an individual's physical, mental development as well as future potential.

Households adopt several strategies in an event of severe food shortage to manage the impact of food insecurity stemming from mild strategy such as eating less preferred food to severe strategies such as skipping meal for a day which sometimes are detrimental to their wellbeing. A review of literature revealed the following: withdrawal of children from school, a decrease in the intake of certain foods, the sale of assets to purchase food, theft, or exchange of sex for food or money (Kendall *et al.,* 1996; Kyaw, 2009; Salaam-Blyther and Hanrahan, 2010; Weiser *et al.,* 2007; Quaye; 2008; Holmes *et al.,* 2009). Women tend to resort to risky coping strategies, especially when they have low education and economic opportunities (Ivers and Cullen, 2011). To alleviate the negative effects of food insecurity requires the concerted efforts of world leaders to work towards reducing poverty and improving food security situation in the world especially at the household's level. This requires perfect understanding of the world food situation which will then inform policy.

Evidence available indicates the worsening food security situation in the world as a result of spike in world food prices and global recession in 2006 to 2008 was expected to improve marginally in 2012 (Wodon *et al.,* 2008; WFP, 2009; Brinkman *et al.,* 2010). The literature reveal that the number of food-insecure people in Sub-Sahara Africa was estimated to decline by 4.3 percent in 2012 and the distribution gap to fall by 1.8 percent, and that, despite the decline in the number of food-insecure people, the intensity of food insecurity was expected to rise in 2012 compared to 2011 in Sub-Saharan Africa (Rosen *et al.,* 2012).

According to United Nation Report on Millennium Development Goal (2010), though various interventions have been put in place to improve the lots of the people, improvements in the lives of the poor have been unacceptably slow, and some hard-won gains are being eroded by the climate, food and economic crises. According to Rosen *et al.,* (2012), the number of food-insecure people in 76 lower income countries will increase by 37 million (4.6%) for the next decade (2012 -2022). Sub-Sahara Africa is projected to have the highest increase (15.1%) in number of food insecure people, though the share of the population that is food insecure is projected to fall from 42 percent in 2012 to 38 percent in 2022 (Rosen *et al.,* 2012). Domestic food performance is expected to play the most critical role in the food security of these countries which depend mainly on local grain supplies.

An examination of the rate by which food prices increase daily in Ghana, migration of people from rural to urban areas, and the state of the economy in terms of food supplies and consumption, has put a lot of burden on people living in poverty, especially, those in extreme poverty majority of which are farming households (Wiggins, 2009 and Nagayets, 2005). Although poverty and low income are associated with food insecurity (Oni *et al.,* 2011), adequate household income only is not sufficient to ensure food security (Ivers and Cullen, 2011). This suggests that Economic growth and improvements in the distribution of income or consumption reduce the depth of poverty and ensure food security. The objectives of the study are three fold: To establish food security status of farming households in the Central Region of Ghana; To determine the level of food insecurity among farming household in the Central Region of Ghana; To identify and rank food insecurity coping strategies used by farming households in the Central Region of Ghana.[4]

2. Methodology

2.1 Study Area

The study was conducted in the Central Region of Ghana which occupies an area of 9,826 square kilometers constituting 4.1 per cent of Ghana's land area making it the third smallest region after Greater Accra and Upper East Region. It shares common boundaries with Western Region on the West, Ashanti and Eastern Regions on the north, and Greater Accra Region on the East. On the south is the 168-kilometre length Atlantic Ocean (Gulf of Guinea) coastline. It also hosted the capital of the Gold Coast (at Cape Coast) until 1877, when the capital was moved to Accra (www.ghanadistric.com).

The region lies within the dry equatorial zone and moist semi-equatorial zone. Its annual rainfall ranges from 1,000mm along the coast to about 2,000mm in the interior (forest). The wettest months are May–June and September–October, while the drier periods occur in December- February and brief period in August. Mean monthly temperature ranges from 24^0C in the coolest month (August) to about 30^0 C in the hottest months

[4] This study is a follow up of Kuwornu et al., (2013ab).

(March –April). The coastal line is characterized with grassland and interspersed with few trees, while semi deciduous forest dominates the inland areas. The region has a population of 2,201,863 consisting of 51.2% females and 48.8% males (GSS, 2012). The major occupation in the region is agriculture with fair representation of artisans and traders. Those along the coastal line are mostly engaged in fishing whiles those in the hinterland (i.e., forest areas) are engaged in food and cash crop production. Four Municipal and District Assemblies were selected for this study namely, Assin North Municipality and Agona East Municipality representing the forest part and Awutu Senya District and Gomoa West district representing the Coastal communities.

2.2 Sampling and Data Collection

A multistage sampling technique was used to select the respondents that were interviewed. The sampling procedure is in three stages as follows.

The first stage involves the selection of districts and municipalities from which respondents interviewed were selected. This was done using purposive sampling techniques where the districts and municipalities were grouped into forest and coastal areas. It was followed by writing the names of all the districts and municipalities in the forest areas on pieces of paper and randomly picking two districts or municipalities.

The second stage involved selection of communities and villages visited using purposive and simple random sampling. This was achieved with the help of the districts' MoFA directorates which grouped the communities into those which have functional Farmer Based Organization (FBO), extension contacts and those who do not have to give fair representation of different groups of farmers. Two communities each were selected from communities with functional FBO and extension contacts and those communities without FBO and extension contacts.

The third and final stage was the selection of the farming households that were interviewed. Again, the respondents were selected using simple random sampling. In this respect, data regarding their socio-economic characteristics, food availability, food accessibility, and access to credit were obtained for analysis.

In all 240 households were interviewed for the study (i.e., 120 farming households in each of the Forest Communities and Coastal Communities were interviewed). Data was obtained from 1690 individuals for the analysis of the food security status of the households. These 1690 individuals consist of 851 and 839 individuals from the Coastal and Forest communities, respectively. The households were selected from Two (2) districts and Eight (8) communities in the Forest belt, and the same was done for the Coastal belt. The eight (8) selected communities in the Forest belt are Assin Dompem, Assin Joaso, Ayittey Nkrafoum, Assin Kushea, all in the Assin North Municipality; and Agona Nsaba, Agona Mensakrom, Agona Kwanyako, Agona Asafo, all in the Agona East Municipality. Similarly, the eight (8) selected communities in the Coastal belt are Senya Bereku, Ahyentia, Aberful, Amadua, all in the Ewutu Senya District; and Munford, Apam, Gomoa Wasa, Gomoa Edwumako, all in the Gomoa West District.[5]

2.3 Method of Data Analysis

2.3.1 Estimating Food Security Index

To establish food security status of farming households in the study area, the study constructed Food Security Index (Z_i) and determined the food security status of each household based on the food security line using the Recommended Daily Calorie Required approach as used by Babatunde *et al.,* (2007). Households whose Daily Calorie Intake were equal or higher than Recommended Daily Calorie Required were considered food secure households and those whose Daily Calorie Intake were below the Recommended Daily Calorie Required were considered food insecure households. The Food Security Index is given as:

$$Z_i = \frac{Y_i}{R} \qquad (1)$$

[5] In this study Coastal communities are used interchangeably with Coastal belt; and Forest communities are used interchangeably with Forest belt.

Where Z_i represents Food Security Index of i[th] household, Y_i is Actual Daily Calorie Intake of i[th] households and R is the Recommended Daily Calorie Requirement of i[th] household. To obtain Per Capita Daily Calorie Intake; daily calorie intake of each household was divided by its' household size. Households' Per Capita Daily Calorie Requirement was also obtained by dividing the households' Daily Calorie Requirement by household size. Based on the food security index estimated, the study further estimated food insecurity gap (FIG) Food Insecurity gap is given by:

$$\frac{1}{M}\sum_{i=1}^{n} G_i \qquad (2)$$

Where M represents the number of food insecure households and G_i is the calorie intake deficiency for the i^{th} households. G_i was further expanded in a form;

$$G_i = (\frac{Y_i - R}{R}) \qquad (3)$$

where Y_i and R are as defined previously.

To determine the Daily Recommended Calorie Requirement or food needs of each farming household, the Ghana Statistical Service (GSS) and the International Food Policy Research Institute (IFPRI) (2000) standard of 2,900kcal was used. The households' composition or daily food requirement (daily calorie requirement) was estimated by first of all categorizing members of each household into different age groups based on the fact that different age groups have different calorie requirements. The daily energy (calorie) requirements of various compositions of the households were converted into adult equivalent using the equivalent scales as shown in Table 1.

Table 1: Recommended Daily Energy Intake and Equivalent Scale

Age Category (years)	Average energy allowance per day	Equivalent Scale
Children (<6)	1150	0.4
Children (6 -18)	2250	0.7
Adults (> 18)	2900	1.0

Source: Ghana Statistical Service (2000)

Total household calorie requirement was obtained by multiplying the total number of adult in each households by the recommended calorie requirement of 2,900kcal (i.e., Total Number of adult*2900kcal). The total food requirements for children were converted to adult equivalent. This was done by multiplying the total number of children below the age of six (6) years in each household by Recommended Daily Calorie Requirement of 2900kcal and conversion factor of 0.4.

The total number of children between the ages of 6 to 18 years in each household was also multiplied by Recommended Daily Calorie Requirement of 2,900kcal and a conversion factor of 0.7 to obtain their adult equivalent. The total Daily Calorie Requirement for each household was obtained by summing up the requirement for the three age groups estimated above.

Households' daily food consumption (Daily Calorie Intake) was obtained from household own food production and purchases to supplement own food production. The data on actual food consumed (maize, rice, cassava, and plantain) by each household per week was obtained and converted into kilogram. The energy content of 1kg of each foodstuff (maize, cassava, rice and plantain) was obtained from literature as showed in Table 2.

Table 2: Cereal Equivalent Conversion Ratios

Food Crop	Calorie/kg	Milling ratio	Maize equivalent ratio
Maize	3,590	0.85	1.00
Rice	3,640	0.65	0.92
Cassava	1,490		0.40
Plantain	1,350		

Source: Okigbo (1991) and Latham, (1969) [Compiled by Tayie and Lartey (2000). Nutrition and Food Science Department, University of Ghana, Legon]

The total quantity of each food (in kilogram) consumed was then multiplied by the energy content (e.g. total kilogram of cassava consumed per week *1,490kcal = total kcal of cassava consumed). This procedure was repeated for rice and plantain. However, due to processing and grinding losses, the quantity of maize consumed per week was multiplied by the energy content (3950kcal) and the milling ratio of 0.85. The total kilocalories of maize, cassava, rice and plantain consumed by each household were summed up and divided by 7 to obtain Actual Daily Calorie Intake.

2.3.2 Determining the Level of Food Insecurity among Farming Households

Following (Kyaw, 2009) the levels of food insecurity among households were identified by estimating the index of coping strategies used by households and categorized households based on their index of coping strategies. The respondents were asked whether there has been an occasions where there was no enough food in the house or inadequate money to purchase food in the past 30 days. The respondents who responded yes to the question were further asked to identify the coping strategies they used to reduce the impact of the food insecurity situation. Respondents were further asked the number of time each strategy was used per week which was then multiply by four to obtain the number of times each strategy was used per month.

Next, to calculate the index of coping strategies, the number of different strategies used by each household was first summed up. The weighted sum of these different coping strategies were then calculated where the weights represent the frequency of use of each strategy. Thus, households were categorized and assigned a score based on the number of times strategies were used per month. The households that never used any strategy at all were assigned 1; those whole rarely used any strategy (used 1 to 2 times) were assigned 2; and those who used any strategy from time to time (used the strategies 3 to 10 times) were assigned 3; and those who used the strategies often (more than 10 times per month) were assigned 4. Based on the index of coping strategies, the farming households were categorized into 3 groups: *low*, *medium* and *high* index of coping strategies. This is summarized in the table 3.

Table 3: Description of Index of Coping Strategies

Description	Mean No. of times strategies were used per month	Index of Coping Strategies	Level coping Strategies
No Strategy	0	1	No strategy
Rarely used	1 to 2	2	Low
From time to time	3 to 10	3	Medium
Often used	Above 10	4	High

2.3.3 Identifying and Ranking Coping Strategies Used by Farming Households

Coping strategies are measures that are adopted by households to mitigate the impact of food insecurity. Studies have identified varied strategies adopted by households in times of food shortages (e.g., Maxwell, 1995; Kyaw, 2009). This objective was achieved by reviewing literature to identify common strategies households use to minimize the impact of food insecurity. These strategies were pretested for confirmation or otherwise and latter presented to the farming households to tick and rank as applied in their cases.

Numerous methods for testing ranking of an object have been identified from literature and notable among them are Garrett's ranking score techniques, Friedman's two-way analysis of variance and Kendall's coefficient of concordance. There is close relation between Friedman's test and Kendall's coefficient of concordance (Legendre, 2005). They address hypotheses concerning the same data and use Chi squarer test for testing. However, they differ in the formulation of their respective hypothesis. Whereas Friedman's test focuses on the

items being ranked, the hypothesis of Kendall's test focuses on the rankers themselves. Garrett's ranking score techniques on the other hand uses average score of the rankers and arrange them in either ascending or descending order. However, the limitation of this method is that it involves a number of steps and it does not test the level of agreements between rankers. Kendall's coefficient of concordance was employed by this study because the Kendall's (W) provides the test of agreement of the rankers (respondents), among their rankings which the Friedman's and Garrett's test lack.

3. Empirical Results

3.1 Food Security Status of Farming Household in the Study Area

Table 4 presents the food security status of respondents using Recommended Daily Calorie Intake of 2,900kcal. The result indicates that majority of respondents (67.9 %) were food insecure and only 32.1% were food secure. This implies that the study area was potentially food insecure.

Table 4: Food Security Status of Respondents

	GSS/IFPRI 100% (2900kcal)	
Item Description	Food Secure	Food Insecure
Percentage of Household	32.1	67.9
Number of Household	77	163
Mean (FSI)	1.4	0.67
Std deviation	0.372	0.174
Per capita Daily Calorie Allowable	2121kcal	

Source: Field Survey, 2012

The statistics of the food security status of the farming households showed that the mean food security index for those households who were found to be food secure was 1.4 (above the threshold of 1). The mean food security index for food insecure households was also found to be 0.67(below the threshold of 1). Per capita calorie intake was estimated and found to be 2121kcal which was below the national average of 2,849kcal (www.faoghana.org). These indices were higher compared to what was estimated by Pappoe (2011) and Quinoo (2010) in their study conducted in parts of Central Region of Ghana. However, Pappoe (2011) used three food items (maize, rice and cassava) in his analysis and also considered only farming households in the coastal communities. The food insecurity gap which measures the depth of food insecurity is also estimated to be 0.26. This result implies food insecure households required an additional 26% of calorie intake to meet their daily calorie requirements. Though this result shows the level of food insecurity across the farming households in the area, this study also examines the differences in the levels of food insecurity. This was achieved by computing an index based of coping strategies as explained in section 2.3.2 above. The results are presented in the next section.

3.2 Level of Food Insecurity among Farming Households in the Coast and the Forest

To determine the level of food insecurity among farming households in the forest and the coastal communities, the index of coping strategies used by farming households to reduce the impact of food insecurity were converted into indices and presented in table 5. Comparing the index of coping strategies between the forest and coastal farming households, the study revealed that the proportion of households who practiced no strategy was high (41.7%) in forest communities than the coastal communities (30%).

Table 5: Index of Coping Strategies used by Respondents as a Proxy for the Degree of Food Insecurity

Coping Strategies	Coastal		Forest		Overall	
	Freq.	%	Freq.	%	Freq.	%
No strategies	36	30	50	41.7	86	35.8
Low Index	25	20.8	30	25.0	55	22.9
Medium Index	58	48.3	40	33.3	98	40.8
High Index	1	0.8	0	0	1	0.4
Total	**120**	**100**	**120**	**100**	**240**	**100**

Source: Field Survey, 2012

Table 5 also shows that the proportion of households who practiced low index of coping strategies was higher (25.0%) in the forest than the coast (20.8). However, the proportion of households who practiced medium index of coping strategies was higher (48.3%) in the coast compared to forest communities (33.3%). It was also observed that none of the respondents in the forest communities practiced high index of coping strategies and only 0.8% of the farming households in the coast practiced high index of coping strategies.

The overall result reveals that few households (35.8%) practiced no strategy. This implies that 35.8% of the households were food secure throughout the year (2011) and majority (64.2%) were food insecure since they practiced one strategy or the other. Among households who practiced coping strategies, medium index of coping strategies were the highest (40.8%) followed by low index of coping strategies (22.9%) and high index of coping strategies were the lowest (0.4%).

3.3 Months Farming Households Experience Severe Food Shortage

Households were asked whether they have experienced food shortage in the previous year (2011). Those who responded yes were further asked to indicate the month(s) (from January to December) in which they experienced food shortage. The frequencies were illustrated in a line graph as shown in figure 1.

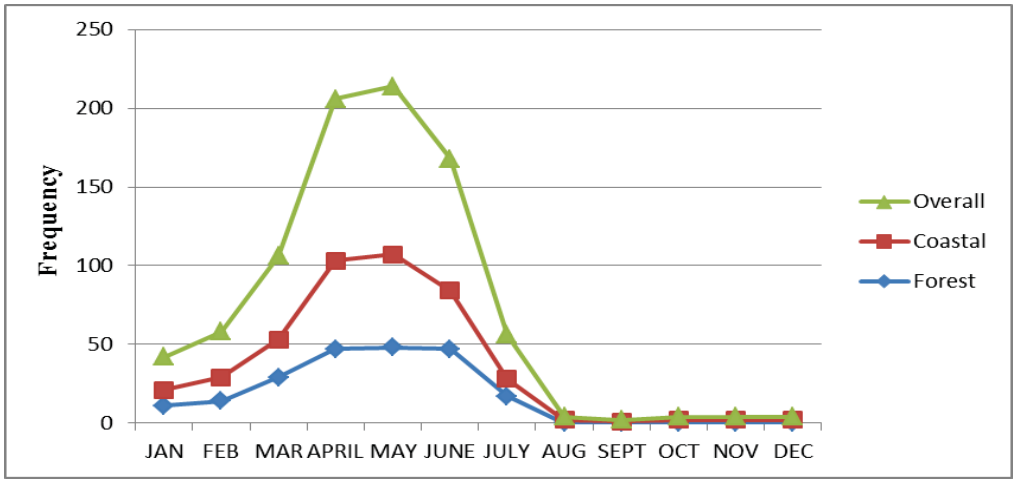

Figure 1: Months Households Experience Severe Food Shortage

Source: Field Survey, 2012

Figure 1 reveals that households experienced severe food shortage in the months of April and May both in the coastal and the forest areas.

The major season starts in March and ends in July whilst the minor season starts in September and ends in October during which the areas receive little rainfall. However, it is during the major season that most serious farming activities take place and just few farmers engage in farming in the minor season. Farmers start planting in March, and by August most farmers have harvested their farm produce which marks the commencement of abundance of food or glut depending on the changes in the weather. This continues to December, and depletion of household harvested food begins from January. Hence, it is not surprising that households experienced severe food shortage in the months of April and May.

3.4 Prevailing Food Insecurity Coping Strategies Used by Farming Households

The prevailing coping strategies used by farming households to mitigate the impact of food insecurity in the study area are presented in the table 6. The results indicate that the most common strategy used by farming households was eating less preferred food which has a mean rank of 1.79, followed by limiting size of food consumed, and skipping meal within a day that have mean ranks of 3.44 and 4.71, respectively.

The result of the study is consistent with the findings of Orewa and Iyangbe (2010) who revealed eating less preferred food, limiting size of food consume (food rationing) and skipping meal within a day were preferred strategies households adopt to minimize the impact of food insecurity. However, the findings of this study does not conform to the findings of Iddrisa *et al.,* (2008) who revealed allowing children to eat first, buying of food on credit and eating once a day as preferred strategies among the farming household in the Borno State of Nigeria.

Maternal buffering which is the practice where parents forego their food to enable children have enough when there were no sufficient food in the house or no enough money to buy food placed fourth on the rankings with a mean rank of 5.3. Borrowing money to buy food and borrowing food placed 5th and 6th rank with mean ranks of 5.66 and 5.89, respectfully. These strategies (borrowing money or food) were difficult to most of the respondents as they see these strategies as loss of pride, and those who practiced them borrowed from their relatives and not neighbours or friends.

Collecting food from the wild or garden, sold asset to buy food and travel to search for job were ranked 7th, 8th, and 9th with means ranks of 6.03, 6.04, and 615, respectively. It is important to note that the mean ranks were arranged from the least to the highest and the least mean rank was considered the 1st rank. The reason for this is that, nine items were ranked and a value of one (1) was assigned to the most important item and Nine (9) the least important item. The Kendall's W of 0.523 implies that there was agreement among 52% of the rankers (respondents), which was significant at 1% as indicated by the p-value of 0.000.

Table 6: Rankings of Coping Strategies by Farming Households

Coping Strategies	Mean Rank	Rank
Eating less preferred food	1.79	1st
Limiting size of food consume (food rationing)	3.44	2nd
Skipping meal within a day	4.71	3rd
Maternal buffering	5.3	4th
Borrowing money to buy food	5.66	5th
Borrowing of food	5.89	6th
Collecting food from the wild or garden	6.03	7th
Sold asset to buy food	6.04	8th
Travel to search for job	6.15	9th
Kendall's W =0.523; X^2 **=1004.1777;** **df = 8** **Sig 0.000**		

Source: Field Survey, 2012

4. Conclusions and Recommendations

This study seeks to determine the level of food insecurity among farming household in the Central Region of Ghana. A multistage sampling technique was used to select the respondents that were interviewed using a structured questionnaire. In all 240 households were interviewed for the study (i.e., 120 farming households in each of the Forest Communities and Coastal Communities). Data was obtained from 1690 individuals for the analysis. The empirical results reveal that majority of the farmers were food insecure. The food insecurity gap which measures the depth of food insecurity was estimated at 0.26. This result implies food insecure households required an additional 26% of calorie intake to meet their daily calorie requirements.
The months of April and May are the periods in which households experience severe food shortage. The immediate food insecurity coping strategies households adopt when faced with food insecurity are eating less preferred food, food rationing and skipping meal within a day.

The study revealed that the proportion of households who practiced no strategy was high (41.7%) in forest communities than the coastal communities (30%). The proportion of households who practiced low index of coping strategies was higher (25.0%) in the forest belt than the coastal belt (20.8). However, the proportion of households who practiced medium index of coping strategies was higher (48.3%) in the coast compared to forest communities (33.3%). It was also observed that none of the respondents in the forest communities practiced high index of coping strategies and only 0.8% of the farming households in the coast practiced high index of coping strategies. The overall result reveals that few households (35.8%) practiced no strategy. This implies that 35.8% of the households were food secure throughout the year (2011) and majority (64.2%) were food insecure since they practiced one strategy or the other. Among households who practiced coping strategies, medium index of coping strategies were the highest (40.8%) followed by low index of coping strategies (22.9%) and high index of coping strategies were the lowest (0.4%).

The study provides the following recommendations.
First, the government should broaden the pro-poor policies such as Livelihood Empowerment against Poverty (LEAP) and school feeding programmes to cover larger poor and food insecure households.
Second, food insecurity coping strategies adopted by households can only temporally minimize the impact food insecurity, therefore is there is the need for household to adopt more sustainable approaches such as engaging in income generating activities such as petty trading and off-farm activities.
Third, Non-Governmental Organizations (NGOs) and other organizations which intend to provide food aid to these communities should do that in the months of April and May since households will make good use of the food items during these periods.
Finally, Clinics and hospitals should consider providing food supplement such as vitamin E400iu to children below the age two years especially during the months of April and May to reduce the effects of food insecurity to the children.

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