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Socio-Economic Analysis of Food Security Status among Rural Farming Households in Kaduna State, Nigeria

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ABSTRACT

The study analyzed food security situation among rural farming households in Kaduna State, Nigeria. Multi-stage sampling technique was used for selecting samples for the study. In the first stage, four Local Government Areas were purposively selected based on their large concentration of farming households, from which two rural communities were each selected. The last stage involved simple random selection of 20% of the farming households from each rural community selected in stage two, to give a total of 120 households as the sample size for the study. Data were collected using structured questionnaires. Data were analyzed using descriptive statistics, household food security index and binary logistic regression model. Results of socio-economic characteristics of farming households showed that the mean age of household heads in the study area was 39 years, majority (87.5%) of the households was headed by males and 83.3% of the households' heads were married. Major occupations of the household heads were farming and trading representing 40% of all the household heads and over 59% of them had secondary school education. The results further show that average household size in the study area was 11 persons. Also, 40% of the household heads had farming experience of between 14 and 22 years and mean annual households income was ₦557,783.00. Majority (55.8%) of the household heads claimed not to have access to extension services. Results of food security status of farming households revealed that 67% of the households were food secure and 33% were food insecure. The Mean Per Capita Food Expenditure (MPCFE) and food security line were ₦3,549.61 and ₦2,366.41 respectively. Results of logistic regression analysis reveal that coefficients of farming experience and access to credit were positive on households' food security status and significant at 5% level of probability; while those of household size and monthly income were also positive and significant at 1%

level of probability. The results further shows that the most common food insecurity coping strategy used by farming households was borrowing money to buy food items, which was used by 60% of the households and ranked 1st.The study concluded that majority of the farming households were food secure. It recommends that low interest credit should be made available and easily accessible by commercial banks and other lending institutions to farmers since most of households rely on borrowing money to purchase food items in situations of food insecurity.
Keywords: Socio-economic, Assessment, Food Security, Farming households, Kaduna State.

INTRODUCTION

The concept of food security has evolved since the 1974 world food conference. At that time, discussion of food security focused on the supply of food at global and national levels and more specifically on ability of different countries to obtain food either through production, import or stock, or an adequate supply of food to feed their population. This focused on national food security and however neglected the fact that quite often countries did have adequate food supply at national levels and still faced with widespread hunger (Corral *et al.,* 2000). This conflicting scenario is reflected and it brought about the definition used in the 1996 Rome declaration on World Food Security which observed that food security exists 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 an active and healthy life (FAO, 2001).This definition clearly shows that there are some interrelationships between access to food, availability of food as well as the biological utilization and stability of food supply. Developing policies and interventions to increase food security therefore requires an understanding of each of these factors, their interrelationships and their relevance to particular group of people (FAO, 2004). Having been defined as access by all peoples at all times to enough food for an active and healthy life, food security is one of the several necessary conditions for a population to be healthy and well nourished. United States Department of Agriculture (2000) defined food security as access by all people at all times to enough food for an active, healthy life. Food

security includes at a minimum: (1) the ready availability of nutritionally adequate and safe food, and (2) an assure ability to acquire acceptable foods in socially acceptable ways (e.g. without resorting to emergency food supplies, scavenging, stealing, or other coping strategies).

Similarly, FAO committee on world food security sees it as a situation where all people at all times have both physical and economic access to the basic food they need (FAO, 2005). Bergeron, (2001) define food security as availability and access to food by all at all times. This definitional framework implies that food security constitutes a number of elements and they are food availability, accessibility and utilization of food. Food availability implies sufficient quantities of appropriate, necessary type of food from domestic production, commercial imports or donors are consistently available to the individuals or are within reasonable proximity to them or are within their reach. Food accessibility exists when individuals have adequate incomes to purchase or barter to obtain levels of appropriate food needed to maintain consumption of adequate diet/nutrition level. Food utilization however means that food is properly used; proper food processing and storage techniques are employed; adequate knowledge and nutrition and child care techniques exists and is applied; and adequate health and sanitation services exist (USAID, 1992).

Analysis of food security can be conducted at different conceptual levels: regions, countries, households and individuals. Much analysis of the topic has focused on the macro levels. Food production in their region as a whole and in most of its countries fall far short of food requirements making it necessary for most countries to turn to imports for a large share of domestic food consumption. As a result, the ability of most countries to maintain national food security depends on import capacity. On the micro level, food security depends on the ability of individual households to meet their food requirements (Lofgren and Richards, 2003).

Recognizing the main problem of food security is lack of access rather than aggregate shortage of food supplies, focus on food security has since the world food conference of 1974 moved from global and national definition of food security used in the 1996 Rome declaration on world food security which observed that food security exist 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 an active and healthy life (FAO, 2001). Food security is a measure of a household condition. Therefore not all individuals in a food insecure or hungry household are food insecure. The issue is especially important for young children who are often shielded from even the most severe forms of food insecurity and hunger.

Problem Statement

Productivity of smallholder farmers has been on the decline for some years now and at the same time the prices of food items has been on the rise. This is despite the fact that food is a basic necessity and is regarded as the basic means of sustenance and an adequate intake in terms of quantity and quality is a key for healthy and productive life (FAO, 2005). Food security is deemed to exist when all people at all times have the food needed for an active and healthy life. Food security is a complex phenomenon attributable to a range of factors that vary in importance across geographical and social boundaries (Arene and Anyaeji, 2010); including household income, farm size, education, household size, climatic and soil factors, distance to markets, access to credit and extension services. One of the most critical problems facing Nigeria today is that of securing already produced food, as availability of food does not automatically guarantee its accessibility. Food insecurity on the other hand refers to limited or uncertain physical and economic access to secure sufficient quantities of nutritionally adequate and safe food in socially acceptable ways to allow household members sustain active and productive living (Ijarotimi and Odeyemi, 2012; FAO, 1996). Nigeria's food insecurity problem has been reported to increase with

urbanization (Omonona, 2007). Progressive increase in urban population without corresponding increase in food output seemed to have worsened the food security situation in Nigeria. On a global note, the problem of food insecurity is usually associated with rural households and the urban poor who are more vulnerable to high food prices and limited access to food as a result of low income. This indicates that reducing rural food insecurity is very important to reducing the overall problem of food insecurity (Irohibe and Agwu, 2014).It is therefore against this background that this research was designed to analyze the food security status at the rural household level with a view to provide additional empirical information that would be important to policy makers and researchers interested in developing better policies and conducting further studies on food security especially in Kaduna State, Nigeria.

Research Questions

The research questions answered by the study were:

i. What are the socioeconomic characteristics of farming households in the study area?
ii. What is the food security status of farming households in the study area?
iii. What is the relationship between households' food security and their socioeconomic characteristics?
iv. What are the various coping strategies used by households to reduce incidences of food insecurity?

Objectives of the Study

The broad objective of the study was to analyze the food security status of rural farming households in Kaduna State, Nigeria. However, the specific objectives of the study were to:

i. describe the socioeconomic characteristics of farming households in the study area;
ii. determine the food security status of farming households in the study area;

iii. determine the relationship between farming households' food security and their socioeconomic characteristics; and
iv. describe the various coping strategies used by the households to reduce the effects food insecurity in the study area;

RESEARCH METHODOLOGY

Description of the Study Area

This study area was Kaduna State, Nigeria. The state is located between 10°20′N 7°45′E and 10.333°N7.7°50′E, and has a total of 23 Local Government Areas (LGAs), covering total land area of 46,053km² (www.tageo.com). The state is situated in the Guinea savannah agro-ecological zone of Nigeria; with two main seasons; the dry windy season and the rainy (wet) season. The wet season is usually from April through October with grater variation as one move up north of the state.

There is heavy rainfall in the southern part of the state with an average of about 1,530mm per annum; 1,053mm per annum in the extreme northern part of the state (Online Nigeria, 2015). According to National Bureau of Statistics, the state has a population growth rate of 2.4%, with current 2017 projected population of 8,217,117 persons (www.kdsg.gov.ng/demographics). Agriculture is the main stay of the economy of the state with about 80 per cent of the people actively engaged in farming. The state is a major producer of cotton. Other crops produced in the state include yam, groundnut, tobacco, maize, ginger, cowpea, guinea corn, rice and cassava. Grapevine growing has recently been introduced and has gained wide acceptance on small but intensively cultivated farms (www.tradeivestnigeria.com). The state is bordered by the states of Zamfara, Katsina and Kano to the north; Bauchi and Plateau to the east; Nassarawa to the south; and Niger to the west. Abuja, the Federal Capital Territory also borders Kaduna to the southwest (Encyclopaedia Britannica, 2015).

Sampling Techniques

The study used multistage sampling technique for selecting its samples. The first stage involved purposive selection of four LGAs based on their large concentration of farming households. As a result, Chikun, Igabi, Kubau and Soba LGAs were selected for the study. In the second stage, two rural communities were randomly selected from each LGA that were selected in stage one which gave rise to a total of eight rural communities included in the study. The last stage involved simple random selection of 20% of the households from each of the rural communities selected in stage two. This was achieved using Excel randomization and gave a total of 120 households included in the study as its sample size.

Table 1: Sampling Frame

LGAs	Rural communities	Est. number of households	Sample size (20%)	Total
Chikun	Kujama	65	13	33
	Sabon gida	100	20	
Igabi	Birnin yero	89	18	32
	Sabon birnin daji	70	14	
Kubau	Dutsen-wai	74	15	28
	Kampanin maude	66	13	
Soba	Gimba	65	13	27
	Kampanin gamagira	71	14	
Total		**600**	**120**	**120**

Source: Field survey, 2016

Methods of Data Collection

This study used primary data as its main source of information. Data were collected using structured questionnaires. The questionnaires were administered to the respondents for their responses. Information educed from the respondents were those regarding their socio-economic characteristics such as age, gender, marital status, occupation and educational qualification of the household heads. Also, information on monthly food expenditure of the households and food insecurity coping

strategies were elicited from the respondents. These went a long way in answering the research questions highlighted for the study.

Tools of Data Analysis

The analytical tools used for achieving the objectives of the study were descriptive statistics, household food security index and binary logistic regression model. These models were specified as follows:

Descriptive Statistics

Descriptive statistics were used to analyze the data with the aim of achieving objectives i and iv. This involved the use of frequency distribution, percentages and means.

Food Security Index

This index was used to achieve objective ii of the study. To establish food security status of the households in the study area, the study used the expenditure method of estimating food security adopted from Omonona *et al.* (2007). The food security index is given by:

$$F_i = \frac{\text{Per capita food expenditure of the ith household}}{\frac{2}{3}\text{mean percapita food expenditure of all households}} \ldots\ldots\ldots\ldots\ldots (1)$$

Where F_i = Food security status of i^{th} household

When $F_i \geq 1$, i^{th} household is food secure

When $F_i < 1$, i^{th} household is food insecure

A food secure household is therefore that whose per capita monthly food expenditure fall above or is equal to two-third of the mean per capita food expenditure. On the other hand, a food insecure household is that whose per capita monthly food expenditure falls below two-third of the mean monthly per capita expenditure (Omonona *et al.*, 2007).

Binary Logistic Regression Model

Logit regression analysis was used to determine the relationship between households' food security status and socio-economic characteristics of household heads so as to achieve objective iii of the study. The model was thus specified as follows:

$F_i = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \beta_9X_9 + U_i$…….. (2)

Where:

F_i = Household's food security status (1, if household is food secure and 0, if household is food insecure).

X_1 = Gender of household head (0=female and 1=male).

X_2= Age of household head (years).

X_3 = Marital status of household head (0= single, 1= married, 2= widowed and 3= divorced)

X_4 = Level of educational attainment of household head (0= never been to school, 1= informal education, 2= primary education, 3= secondary education and 4= tertiary education).

X_5 = Household size (number of persons).

X_6 = Farming experience (years).

X_7= Monthly household income (Naira).

X_8 = Access to credit (0=had no access and 1=had access).

X_9= Access to credit (0=had no access and 1=had access).

$\beta_1 - \beta_9$= Regression coefficients of the explanatory variables.

α = Constant

RESULTS AND DISCUSSION

Socio-Economic Characteristics of Farming Households

This section presents the results of socio-economic characteristics of farming households in the study area. Variables presented in this section include age, gender, marital status, occupations, level of educational attainment, household size, farming experience, annual income and access to credit and extension services by the farming households.

Table 2: Distribution of Households by their Socio-Economic Characteristics

Variables	Frequency	Percentage	Min.	Max.	Mean	Std. Dev.
Age of household head (Years)						
19-29	16	13.3	19	73	39	10.5
30-40	59	49.1				
41-51	31	25.8				
52-62	10	8.3				
63-73	4	3.3				
Household size (No. of persons)						
2-11	78	65.0	2	41	11	6.3
12-21	37	30.8				
22-31	4	3.30				
32-41	1	0.83				
Farming experience (Years)						
5-13	30	25	5	48	21	9.9
14-22	48	40.1				
23-31	30	25				
32-40	8	6.60				
41-49	4	3.30				
Annual income (₦)						
24,000 – 1,006,286	74	61.66	24,000	6900000	557783	1.01E6
1,006,287 – 1,988,573	21	17.50				
1,988,574 – 2,970,860	12	10.00				
2,970,861 – 3,953,147	9	7.50				
3,953,148 – 4,935,434	2	1.67				
4,935,435 – 5,917,720	0	0.00				
5,917,721 – 6,900,007	2	1.67				
Gender						
Male	105	87.5				
Female	15	12.5				
Marital status						
Single	6	5.0				
Married	100	83.3				
Widowed	13	10.8				
Divorced	1	0.8				
Occupation of household heads						
Farming only	27	22.5				
Farming and trading	48	40.0				
Farming and civil service	21	17.5				
Farming and rearing	6	5.0				
Farming and others	18	15.0				
Level of education of household heads						
Never been to school	5	4.2				
Informal education	23	19.1				
Primary education	20	16.7				
Secondary education	47	39.2				
Tertiary education	25	20.8				
Access to credit						
Had access	62	51.6				
Had no access	58	48.4				
Access to extension services						
Had access	53	44.2				
Had no access	67	55.8				
n = 120						

Source: Field survey, 2016

The results in Table 2 shows that majority of the farmers were within the age range of 19-40 years representing 62.4% of all the respondents. The minimum, maximum and mean ages were 19, 73 and 39 years, respectively. This indicated that most of the household heads were within their economically active age, which can cultivate large-sized farmlands for food production and consequently improve the food security status of the farming households. This is in line with the findings of Irohibe and Agwu (2014) who reported that majority of the farmers were predominantly in their active age, hence can cultivate large size farms for increased food production and engage in off-farm jobs so as to increase household income.

Table 2also presents results of the gender of household heads in the study area. The result shows that majority of the households were male-headed, while few were female-headed representing 87.5% and 12.5% of the entire household heads respectively. This implies that majority of the households in the study area had males as heads. The result agrees with the findings of Sadiq (2012) who inferred that most farmers are males, but females were also found to be actively engaged in farming on a lesser proportion. The part linear nature of African societies gave men more access to properties and assets than women, hence male-headed households are more likely to be engaged in farming and food secure than female-headed households (Agboola *et al.,* 2014).

Table 2 further reveals the marital status of the household heads. The results shows that majority (83%,) of the household heads were married, while 5.0% were single. This implies that most of the farmers in the study area are family men or women who may be using farming as an occupation. Marital responsibility may increase the socio-economic responsibility on the household head which may consequently increase household food expenditure and supply of household labour needed for farming activities. This may or may not improve the food security status of households.

Further presented in Table 2 is the occupation of household heads. The occupation of an individual is the source of his/her livelihood and where such individual spends much of his/her time (Makerere, 2004). Occupation of the household head is an important determinant of household income, and consequently of food security status of a household. The results shows that a greater proportion of the respondents had farming and trading as their main occupations, which represents 40% of the total respondents. Also, 22.5% of the farmers were engaged in farming only. This shows that most of the farmers were actively employed and this could help the households achieve a better status of food security.

Table 2 also presents the distribution of household heads based on their levels of educational attainment. The result shows that 39.2% of the heads of households had secondary education. Also, 20.8% of the household heads acquired tertiary education. The findings implies that majority of the farmers in the study area were averagely educated. Abdullahi and Delgado (1999) reported that the level of educational attainment of an individual may indicate productivity potential in both farming and non-farming enterprises. The more educated an individual is, the more effective and efficient he or she is in both farming and non-farming enterprises and the more the income(Agboola *et al.*, 2014), hence better food secure.

Results also revealed that, majority of the households had household sizes ranging from 2-11 persons, representing 65% of the total households. The minimum and maximum household sizes were 2 and 41 persons respectively, while the mean size was 11 persons. The size of a household is an important socio-economic attribute that can determine the food security status of the household. This is because, on the one hand, large household sizes mean greater social and economic responsibility on the household head. Also, given an income level of a household, the greater the household size, the less the per-capita food

expenditure of the household and the more likelihood that the household would be food insecure and vice versa. On the other hand however, a greater household size has the opportunity to supply sufficient labour needed for the cultivation of large-sized farmlands which could increase productivity and consequently improve household food security status. Ekine and Onu (2008) reported that the size of a household is important in supplying part or all of the labour needed by a household in farm production.

Years of farming experience of the households were also presented in Table 2. According to the results in the table, a high proportion of the households had farming experience ranging from 14-22 years, accounting for 40% of the total households. Mean farming experience was 21 years. The result thus indicates that majority of the farmers in the study area were well experienced in farming; hence have acquired good practical knowledge of farming. This agrees with the findings of Nwaru (1993) who reported that majority of farmers are well experienced in farming and thus likely to be efficient. Experience in farming is one of the key factors affecting farmers' productivity. Hence, the longer the years of farming experience, the more efficient the farmer becomes.

Income is an important economic determinant of households' access to food. Also presented in Table 2 is the distribution of farming households based on their annual income. Results revealed that majority of farming households had annual incomes within the range of ₦24,000 – ₦1,006,286; representing 61.67% of all the households. Mean annual income in the study area was ₦557,783.00. Income of households has positive effect on their food security status, implying that the more gainfully employed a household head is, the greater the chances of his/her household of being food secure (Arene and Anyaeji, 2010).

Table 2 also presents the result of households' access to credit. The results shows that majority (51.6%) of the household heads had access to

credit, while 48.4% of them had no access to credit. Farmers' access to credit is an indication of their income. Credit is important to farmers in the purchase of food items, farm inputs and payment for labour and other services needed in agricultural production, which could further strengthen their food security status. Households that can seek for and acquire credit could have a better status of food security than those that are unable to. Kuwornu *et al.* (2013) opined that consumption and production credit can improve household income on both short and long run. While consumption income can be used to increase the food basket of the household, production credit can be used to acquire production resources like seeds, fertilizers, pesticides and others.

Access to extension service by the farming household is also presented in Table 2. Result revealed that majority (55.8%) of the households had no access to extension services; while 44.2% were visited by extension agents. This implies that most farmers in the study area do not have access to extension services. This could pose a threat to households having access to better crop production techniques, improved inputs as well as other agricultural information provided by extension agents; and consequently render them food insecure. This is in contrast with the findings of Irohibe and Agwu (2014) who reported that majority of farmers in Kano state had access to extension services. This could be attributed to differences in time and location.

Food Security Status of Farming Households

The result of food security status of farming households is presented in Table 3.

Table 3: Food Security Status of Farming Households

Variables		FOOD SECURITY STATUS		
		Food secured	Food unsecured	Total
*MPCFE	₦3,549.61			
Food security line (2/3 MPCFE)	₦2,366.41			
Number of households		80	40	120

Percentage of households	66.6	33.3	100
Head count ratio (H)	0.66	0.33	

Source: Field survey, 2016
*MPCFE = Mean per capita food expenditure of all household.

Result presented in Table 3 revealed that the food security line (2/3 MPCFE) for all households was ₦2,366.41. Household whose per capita food expenditure is equal to or greater than 2/3MPCFE were designated as food secure households, while households whose per capita food expenditure fall less of the 2/3MPCFE were designated as food insecure households. The table revealed that the per capita food expenditure of majority of the households were at least equal to or greater than the 2/3MPCFE, representing 66.6% of all the households, hence such households were food secure; while the per capita food expenditure of 33.3% of the households were less than the 2/3MPCFE, hence food insecure. The average per capita food expenditure of all the households was ₦3,549.61. This implies that majority of the households in the study area were food secure. This corroborates with several findings (Irohibe and Agwu, 2014; and Olaoye and Adewole, 2015) who reported that majority of households they studied were food secure. The findings are however, is in contradiction with those of Arene and Anyaeji (2010) who reported that more than half of the households in Nsukka metropolis were food insecure. This could be attributed to differences in location and time.

Relationship between Households' Food Security Status and Farmers Socio-Economic Characteristics

This section presents the result of logistic regression analysis showing the relationship between households' food security status and their socioeconomic characteristics. The results are presented in Table 4.

Table 4: Logistic Regression Results Showing Relationship between Households' Food Security Status and Farmers Socioeconomic Characteristics

Variables	Coefficient	S.E.	Wald	df	Sig.	Exp(B)
Gender of household head	0.328	1.349	0.059	1	.808	1.388
Age of household head	-0.091	0.044	4.282	1	.039	0.913
Marital status	0.890	0.697	1.632	1	.201	0.411
Level of educational attainment	0.344	0.242	2.023	1	.155	1.411
Household size	0.273	0.069	15.822	1	.000	0.761
Farming experience	0.097	0.045	4.728	1	.030	1.102
Monthly income	0.020	0.000	8.998	1	.003	1.000
Access to credit	0.405	0.586	0.478	1	.048	0.667
Access to extension services	0.017	0.561	0.001	1	.975	1.017
Constant	4.644	2.261	4.220	1	.040	103.965

Source: Field survey, 2016.

Results in Table 4 reveals that coefficients of farming experience and access to credit were positive on households' food security status and significant at 5% level of probability. This implies that the more the farming experience and access to credit of farming households, the better their chances of being food secure. This is in line with the findings of Irohibe and Agwu (2014) and Babatunde *et al.* (2007) who reported that households' access to credit was found to positively influence their food security status.

In addition, household size had a positive influence on households' food security status at 1% level of significance. This means that the larger the size of a household, the better food secure it is. This is because a greater household size has the opportunity to supply sufficient labour needed for the cultivation of large-sized farmlands which could increase productivity and consequently improve household food security status. This contradicts the findings of Irohibe and Agwu (2014) who reported a negative coefficient for household size on food security status of farming households.

Furthermore, monthly household income was also positive and significant at 1% level of probability on household food security status, which means increasing households' income will improve their food security status. This agrees with the findings of Arene and Anyaeji (2010) who reported that income of households has positive effect on food security status implying that the more gainfully employed a household head is, the greater his or her chances of being food secure.

However, age of household heads negatively influence the food security status of farming households at 5% level of significance. This implies that the more the age of farmers, the less the food security status of their households. This is because greatly aged farmers lack the agility for undertaking any form of labour intensive operation; and would be reluctant to search for and accept credit and agricultural extension packages from extension workers.

Strategies Employed by Households in Coping with Food Insecurity

Table 5 presents result of strategies used by farming households to cope with situations of food insecurity.

Table 5: Food Insecurity Coping Strategies

Coping Strategy	Frequency	Percentage	Ranking
Economic Strategies			
Borrowing money to buy food	72	60.0	1st
Borrowing food items from family and friends	61	50.8	2nd
Sale of livestock	38	31.7	4th
Borrowing money from wife(ves) to buy food	22	18.3	5th
Sale of household assets	18	15.0	6th
Using money meant for other purposes to buy food	11	9.2	9th
Selling stored produce to purchase other food items	10	8.3	10th
Bartering with less preferred food	6	5.0	12th
Bartering with other assets	6	5.0	12th
Non-Economic Strategies			
Eating less preferred food	28	40.0	3rd

Reducing quantity and quality of food consumed	14	11.7	7th
Begging for food from friends and relatives	13	10.8	8th
Sending children to relatives to eat	11	9.2	9th
Sending children to venues of wedding and naming ceremonies	10	8.3	10th
Improvising with cheaper meals	7	5.8	11th
Relying on charity and food assistance	3	2.5	13th
Total	**330***	**292***	

*Multiple responses. **Source: Field survey, 2016**

Results in Table 5 indicated that the most commonly used food insecurity coping strategy was borrowing money to buy food items, which was ranked first and used by 60% of the households. Also, majority (50.8%) of the households borrowed food items from family and friends when they find themselves in food insecure situations, and this strategy was ranked 2nd. This is supported by the findings of Irohibe and Agwu (2014), who in a similar study reported that farmers' access to credit is a crucial factor in determining the food security status of an individual. Table 5 further revealed that 40% of the households in the study area improvised less preferred food and 11.7% reduced the quantity and quality of food consumed as measures for cushioning the effect of food insecurity. This could be as a result of high market prices of food items and low income levels of the farming households, which may cause households to opt for food that are less preferred. This finding is in consonance with that of Ibrahim *et al.* (2009) who reported that some coping strategies employed by households include reducing the quantity and quality of meals consumed and purchasing less preferred food items.

In addition, 31.7% of households at one time or another sold livestock belonging to the household to purchase food items in order to reduce the effect of food insecurity. Household livestock are a means of security that could be used to cope with adverse situations of crop failure and food insecurity. Other coping strategies used by farming households in the study area include borrowing money from wife(ves) to buy food, selling household assets to purchase food items, as well as begging for

food from friends and relatives. Hassan and Babu (1991) have found that the level of assets ownership in a household is an indication of its endowment and provides a good measure of household resilience in times of food crisis, resulting from famines, crop failures or other natural disasters. This is because a household can easily fall back on its assets in time of need by selling or leasing them.

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