



Analysis of Food Security among Farming Households in Borno State, Nigeria.

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ABSTRACT

The paper measured food security status among farming households across the three agro-ecological zones of Borno State, Nigeria. Well-structured questionnaire was used to source information from 120 randomly selected households. Descriptive statistics, Cost-of-Calorie Function (COC) and Logit model were used to analyze the data. The result of analysis indicated that about 81% of the respondents were males, 48% of the respondents fell within the active work-age bracket of 31 – 40 years, about 57% had informal education and about 47% had an estimated monthly income of between ₦100,000-₦149,999. About 40% of the households were food secure and the model revealed that 11 of the 12 independent variables were significant at 1% and 5%. The Logit analysis revealed that the major determinants that positively influenced food security in the study area were gender, age, level of education, cooperative membership, extension agents' contact, farming experience, access to credit, income, and farm size while household size and child dependency ratio negatively influenced food security. Food diversity result showed that about 57% belong to the low food diversity group. The study, therefore recommended that improvement of wage earning capacity, more income diversification opportunities and increased awareness and access to family planning facilities.

Keywords: Socio-economic characteristics, food security status, determinants, food diversity.

INTRODUCTION

At more than 160 million people, the population of Nigeria is the largest in Africa and accounts for 47 percent of West Africa's total population (World Bank, 2012). The Nigerian economy, in terms of revenue and foreign exchange, is undoubtedly dominated by the oil sector but agriculture holds the key to sustainable development of the country with respect to provision of employment opportunities, the provision of raw materials for agro-industries, as a source of income for rural families, and perhaps most importantly, provision of food for the population. The right to an adequate standard of living including food security is recognized in the universal declaration of human right. It is a widely accepted fact that food is a basic necessity of life. As such, adequate intake of quality food is a key requirement for a healthy and productive life.

Food security is defined as a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 2002). Helen (2002) asserted that food is useful for maintaining political stability, and insuring peace among people. However, Shala and Stacey (2012) found that many countries experience food insecurity with food supplies being inadequate to maintain their citizens' per capita consumption. They also found that sub-Saharan Africa was the most vulnerable region with regards to food insecurity. The average amount of food available per person per day in the region was 1,300 calories compared to the world wide average of 2,700 calories. FAO (2010) also concluded that Africa has more countries with food insecurity problems than any other continent.

History has shown that most nations have invested in agriculture and its concomitant institutions (Isife and Abert 2009). In Nigeria, the percentage of food insecure households was reported to be 18% in 1986 and 40% in 2005 (Sanusi *et al.*, 2006). Ayodeji (2010) asserted that the number of hungry people in the country is over 53 million, which is about 30% of the country's total population of roughly 160 million. About 52% of people in Nigeria live below the poverty line. The Global Food Security Index (GFSI) of the Economist Intelligence Unit ranked Nigeria as the 80th among 105 countries with food affordability, availability and quality. According to the Index, Nigeria recorded weak scores in the areas of Public expenditure on agricultural research and development, (0.0); presence of food safety net programmes, (0.0); gross domestic product per capita, (3.0); proportion of population under global poverty line (9.6); food consumption as a share of household expenditure, (9.6) and protein quality (12.8) (El-Kurebe 2013). These are matters of grave concern largely because Nigeria was self-sufficient in food production and indeed was a net exporter of food to other regions of the continent in the 1950s and 1960s. Despite the huge financial investment in the sector, many Nigerians cannot afford three square meals a day. The slow growth of agriculture and food production has resulted in growing food imports and food insecurity in the country.

The role of agriculture in the development and growth of the Nigerian economy is primarily indicated in its contribution as a source of food supply. Food demand in Nigeria has generally grown faster than either food production or total supply. CBN (2010) reported that the rate of increase in food production of 2.5 percent per annum does not keep pace with the annual population growth rate of 2.8 percent per annum. Fakiyesi (2001) also maintained that Nigeria's domestic food supply has been far short of the need of the population. Over the period 2007–2010, prices were more volatile than they had been for decades. This situations are bad for farmers (who are left not knowing how and where to invest) and worse for consumers, especially the poor, who are unable to afford basic food (Sasson, 2012). Furthermore, since 2009, security challenge has been the order of the day in Borno State. This poised a huge setback to food production and consumption especially among farming households whose livelihoods hinge on agricultural production. This study, therefore, examined the socio-economic characteristics of the farming households; measured the food security status of respondents; examined the determinants of food security intensity among farming households; and identified food diversity intake of farming households in an effort to analyze food security among households in Borno State, Nigeria.

METHODOLOGY

The study area

The study was conducted in Borno State located in the North-eastern part of Nigeria. It lies between latitudes 12°.00N and 14°.00 N and longitudes 10°.00 E and 14°.00 E. Within the north-east, the State shares borders with Adamawa State to the south, Yobe State to the west, and Gombe State to the southwest. It also shares International borders with the Republic of Niger to the north, Chad to the north-east and Cameroon to the east. The state has an area of 75,540 km² and 27 Local Government Areas spread across three major agro-ecological zones. Agriculture is the main stay of the State's economy. The major crops cultivated in the State are millet, sorghum, maize, groundnut, wheat, cowpea, soybeans (which has become a major crop in southern Borno in recent years) and vegetables (onions, pepper, tomatoes, garden eggs and leafy vegetables among others). The major livestock reared in the State are cattle, camel, sheep and goats (Kwaghe, 2006). Households in the study area are predominantly involved in farming, petty trading and civil service.

Sampling Technique

Multistage sampling technique was employed for this study. According to Maryah (2005), Borno State is divided into three agro-ecological zones namely: Sahel (extreme northern part); Sudan savannah (central part); and guinea savannah (southern part). Farming households are chosen across the agro-ecological zones because the study area is extremely diverse in terms of natural resources, ecology, land use and

inhabitants (Kwaghe, 2006). The diversities in agro-ecological zones also reflect the types of crops grown and by extension the various income diversification opportunities available to households. The first stage involved the random selection of two LGAs in the sahel region namely Kukawa and Monguno because it has more LGAs than the other two regions. Kaga and Hawul LGAs were also purposively selected from sudan savannah and guinea savannah respectively. These four LGAs are strategically located in the three agro-ecological zones of the State. The second stage involved the selection of two wards in each of the LGAs making a total of eight (8) wards in the study area. The randomly selected wards in Kukawa were Bunduu and Kauwa; Monguno were Mandala and Wulo; Kaga were Ngamdu and Benesheikh; and Hawul were Kwajaffa and Kwaya Bura. The third stage was a random sampling of 18 respondents from each selected community, making a total of 144 respondents. However, only data from 120 farming households were analyzed as others were discarded for inconsistency or incompleteness.

Analytical Techniques

Descriptive statistics

Descriptive statistics were used to examine the socio-economic characteristics and coping strategies employed by respondents.

The cost-of-calories (COC)

The COC proposed by Greer and Thorbecke (1986) was used to estimate the food security line. This method has been applied by several studies (Makinde 2000; Babatunde *et al.* 2007; FAO, 2009; Oluyole *et al.* 2009) whose main focus was on food security. A household whose daily per capita calorie intake is up to 2260 Kcal was regarded as food secure and those below 2260 Kcal were regarded as food insecure. Calorie adequacy was estimated by dividing the estimated calorie supply for the households by the household size adjusted for adult equivalence using the consumption factor for age-sex categories. The food security line is given as: $\ln X = a + bC$ (1)

Where: X = adult equivalent food expenditure (in Naira) and C = actual calorie consumption per adult equivalent of a household (in kilocal). The calorie content of the recommended minimum daily nutrients level (L) 2260Kcal was used to determine the food security line S using the equation:

$$S = e^{(a+bL)} \dots\dots\dots (2)$$

Where: S = cost of buying the minimum calorie intake (food security line);

a = Intercept;

b = Coefficient of the calorie consumption;

L = FAO recommended minimum daily energy (calorie) level.

Logit Model

Empirical model for the determinants of food security

A Logit model was used to examine the determinants of household food security which was specified as:

$$Y_i = g(I_i) \dots\dots\dots (3)$$

$$I_i = b_0 + \sum_{j=1}^m b_j X_{ji} \dots\dots\dots (4)$$

Where: Y_i is the observed response for the i th observation (i.e., the binary variable, $Y_i = 1$ for a food secure household and $Y_i = 0$ for a food insecure household); I_i is an underlying and unobserved stimulus index for the i th observation for each household; if $I_i > I_i^*$ the household is observed to be food secure, if $I_i < I_i^*$ the household is observed to be food insecure; g is the functional relationship between the field observations (Y_i); (I_i^*) the stimulus index determines the probability of being food secure; and (I_i) the stimulus index determines the probability of being food insecure. The empirical model used for determining factors that influenced food security status among low-income households in Maiduguri was specified as:

$$I_i = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + b_{10}X_{10} + b_{11}X_{11} + b_{12}X_{12} e^{-} (5)$$

where: P_i = the probability of an i th household being food secure stands for dummy, X_i = vector of explanatory variables which are defined as: X_1 = Sex of household head (SEX) $D = 1$ for male, $D = 0$ for female; X_2 = Age of household head (AGE) in years; X_3 = Level of education (EDUC) in years; X_4 = Farming experience (FARMEXP) in years; X_5 = Co-operative membership; (COOP) $D = 1$ if yes; $D = 0$ otherwise; X_6 = Extension agent's contact (EXTAC) $D=1$ if yes, otherwise $D=0$; X_7 = Household size (HHSZ); X_8 = Access to credit facilities (CREDIT) $D=1$ if yes, otherwise $D = 0$; X_9 = Income of a household per annum (HHINC) in Naira; X_{10} = Farm size of a household (FARMSZ) in hectares; X_{11} = Marital Status of the household (MSTATUS) and X_{12} = Child Dependency Ratio (CDR) b_0 = constant; and e = error term.

Household Dietary Diversity Score (HDDS): This method was employed to determine the food diversity level of households. Dietary diversity was measured by summing the number of foods or food groups consumed over a reference period. The HDDS which ranged between 0-12 was used to measure household's dietary diversity and also ranked accordingly into high dietary diversity (6-12) and low dietary diversity (0-5) (FAO, 2008). HDDS indicator for sample population was also measured by the sum of HDDS of households divided by the total number of households. Twelve (12) food groups included in the HDDS were: Cereals; roots and tubers; Vegetables; Fruit; Meat, poultry, offal; Eggs; Fish and sea foods; Legumes, nuts and seeds; Milk and milk products; Oils and Fat; Sugar/honey; condiments; and Beverages (FAO, 2007). These food groups were used to identify food intake quality of the households. Foods locally consumed in these food groups were determined and considered for the measure of food intake diversity in the study area.

The 24-hours recall method

The 24 hours recall, originally attributed to Wiehl (1942) means an interview. It is a short-term dietary assessment method to collect dietary information on current intake by recalling the intake from the previous day. The investigator asks the respondent to enumerate the foods and beverages consumed in the preceding full day, including their quantity (occasionally, the recall period starts with the last eating event and moves backwards for 24 hours). This ultimately highlights the nutritional constituent of diet. The recall period of 24 hours as chosen by FAO was used in this study as it has been used in many other dietary diversity studies (Kennedy *et al.*, 2007; Ruel and Garrett 2004; Savy *et al.*, 2005; Steyn *et al.*, 2006).

RESULTS AND DISCUSSION**Socio-economic Characteristics of Farming Households****Table 1: Socio-economic Characteristics of Farming Households**

Variables	Frequency	Percent %
Sex		
Female	16	13.3
Male	104	86.7
Age		
20 – 30	5	4.2
31 – 40	58	48.3
41 – 50	32	26.7
Above 60	25	20.8
Educational Status		
No formal Education	68	56.6
Primary Education	16	13.3
Secondary Education	11	9.2
Tertiary Education	25	20.7
Farming experience		
<10	7	6.0
10 – 19	56	46.7
20 – 29	29	24.2
Above 30	28	23.2
Cooperative Membership		
Members	43	35.8
Non-Members	77	64.2
Extension agent contact		
Had contact	37	30.8
No contact	82	68.3
Households Size		
< 3	9	7.5
3 – 6	57	47.5
7 – 10	43	35.8
Above 10	11	9.2
Access to Credit		
Accessible	33	27.5
Not accessible	87	72.5
Monthly Income		
Less than 50,000.00	5	4
50,000 – 99,999.00	15	12.5
100,000 – 149,999.00	56	46.7
150,000 – 199,999.00	26	21.7
Above 200,000.00	18	15
Farm size of Households		
<1ha	4	3.3
1 – 1.99	50	41.7
2 – 2.99	29	24.2
Above 3	37	30.8
Total	120	100

Source: Field Survey, 2014

Distribution of the household heads based on gender presented in Table 1 revealed that 86.7% of the respondents were male while only 13.3% were females. This result is not unconnected with the cultural and religious inclinations that confers household headship to males and most importantly the responsibility of sustaining the household economy. Also in Table 1, 48% of the respondents were in their youthful age within the age range of 31–40 years. This indicates that the respondents are in their active work life and can engage in diverse income generating opportunities.

The level of education of respondents as revealed that 56.6% respondents of the sampled population had no formal education. Only about 20.7% had tertiary education. Educational level of respondents is an additional factor which is thought to influence the food security status of households. The awareness of food groups necessary for human growth and wellbeing may be dependent upon the level of education of the household head. The knowledge of these food groups ultimately influenced nutritional decisions that enhanced quality food intake. The result on farming experience showed that majority (about 71%) of the sampled population has farming experience of between 10-29 years. This implies that increase in farming experience predisposes farmers to acquisition of skills and better farming practices which will increase food production and decrease food insecurity incidence.

The analysis of result on cooperative membership revealed that about 64% of the respondents are not members of any cooperative society and only about 36% of the respondents were cooperative members. It is believed that cooperative membership offers members access to agricultural inputs, modern technologies and food items at affordable rates. This implies that the level of education could possibly have affected the level of awareness and need for functional cooperative membership in the study area.

Results on extension agent contact showed that about 68% of the respondents did not have any contact with extension staff during the 2013 cropping season, while only about 32% had extension contact during the same cropping season. This implies that traditional farming methods were still widely practiced in the study area. This could affect productivity in quality and quantity of output, incomes of farmers and ultimately the food security status of households. Ibrahim *et al.* (2009) opined that access to extension services by farming households' accords households the knowledge of improved inputs as well as adoption of new techniques of farming and marketing.

The result presented in Table 1 also revealed that about 48% of the respondents had between 3–6 persons per household. Also about 36% of the sampled population had between 7–10 household members. Increasing family size could exert more pressure on the level of consumption since food requirements tend to increase with the number and composition of persons in the households. This implies that as the household size increases, the probability of food security decreases.

About 73% of the sampled households did not have access to credit in the study area. This result indicates that agricultural loans were not easily accessible to farmers in the study area. Among other factors, this may be due to low level of education and lack of collateral especially among farming households. It is expected that low access to agricultural loans will adversely affect in domestic food production and other agro-processing enterprises resulting in food insufficiency, decreased incomes, and lack of sustainable rural household food security as well as reduced quality of life.

Household monthly income in the study area is presented in Table 9. About 47% of the respondents have monthly income range between ₦100,000 - ₦149,999 and only about 21.7% of the households have monthly income between ₦150,000- ₦199,999. As the monthly incomes of households increase and households invest in more income generating activities, purchasing power of households is expected to improve and probability of household food security also increases. Consequently, increased household income could positively influence food production and access to food in quantity and quality.

Farm size as estimated in this study refers to the land area that was actually utilized by the households for crop production during the survey year. Distribution of the households by farm size is presented in Table 1. Analysis of the data shows that about 41.7% of the households cultivated less than 2 hectares and about 31% cultivated farm lands above 3 hectares. Farm size is a reflection of own-food production ability and incomes of the farming households. It is believed that increase in farm size will result in increased food production which ultimately, increased likelihood of household food security.

Households Income Generating Sources

Sampled households engaged in multiple income generating activities as presented in Table 2. The result showed that all the respondents were famers (100%). Other major income generating activities were civil service (80.8%), petty trading (76.7%), poultry (74.2%), animal husbandry (47.5%) and agro-processing (37.5%). This implies that most respondents had other income sources besides farming for general livelihood sustenance. Kwaghe (2006) and Babatunde *et al.* (2007) in their studies observed that households that engage in different enterprises earned additional money apart from the farm income. It is expected, therefore, that level of food insecurity may be less among such households.

Table 2: Income Generating Sources

Income Sources	*Number of Respondents	Percent (%)
Civil service	97	80.8
Carpentry	10	8.3
Petty trading	92	76.7
Farming	120	100
Agro-processing	45	37.5
Animal Husbandry	57	47.5
Poultry	89	74.2
Barbing/Plaiting	23	19.2
Tailoring	16	13.3

* Multiple responses existed. Source: Field Survey, 2014

Measure of Calorie intake and Food Security Status

The summary of food security measure is presented in Table 3. Based on the recommended daily energy levels (L) of 2260 Kilocalories, the food security line (Z) for the sample households was estimated at ₦65.667 per day per adult equivalent and ₦23968.53 per year per adult equivalent. Only 40% of the sampled households were food secure. This implies that about 60% of the households fell short of the recommended per adult daily calorie intake requirement of 2260 Kilocalories. Furthermore, the aggregate income gap (G) of -354.56 indicates that the food insecure households would need ₦354.56 to meet their monthly basic food requirements.

Table 3: Food Security measure among farming households

Variable	Value
Cost-of-calories equation	$\ln X = a + Bc$
Constant	4.162 (60.667)*
Slope coefficient	0.0000 (5.779)
FAO recommended daily energy levels (L)	2260 Kcal
Food security line Z:	N65.6672 per day N23968.53 per year
Head count (H)	48 (for food secure households). 72 (for food insecure households)
Percentage Households	40% (for food secure households) 60% (for food insecure households)
Aggregate income gap	-354.56

Source: Analysis of OLS estimates and cost-of-calories equation.*Figures in parenthesis are t-values.

Determinants of Food Security Intensity among Farming Households in Borno State

The result of the Logit regression for the respondents is presented in Table 3. Analysis of the survey data revealed that 11 out of 12 variables included in the model were significant in explaining the variation in food security status of households in the study area. The significant and positive variables were sex, age, level of education, farming experience, co-operative membership, extension agent contact, and household size, and credit, income and farm size while child dependency variable was significant but negatively related to food security. The coefficient of variables in the model were significant at 1% ($P < 0.01$) and at 5% ($P < 0.05$) levels. The summary of the significant determinants from the logit regression analysis are discussed as follows:

Table 4: Determinants of Food Security among Farming Households

Variable	Coefficient	Std Error	b/St.Er.
Constant	.5377623020	.23245292	2.313**
SEX(X ₁)	.408843914	.096733637	4.226***
AGE(X ₂)	.6793025143	.12118416	5.605***
EDU (X ₃)	.152875773	.053495119	2.862***
FARMEXP(X ₄)	.9499185320	.39885779	2.381**
COOP(X ₅)	.241020230	.057919590	4.162***
EXTAC(X ₆)	.8217537145	.28246721	2.909***
HHSZ(X ₇)	-.5256045491	.14279143	-3.683***
CRDT(X ₈)	.6655246020	.14145292	4.705***
HHINC(X ₉)	.2312900838	.49641062E-01	4.661***
FARMSZ(X ₁₀)	.402376231	.120185893	3.348***
CDR(X ₁₂)	-0.000234	0.0000620	-3.782***
R ² = 77			

*** = significant at 1% ** = significant at 5%

Sex of household head (SEX)

The coefficient for gender is significant at 1% and shows a positive relationship with household food security status. This suggests that households headed by male had higher probability of being food secure in the study area than the female headed households. This may be because female household heads were usually saddled with the responsibility of home keeping and raising children which usually limits their engagements in some income generating activities compared to their male counterparts.

Age (AGE)

The coefficient of the variable was found to be positive among the sample household at 1% significance level. This suggests that as household heads advance in age, their food security status increases. This suggests that incomes of these households were likely to be higher as a result of longer stay on their public service or private business endeavors'.

Level of Education (EDU)

The coefficient of level of education was positive as expected *a priori*, and also significant at 1% level. The regression result shows that as the level of education of household heads increases, the food security intensity increases and vice versa. This suggests that the level of formal education could impact positively the household production and nutrition decision thereby reducing food insecurity intensity.

Farming Experience (FARMEX)

The coefficient is significant at 5% and shows a positive relationship as expected with the household's food security status as expected. This implies that increased farming experience may result increased food production and therefore, a food security problem in the study area. This result is in consonance with the findings of Oluyole *et al* (2009) in their study on food security among cocoa farming households of Ondo State, Nigeria.

Cooperative membership (COOP)

As expected, the coefficient for cooperative membership was positive and significant at 1% level indicating that the food security status of households increased with cooperative membership. This according to Amaza *et al.* (2008) can be closely linked to the beneficial effects of their memberships in terms of production and other welfare enhancing services. It is expected that as the level of participation increases, the probability of being food secure increases.

Extension Agent Contact (EXTAC)

The coefficient of extension agent contact as expected *a priori* was positive and significant at 1% level among the households. The regression result suggests that extension agent contact is important in the adoption of modern farm practices that ultimately influences the level of farm output and income earning capacity of households, hence food security in the study area.

Household Size (HHSZ)

The coefficient of the variable household size was negative as expected and significant at 1% level. This implies that as the household size increases, food security intensity decreases. Increase in family size necessitates increase in household food expenditure, especially, in a situation where many of the other household members did not generate any income but only depended on the household head, the probability that food security would reduce as household size increased was high.

Access to Credit (CRDT)

As expected, the coefficient for credit consumption of the sample household was positive and also significant at 1% level suggesting that access to credit tended to positively influence the food security level of households. Credit is an important means of investment and households who have access to credit can invest in preferred businesses and earned more income resulting in increased financial capacity and purchasing power of households, thus reducing the risk of food insecurity.

Household income (HHINC)

The coefficient of this variable was found to exert significant influence (1% level) and shows a positive relationship on household food security status. This indicates that the higher the household income, the higher the probability that the household would be food secure. It is imperative therefore that increase in household income, other things being equal means increased access to food and is a sure way of combating food insecurity. This finding buttresses the views of Omotesho *et al.* (2006) and Babatunde *et al.* (2007).

Farm size (FARMSZ)

The regression coefficient of farm size variable as expected *a priori* was positive and significant at 1% level. Farmland holding is a basic asset in farming households' livelihood. The result indicated that households with larger farm sizes were likely to produce more food and possibility of increased production translates to more income and improves food security than those with smaller farm sizes and vice versa. It is expected that efficient use of land resources and modern agricultural practices will ensure food security in households.

Child Dependency Ratio (CDR)

The coefficient of child dependency ratio negatively affected the food security status of households as expected. It was also statistically significant at 1% level. The classification of households by child dependency ratio in the study of food security is important because as child dependency ratio increases food security among households decreases and vice versa. This is plausible as high child dependency ratio could result in increased household food requirements, probable reduction in quantity and quality of food as a result of heavy dependence on available household income, hence high probability of food insecurity.

Food Diversity Intake

Dietary diversity was employed as a qualitative measure of food consumption in the study area. It reflects household access to a wide variety of foods twelve (12) food groups included in the Household Dietary Diversity Score (HDDS). Dietary diversity indices have been shown to be good proxies for calorie intake and nutritional outcomes (Ruel, 2006). To better reflect quality diet of households in the study area; households were grouped into low diet diversity (0-5) and high diet diversity (6-12). The number of different food groups consumed was calculated, rather than the number of different foods consumed.

Table 5: Dietary Diversity among Farming Households

Diet diversity	Frequency	Percentage (%)
Low	68	56.7
High	52	43.3
Total	120	100

Source: Field Survey, 2014

The summary statistics of dietary diversity measures among the sample households revealed that about 57% belonged to the low food diversity range while about 43% belong to the high food diversity range. Respondents were all farming households whose major source of livelihood has been drastically affected by the insecurity situation in the study area since 2009. Households cultivate food crops at the risk of their lives and often could not visit farms for the fear of insurgents. Respondents were forced to consume a particular range of food groups available, have limited income diversification opportunities consequently reduced economic access to food in adequate quantity and quality when own production depletes.

CONCLUSION AND RECOMMENDATIONS

The study examined the food security status of farming households in Borno State, Nigeria. The study observed that understanding the socioeconomic characteristics and the independent influence they exert on the level of food security in the households is particularly important. The effect of some variables such as income, level of education, farming experience, access to credit cannot be overemphasized. Also, the overall food security status of the study area, calorie consumption was just at the threshold of adequacy. Only about 43% of the households had high dietary diversity level and most respondents (60%) of the households were food insecure. Based on the findings of this study, the following policy measures aimed at improving households' food security status in the study area were recommended as follows:

- i. Insecurity and its attendant implications have enormously affected generally the livelihood of farming households in the study area vis-à-vis level of food production and income generating capacity of households, hence the food insecurity status of respondents. A more lasting solution to the insecurity situation that will guarantee safety of lives and property in the study area cannot be overemphasized. Such safety nets can be provided by public and grassroots security agencies.

ii. Household income was also identified to have significant effect on food security status of households especially during lean periods. It is therefore important that improving wage earning capacity and exploring income diversification opportunities are crucial in enhancing food security status of households. Households should be encouraged to intensify combination of enterprises and off-farm activities that could generate more income for the households and also help to improve their asset base.

iii. Large household sizes and high dependency ratio were found to affect household food security in the study area. Therefore, policy effective community participation in the design of concepts and messages aimed at imparting knowledge about family measures directed towards the provision of better family planning, increased awareness and access to family planning facilities should be given adequate attention and priority by the government. In view of this, strategies for an effective family planning to households are recommended especially when large family size is a status symbol and a boost to family labour adequacy.

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