
Assessment of Food Security Status among Rural Farming Households in Guma Local Government Area of Benue State, Nigeria

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Abstract: *This study assesses food security status among farming households in Guma local government area (LGA) of Benue state in north-central Nigeria. Primary data were collected from 120 households selected through multi-stage sampling procedure. The data were analysed using frequency, percentage, head count method, food security gap and squared food security gap. The result of analysis indicated that 60% of the respondents fell within the active age bracket of 30 – 49 years, more than half (52%) had only primary education with a high proportion (57%) engaged in farming as a primary occupation. The family size of 40% of the respondents was between 7–9 persons, with estimated annual income of the majority (87%) less than or equal to N 100, 000 per annum. The incidence of food insecurity was high among the age bracket of 40-49 years (27.5%) but the depth and severity was higher (0.24 and 0.41 respectively) among the age group of 50 years and above. Also, households with large family size, low income level and low level of education were mostly affected by food insecurity condition. Eating once a day, letting children to eat first and buying food on credit were among the coping strategies adopted by the respondents. Based on the result, the study recommended that farmers should be given informal education through extension service with a view to enhance their understanding of modern agricultural production techniques to boost agricultural production and agricultural extension services should be strengthened with a view of educating farmers and rural households on the use of local resources to improve the nutritional status of their households.*

Keywords: *Analysis, Food, Security, Insecurity, Households*

1. INTRODUCTION

The focus on “Food security” has moved from a global and national perspective to that of households and individuals (BNARDA, 2005). This is because there have been increased observations of inequalities in the sufficiency of food intake by certain groups despite overall adequacy of supply. This led to its inclusion as one of the two targets of the first Millennium Development Goal (MDG). According to Food and Agriculture Organization, food security obtains 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, 1996).

The main goal of food security therefore, is for individuals to be able to obtain adequate food needed at all times, and to be able to utilise the food to meet the body's needs. The World Bank (2001) identified three pillars underpinning food security. These are food availability, food accessibility, and food utilization. This means that a nation whose food production level is unable to satisfy these three criteria is said to be food insecure. The Federal Ministry of Agriculture (2010) estimated that over 53 million people in Nigeria are hungry, which is about 30 percent of the country's total population of roughly 150 million; and 52 percent live under the poverty line. However, Nigeria attained self-sufficient in food production and a net exporter of food to other regions of the continent in the 1950s and 1960s. The fall in food production has resulted to increase in food importation to clear the excess demand over supply of food in the country.

In spite of successive governments efforts over the years to achieve food security in the country, through the setting up of a number of agricultural development institutions, and special programmes and projects which include: National Accelerated Food Production Programme, NAFPP (1973); Agriculture Development Project, ADP (1975); Operation Feed the Nation, OFN (1976); National

Seed Service, NSS (1977); Agricultural Credit Guarantee Scheme ACGS(1977); Rural Banking Scheme, RBS(1977); Green Revolution GR(1979); Directorate of Food, Road and Rural Infrastructure, DFRRRI(1986); National Agriculture Land Development Authority, NALDA(1992), National Fadama Development Project, NFDP I ,II, and III(1992, 1999 and 2008 respectively); Nigeria Agricultural Cooperative and Rural Development Bank, NACRDB (2000); National Agricultural Development Fund, NADF(2002); National Special Programme on Food Security, NSPFS (2002); Commodity Marketing and Development Companies, CMDC (2003) and more recently, the Presidential Initiatives on selected crops (2004-2005), 7 Points Agenda with emphasis on Food Security (2009) and the Agricultural Transformation Agenda of the present administration. Still very large proportions of Nigerians are in hunger and poverty. This situation is not different in Benue state, as the state prides itself as the food basket of the Nation. However recent events such as crisis between farmers and Fulani's herdsman, inter - communal crises has threaten this claim as about 78.3% of her populace still live below the poverty line with notable incidence of hunger and food insecurity (ACTIVISTA, 2009). Against the above background, this research is set to analyse the determinant of food security status among farming households in Guma local government of Benue state and identify the coping strategies against food insecurity in the study area.

2. LITERATURE REVIEW

2.1. Conceptual and Theoretical Framework

The definitions of food security are many and varied, and they depend on the theoretical approach taken to assess and measure food security. According to Pinstrup-Anderson (2009), food security was originally described as whether a country has enough access to food to meet its food energy requirements. Thus, food security implied the ability of a nation to meet the food needs of its populace, suggesting self- sufficiency. FAO (1996) defines food security as the situation that 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 preference for a healthy and active life.

Saimwalla and Valdes (1994) define food security as the ability of countries, regions or households to meet targeted level of food consumption on a yearly basis. Following closely the idea of Sen's Food Entitlement theory, Frankenberger and McCaston (1998) defined entitlement as the set of income and resource bundles over which a household can secure its livelihood. Securing this livelihood ensures that the whole set of well-being of the household is put into consideration, and not just its food needs. The need for nutrition security came into being with the realization that although availability and accessibility of food are essential, they are not the only factors that determine good nutrition within the households. Because household food security does not necessarily mean nutrition security, if the available food is not used in its correct form and manner to bring about adequate nutrition for the household, the dimension known as *utilization* became part of the considerations.

There is an array of health, socio-economic, environmental and cultural factors implicated in the utilization of food in order to have nutrition security. From the foregoing, there are thus three basic elements that are obvious in the development of household food security; these are availability, accessibility and utilization. According to Duhaime and Godmaire (2002), food security analysis must now include accessibility, consumption, production, and circulation, or availability of stocks. Accessibility and individual consumption are based on the dynamics of relationships between and within institutions where food circulation takes place. Based on the study, these circulation transactions are commercial or non-commercial in nature. However, non-commercial transactions such as preference, gender, and nutritional needs come into play within the household food security analysis.

Another pertinent issue that arises in the household food security approach is that of stability of access to the food needed to attain food security (Jrad *et al*, 2001). From here comes the notion of livelihood security of households; that is the adequate and sustainable access to income and resources to meet basic needs. Thus, a household may decide to reduce its food intake in order to preserve other assets, or may, on the other hand, decide to diversify livelihood activities. The primary conceptual framework in this study will make use of the nexus among the various dimensions of well-being as identified in theory.

Empirically, most of the world's poorest countries are in Africa and many of these face chronic poverty and food insecurity. Agriculture, of which 85-90 per cent is rain-fed in Sub-Saharan Africa,

accounts for 35 percent of the region's gross national product (GNP), 40 percent of exports and 70 percent of employment (World Bank, 2000). Clover (2003), Smith (2007), Babatunde et al. (2007), Swaminathan (2008), Oriola (2009), Faye and Ola (2007) are some of the works that have examined food security in developing countries. The authors argue that domestic policies in many developing countries have contributed very marginally to food security especially in Africa, and that, despite the growing global food production, hunger, malnutrition and famine are prevalent in many developing countries. From their analysis it is evident that improvement in food production in Sub-Saharan Africa will boost per capita GDP, raise purchasing power and access to food. Their major conclusion is that research is needed on new technologies that are output-driven, ecologically friendly, acceptable and affordable to the resource-poor farmers. Finally, they argue that good governance and stable political governance system will provide an essential and enabling environment for food security in Sub-Saharan Africa.

According to CFSVA (2009), 5 percent or 1.2 million of the Ghanaian population, of whom the majority reside in rural areas, is food insecure. Ghana has seen the number of people living in poverty reduced significantly; in 2005/2006 the share of the population living in poverty was calculated at 28.5% down from 39.5% in 1998/1999. This makes Ghana one of the few countries that are on track to meet Millennium Development Goal (MDG) before the target year of 2015.

2.2. Determinants of Food Security in Nigeria

The different dimensions of food security from the definitions available are availability, accessibility, utilization, sustainability as well as safety (Omonona and Agoi, 2007; Ayatoye et al, 2011; Jrad et al, 2010; IFAD, 2012). All these studies have shown that access to food is a very important dimension of food security. Food security is determined by various socio-economic, natural and political factors. These include income, education, age, availability of infrastructure, availability of extension services, government policies on trade, agricultural land area under cultivation, and social safety net (Rose et al, 1998; Mano et al, 2003; Makombe et al, 2011). In Nigeria, determinants of food security are stability of access, household economic status, household income variability, quality of household human capital, degree of producer and consumer price variability, food storage and inventory, household size, and access to social capital (Olayemi, 1998; Amaza et al, 2007; Ayantoye et al, 2005; Oni et al, 2011). Food security has also been found to be both temporal and spatial in nature (Johnson-Welch et al, 1999; Anderson, 2009; Ayantoye et al, 2011; Devereux et al, 2004). This definition integrates stability, access to food, availability of nutritionally adequate food and the biological utilization of food. As a result, a synthesis of these definitions, with the main emphasis on availability, access, and utilization, serves as working definition in projects of international organizations.

In the view of Babatunde et al. (2007), among the developmental problems facing Nigeria, food security problem ranks topmost. Available statistics show that the Nigeria food security picture is pathetic as more than 70 percent of the populace live in households too poor to have regular access to the food that they need for healthy and productive living (Aletor, 1999) ascribing Nigeria with highest incidence of food insecurity in Africa (FAO, 2005).

In the analysis of Iremiren (1992), "Jesus taught us to pray for our daily bread among other requests in the family prayers. For many years now, the price of the symbolic bread has gone beyond the reach of most Nigerians and it has disappeared from the breakfast menu. For few that still eat bread, it is no more daily". Fasting in Nigeria has become the order of the day, not as a means of drawing nearer to God alone, but as a means of sustaining hope for another days meal (Tewe, 1997). This statement is underpinned by the now universal 001; 101; 010; 110 etc menu formulae adopted not by students alone, but workers and indeed many households, whereby meals are skipped out of sheer necessity to ensure the availability of another days maintenance ration (Aletor, 1999).

3. METHODOLOGY

3.1. The Study Area

Benue State (the Food Basket of the Nation) is located in the Middle Belt region of Nigeria, between Longitude 6°31'E and 10°E and between Latitudes 6°30'N and 8°10'N (BNARDA, 2005). Benue State has a total land mass of about 33, 955Km² with 23 Local Government Areas, politically and

agriculturally divided into three zones; Zone A, B and C with a total population of 4,219,244 people and 413,159 households (BNARDA, 2005; NPC, 2006).

3.2. Sampling Techniques

The population for the study comprised the farm-families (households) of Benue State drawn from the three agricultural zones. The selection of the sample involved a three stage-wise simple random sampling approach. In the first stage, a random selection of three (3) Local Government Areas each from the three agricultural zones of the State was made. The second stage involved a random selection of 10 villages from each of the nine selected Local Government Areas giving a total of 90 villages. In the last stage, 180 farming households were selected from the earlier 90 villages sampled for the study, that is, two household per village using the concept of 20-30 households per village.

3.3. Data Collection Method and Instruments

In this research, a 7-day recall method was used and the estimated quantities of every food item consumed by the household in the 7-day period calculated. The quantities were converted to gram and the caloric content estimated by using the nutrient composition table of commonly eaten foods in Nigeria. The primary data were collected with a well-structured questionnaire, designed to capture general information about household characteristics, food consumption, income and expenditure. The secondary data were gathered from the State Ministry of Agriculture, Benue State Agricultural and Rural Development Authority, (BNARDA), Bureau of Statistics, published and unpublished Theses and the internet.

3.4. Methods of Data Analysis

This paper measured food security by direct surveys of dietary intake (in comparison with appropriate adequacy norms). The paper used Food Security Index and other statistical tools to assess households food security (HFS). To measure the households food security, a food security index was constructed. This involved two steps; defining a minimum level of nutrition necessary to maintain a healthy living, the food security line, below which households is classified as food insecure and aggregation, derived from food security statistics (Agboola *et al.*, 2004, Babatunde *et al.*, 2007). Caloric adequacy was estimated by dividing calorie supplied for the household by the family size adjusted for adult equivalent using the consumption factor for age-sex categories (Runge-Metzger and Diehl, 1993). The frequencies, mean, standard deviation and other food security indices were determined using the Statistical Package for the Social Sciences (SPSS) Version 17.0.

3.5. Model Specification

The food security index is expressed empirically as;

$$Z = \frac{\text{Household capita per daily's calorie availability (A)}}{\text{Household capita per daily's calorie requirement (R)}} \quad (1)$$

For this research, the daily per capita calorie availability and requirement is used and a household is defined as a group of people living together and eating from the same pot and the lower limit of the FAO recommended daily caloric intake for an adult aged man (30-60 years) of 2500 kilocalories which is slightly below the FAO 2730 kcal target for developing countries by 2010 (FAO, 1996) is used as a threshold for food security status. Based on Z, several food security measures were calculated; the shortfall/surplus index, P, as

$$P = \frac{1}{M} \sum_{k=1}^K GK \quad (2)$$

$$GK = \frac{Xk-1}{1} \quad (3)$$

This is the deficiency or surplus faced by household j. P = Shortfall or surplus index Xk = Average daily caloric available to the jth household. M = the number of households that are food secure (surplus index) or food insecure (short fall index) = the food security line (2500kcal). The Head count ratio (H) is given as:

$$H = M/N \quad (4)$$

Where M = the number of food secure or insecure members of the sample population

N = total population under study

4. RESULTS AND DISCUSSION

4.1. Socio -Economic Characteristics of Farming Households

Table 1. Percentage distribution of respondents on the basis of their socio-economic characteristics (n=120)

	Frequency	Percentage (%)	Mean
Age (in years)			
20 – 29 years	36	30	
30 – 39 years	35	29	
40 – 49 years	37	31	30
50 and above	12	10	
Education level (number of years of schooling)			
Primary Education	62	52	
Secondary school	46	38	
Tertiary Education	12	10	
Primary occupation			
Crop farming	68	57	
Poultry keeping	24	20	
Agro-processing	11	9	
Livestock keeping	17	14	
Household size (number of persons)			
1-3 persons	65	8	
4 – 6 persons	25	21	
7 – 9 persons	48	40	8.0
10 persons and above	41	34	
Estimated annual income			
N 0.000 – 50,000	70	58	
N 51, 000 – 100,000	35	29	N 67,708
N 101, 000 – 150,000	10	8.0	
> N 151, 000	05	4.0	

Source: Field survey, 2014.

Table 1 show that majority (31%) of the respondents were between 40 and 49 years of age, while 29% were within the age range of 30 - 39 years of age. Those that were within the age range of 20–29 years and 50–59 years accounted for 30% and 10% respectively. By implication about 60% were within their middle age of 30 – 49 years. Within this age range, the respondents are expected to very active on the farm and more responsive to agricultural extension programmes. This could also lead to a boost in agricultural activities as Anyanwu et. al., (2001) recognized that young people are more likely to be energetic and have the capacity to use innovation.

The study also showed that about half (52%) of the respondents had primary education; 38.0% had either secondary school certificate. This situation has serious consequences on the level of agricultural production and hence food security at household level. Bzugu et. al, (2005) and Idrisa et. al, (2007) had earlier recognized that low level of formal education among farmers make the introduction of improved agricultural technologies by extension agents difficult. As it could be seen from Table 1, more than half (57.0%) of the respondents are engaged in farming as primary occupation with majority of them operating at subsistence level. Record of family size also revealed that 74.0% of the respondents had more than six persons per family, while majority (87.0%) of them depended on annual income of not more than N100, 000. Both family size and level of income could affect the food security status at the family level. According to Olayemi (1998) and Ali (1994), the urban poor do spend a high proportion of their income on social services and only a little could be left for the purchase of food, or investment in production. The consequence is more serious when the income is ‘low’ and family size is ‘high’ as portrayed by this study.

4.2. Food Security Status of Respondents

Table 2. Incidence, depth and severity of food insecurity according to socio-economic characteristics of respondents (n = 120)

Characteristic	Incidence of Food Insecurity (%)	Depth of Food Insecurity	Severity of Food Insecurity
Age (years)			
20-29	1.7	0.08	0.38
30-39	20.0	0.20	0.20
40-49	27.5	0.18	0.12
50 and above	14.2	0.24	0.41
Educational Level (years of schooling)			
Primary School	30.8	0.30	0.29
Sec. School	20.0	0.17	0.14
Tertiary level	12.5	0.15	0.18
Household Size (number of persons)			
1-3	4.2	0.1	0.20
4-6	10.0	0.19	0.36
7-9	15.1	0.29	0.56
10 and above	34.2	0.50	0.73
Primary Occupation			
Crop farming	13.3	0.10	0.08
Poultry keeping	6.7	0.14	0.29
Agro-processing	25.0	0.22	0.19
Livestock keeping	18.3	0.25	0.34
Estimated Annual Income (N)			
<N300	31.7	0.36	0.41
N300 - N600	16.7	0.23	0.32
N601 - N900	10.8	0.15	0.23
>N901	4.2	0.13	0.40

Source: Field survey, 2014.

The result from table 2 was calculated based on recommended calorie intake of 2654kcal for developing countries as recommended by FAOSTAT database (FAO, 2005).

The results on table 2 reveal that the incidence of food insecurity was high within the age bracket of 40-49 years (27.5%) but the severity and depth was higher within the age bracket of 50 years and above. The age bracket within 40-49 years fell under potential food insecurity group with less than 50% calorie deficiency, while those within the age bracket of 50 years and above fell within chronic food insecurity group with more than 50.0% calorie deficit. This agrees with the findings of FAO (2004) that about 4.7% of the population consumes less than their dietary requirements. This may be attributed to the old age which makes them less active, less productive and unable to look for jobs; as such, the severity is higher among this category.

The incidence of food insecurity is also high among households in which the heads of family had low level of education (30.8%); likewise, the depth and severity of food insecurity (0.3 and 0.29, respectively), with the incidence being less among households headed by highly educated persons. This agrees with the findings of Amaza *et.al.* (2006), which suggests that the higher the educational level of a head of household, the more the food security status of the family. The results also show that the incidence, depth and severity were higher among families with large household size than among those with small household size. This is obvious because the larger the household size, the greater the responsibilities, especially, in a situation where many of the household members do not generate any income but only depend on the household head. This is in consonance with the findings of Maharjan and Chhetri (2006) that foods secure households have small size and low dependency ratio.

The primary occupation of respondents also reveals that the incidence of food insecurity was high among those who were involved in agro-processing (25.0%) as their primary occupation compare to the dismal (6.7%) among those involved in poultry keeping and 13.3% among those involved in crop farming as their primary occupation. However, the depth of food insecurity was higher among livestock keepers (0.25) as against the dismal (0.10) among those involved in crop farming. Severity

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of food insecurity was also found to be higher among those involved in livestock keeping (0.34) and least among crop farmers (0.08). The depth and severity of food insecurity was found to be higher among those involved in livestock keeping. Income level of respondents reveals that households with income level of less than <N300 had the highest incidence, depth and severity of food insecurity status of 31.7%, 0.36 and 0.41, respectively, while the incidence in particular is less among households with income level greater than N901 (4.2). This category also had the least depth (0.13).

The implication of this finding is that accessibility to good food, in the volume to subdue hunger and taken in the right quality i.e. containing the correct nutritional requirement is low among a vast majority of the households. As such, nutrients-related diseases are likely to become rampant. Thus, consumption below the minimum level of calorie requirement indicates food insecurity condition. Helen (2002) opined that about 800 million people suffer from malnutrition and most of those undernourished in low income countries like Nigeria.

4.3. Coping Strategies Against Food Insecurity

Table 3 shows that that majority (68.3%) of the respondents often allowed children to eat first, 64.2% often bought food on credit, while 57.5% resorted to eating once a day. Moreover, 58.3% of the respondents occasionally resorted to eating wild fruits. Eating of wild fruits is occasional to the nature of the study area being an urban center hence, the availability of wild fruits is limited.

Table 3. Percentage distribution of respondents according to strategies against food insecurity (n=120)

Coping strategy	Very often (%)	Often (%)	Not often (%)	Never (%)
Eating once a day	57.5	12.5	24.2	5.8
Letting children to eat first	68.3	15.0	15.0	1.7
Eating food	10.0	24.2	58.3	7.5
Selling of assets	38.3	11.7	41.7	8.3
Buying food on credit	64.2	20.0	10.8	5.5
Picking of leftover food at social functions	46.7	22.5	25.0	5.8

Source: Field Survey, 2014.

Table 4 indicates that about half (48.0%) of the respondents engaged in handicraft as means of improving food insecurity status, 30.0% engaged in fishing mainly in River Benue and the shores of River Benue, 15.0% sold farm by-products and seven percent joined cooperative societies. All these activities, except the joining of cooperative societies are done during the off-farming season. The steps taken here are in line with the United Nations (2002) report, which indicated that during food crisis, affected population adopt a variety of coping mechanisms to survive such strategies may include finding additional food or income or even, migration etc.

Table 4. Percentage distribution of respondents based on strategies adopted to improve food security

Strategy	Frequency (F)	Percentage (%)	Rank
Hand craft	58	48	1
Fishing during dry season	36	30	2
Sales of farm by product	18	15	3
Joining cooperative societies	8	7	4
Total	120	100	

Source: Field survey, 2014

5. CONCLUSION AND RECOMMENDATION

The paper assessed food security status among farming households in Guma local government area of Benue state. Results of the study indicated that more than half of the respondents did not have up to secondary school level of education, with majority (57%) engaged in “peasantry” farming and 74% had more than seven persons per family while majority (58%) had income of less than N50,000 per annum. It was also found that households whose heads had low level of education (30.8%), those having large number of persons per family (34.2%) and those whose heads had low level of income (31.7%) were worse affected by incidence, depth and severity of food insecurity. The coping strategies adopted included eating once per day, allowing children to eat first, eating wild fruits and buying food on credit. In addition, the respondents adopted some mechanisms to improve their food

security statuses. These included handcraft and fishing during off-season. To improve food security situation in the study area requires paying proper attention to the following recommendations.

- Farmers should be given informal education through extension service with a view to enhance their understanding of modern agricultural production techniques and easy access to improved technologies to boost agricultural production.
- Agricultural extension services should be strengthened with a view of educating farmers and rural households on the use of local resources to improve the nutritional status of their households.
- The poverty alleviation programme of government should focus on how to boost non-farm income of farmers by training the farmers on off-farm businesses so as to boost income and subsequently enhance food security.
- The coping mechanisms embarked upon by the respondents have short term effect. Therefore, there is a need to improve on access to income generating activities that are more sustainable.

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