

## ANALYSIS OF FACTORS AFFECTING FOOD SECURITY IN RURAL AND URBAN FARMING HOUSEHOLDS OF BENUE STATE, NIGERIA

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### Abstract

*The study examined factors affecting household food security status among rural and urban farming households of Benue State, Nigeria. Purposive and simple random sampling techniques were employed to obtain a sample of 180 respondents, 90 households head each from rural and urban areas. Data were collected through structured questionnaire and analyzed using descriptive statistics, Food Security Index, Surplus/Food Insecurity Gap, Factor analysis and Probit model. Using calorie intake method, the result revealed that 53.3% and 62.2% of rural and urban households respectively were food secured. The rural and urban food secure households exceeded the recommended calorie intake by 39% and 42% respectively, while the rural and urban food insecure households fell short of recommended calorie by 24% and 26% respectively. It was also found that income of households head ( $p < 0.10$ ), rural households size ( $p < 0.01$ ), and farm size ( $p < 0.10$ ) had a positive impact on household food security. On the other hand, age of household head ( $p < 0.05$ ) and urban household size ( $p < 0.10$ ) had a negative relationship with household food security. Constraints such as lack of access to credits, inadequate land availability, and poverty, infertility of the soil, lack of non-farm income generating activities, storage and processing problems were identified as some of the factors militating against the achievement of food security in the study area. It was recommended that credit be provided to farming households by government to reduce the constraint of not being able to access credit facilities, the agricultural policies which aimed at promoting farmers access to land and improving farm household productivity be encouraged and that farmers be provided with informal education through extension services on nutritional awareness and non-farm income generating activities.*

**Keywords:** *Factors Affecting, Food security, Urban, Rural, Farming households, Nigeria*

### 1. Introduction

The attainment of food security in any country is usually an insurance against hunger and malnutrition, both of which slow down economic development (Davis, 2009). The World Bank(1986) defined food security as the access by all people at all times to enough food for an active healthy life. Hence, making food available in sufficient quantity and quality is considered as a basic prerequisite for economic development, social interaction, political stability and security of the nation. The main aim of food security is for individuals to be

able to obtain adequate food needed at all times and to be able to utilize the food to meet the body's needs. Agbaji *et al.*, (2005) however, noted that the objective of food security programme of increasing agricultural food production for self-sufficiency is still far from being realized.

Food security exists when food is available to everyone at all times, they have means of access, and that it is nutritionally , adequate in terms of quantity, quality and variety also that it is acceptable, within the given culture (FAO, 2004). This implied food must be available to the people to an extent that will meet some acceptable level of nutritional standards in terms calorie, protein and minerals which the body needs; the possession of means by the people to acquire it and consistency in its supply at all times.

The recent concept of food security has given more attention to households, and individuals than its availability at international, national, regional and state levels. Food security at one level does not imply food security at other levels i.e National and Household levels. At National level, food security exists when all people at all times have the physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for active and healthy life. At household level, food security implies physical and economic access to food that is adequate in terms of quantity, quality, safety and cultural accessibility to meet each person's need (Ingawa, 2002).

The problem of food and nutrition security in Nigeria has not been adequately and critically analyzed despite various approaches at addressing the challenges. Government has introduced several projects and programmes to improve agriculture and boost food production in the country. However, the empirical records of many of these programmes and projects are not impressive enough to bring about the expected transformation of the sector (Ihimodu 2004). Today, the problem continues to exist at an increasing pace as more than 900 million people around the world are still malnourished (FAO 2010). According to Adebisi (2012) Nigeria remains a net importing nation, spending about ₦1.3 billion on importing of basic food items annually. The food security problem in Nigeria is pathetic as more than 70 percent of populace live in households too poor to have regular access to the food that they need for healthy and productive living with an increasing high levels of malnutrition and poverty (Babatunde *et al.*; 2007).

Food demand has generally grown faster than total supply. According to food and agricultural organization (2004) about 4.7% of the population consume less than their dietary requirements.

At the moment, over 70 percent of the population is still living on less than a dollar per day and over 50 percent is food insecure (Babatunde *et al.*, 2008). The reality is that, Nigeria has not been able to attain self-sufficiency in productivity despite increasing hectares put into production annually (CBN, 2000).

The issue of food crisis is not peculiar to Nigeria, it attracted a global attention as more than 800 million people throughout the developing countries and some other 40 million in developed world do not have enough food to meet their basic needs and millions more experience hunger, malnutrition, growth retardation and sometimes death due to starvation (Idachaba, 2004).

It is against this background that this study was undertaken to examine the factors affecting household food security in rural and urban areas of Benue State, Nigeria. The specific objectives of the study were to:-

- i) examine the socio-economic characteristics of farming households in the study area;
- ii) estimate the food security status across households in the study area;
- iii) assess the factors that determine household food security in the study area;
- iv) identify the constraints affecting the achievement of food security in the study area.

## **2. Methodology**

### **2.1 The Study Area**

The study was conducted in Benue State, Nigeria. The State is one of the six states constituting the North Central region of Nigeria. The State is situated within the middle belt of Nigeria. It is located between longitudes 6<sup>o</sup> 33E and 10<sup>o</sup>E and latitudes 6<sup>o</sup> 30 N and 8<sup>o</sup> 10N. Benue State has 23 local Government Areas with its headquarters in Makurdi. The State has a population of 4,253,641 Million people (National Gazette, 2009) and covers a total land area of about 33,955 square kilometres. The major crops grown here include, rice, yam, cassava, groundnut, millet, soybeans, maize, citrus, mango, sorghum, sweet potatoes, cocoyam, guava, oil palm, tomatoes, cowpea, cashew and okra. Small ruminants such as goat, sheep, and non-ruminants such as swine, rabbits and poultry are also reared in the state. There are two distinct seasons here, the wet and the dry seasons. The wet season begins in April and ends in November while the dry season starts in December and ends in March. Farming is the major occupation of the Benue State indigenes.

### **2.2 Population and Sampling procedure**

This study covered rural and urban areas of Benue State, made up of indigenes and the immigrant populace of various ethnic groups. A multi-stage selection procedure involving purposive and simple random sampling techniques was employed to select respondents. Based on the division of the state into three senatorial districts: Benue North-East, Benue North-West and Benue South senatorial districts popularly known as zone A, B and C, one local government area was purposively selected from each zone; namely Katsina-Ala in zone A, Gboko in Zone B and Otukpo in Zone C respectively. These three (3) local government areas are selected due to the fact that they are highly demarcated into urban and rural divisions.

In the second stage, two (2) council wards were randomly selected each from rural and urban areas of the chosen local government areas giving a total of 12 council wards.

Lastly, using proportional allocation of 2% on sample frames of rural and urban households, a sample size of 193 households was selected for the study area.

### **2.3 Methods of Data Collection**

The data obtained from primary sources through structured questionnaire. Data were collected on the socio-economic variables of respondents as well as the types and quantities of food consumed in a week (7days).

### **2.4 Methods of Data Analysis**

The data for this study were analyzed using descriptive statistics, Food Security Index, Surplus/Food insecurity Gap, Factor analysis and Probit model.

### **2.5 Analytical tools**

Data were analysed using descriptive statistics, Food Security Index, Surplus/Food Insecurity Gap, Factor analysis and Probit model.

### **2.5.1 Food security index**

The study employed food security index ( $Z_i$ ) and determined the food security status of each household based on the food security line using the recommended daily calorie intake of 2500kcal. Households whose food security index is equal to or greater than the recommended daily calorie intake of 2500kcal will be regarded as food secure and those whose food security index is lower than the recommended daily calorie intake will be considered food insecure. The food security index is given as:

$$Z_i = \frac{Y_i}{R}$$

Where  $Z_i$  represents food security index of the household,  $Y_i$  is actual daily calorie intake of  $i^{\text{th}}$  households and  $R$  is the recommended daily calorie requirement of  $i^{\text{th}}$  household. To obtain the per capital daily calorie intake, daily intake of each household was divided by its household size. The study estimate other index such as Food Insecurity Gap (FIG), Head Count Ratio (HCR) and Surplus Index (SI) based on the Food Security Index estimation.

### **2.5.2 Surplus/Food Insecurity Gap**

The tool was used to measure the extent to which a household is food secure or insecure. Food insecurity gap is given as:

$$\text{FIG} = \frac{1}{m} \sum_{i=1}^n G_i \quad (2)$$

Where  $M$  represents the number of food insecure households and  $G_i$  is the calorie intake deficiency for the  $i^{\text{th}}$  households.

$G_i$  is further expanded in a form:

$$G_i \left( \frac{Y_i - R}{R} \right) \quad (3)$$

The Headcount Ratio (HCR) is given as:

$$\frac{M}{N} * 100\% \quad (4)$$

Where  $N$  represents the number of households in the sample

The Surplus Index (SI) is given as:

$$\frac{1}{m} \sum_{i=1}^n \left( \frac{R - Y_i}{R} \right)$$

### **2.5.3 Procedure for Measuring and Estimation of Food Security**

The study used the food consumption recall for the household as a whole and analyzed each type of food mentioned for calorie content. In this study, a 7-day recall approach was used. The food security line was the recommended daily per capita calorie intake of 2500kcal. The qualities of food consumed were converted to grams and calorie content was

estimated by using nutrient composition table of commonly eaten food in Nigeria. Per capita calorie intake was calculated by dividing estimated total household calorie intake by the household size. The household's daily per capita calorie was estimated by dividing the household's daily per capita calorie intake by seven. Household whose daily per capita calorie intakes were up to 2500kcal were regarded as food secure and those below 2500kcal were considered food insecure.

#### 2.5.4 Factor analysis

Principal component analysis model was used in estimating the factors constraining achievement of household food security among rural and urban farming households in Benue State Nigeria. It is specified as:-

$$\begin{aligned} P_1 &= a_{11}X_1 + a_{12}X_2 + \dots + a_{1n}X_n \\ P_2 &= a_{21}X_1 + a_{22}X_2 + \dots + a_{2n}X_n \\ P_3 &= a_{31}X_1 + a_{32}X_2 + \dots + a_{3n}X_n \\ P_n &= a_{n1}X_1 + a_{n2}X_2 + \dots + a_{nn}X_n \end{aligned}$$

Where;

$P_1, P_2, P_n$  = observed variable/factors constraining food security

$a_{11}, a_{12}, \dots, a_{nn}$  = factor loading correlation coefficients

$X_1, X_2, \dots, X_n$  = unobserved underlying factors constraining the study selected factors with high factors loadings scores  $\pm 0.40$  or greater.

#### 2.5.5 Probit Model

This model was employed to assess the factors influencing the achievement of food security status in the study area.

Probit model is specified implicitly as:-

$$Y = \sum \beta_x + \varepsilon_i \quad (6)$$

Where,

$Y$  = Food security status (1, for food secure households; 0, for food insecure households)

$X_1 - X_7$  = Vector of explanatory variables (predictors)

$\beta_1 - \beta_7$  = Coefficients

$\beta_0$  = Constant

$\varepsilon_i$  = Error term

Probit Model is specified explicitly as:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \varepsilon_i$$

$X_1$  = Sex of household head (male =1, female = 0)

$X_2$  = Age of household head (years)

$X_3$  = Household size (persons)

$X_4$  = Farm size (hectares)

$X_5$  = Level of education (years)

$X_6$  = Income of household head (naira)

$X_7$  = Quantity of own production (kilogram)

The *a priori* expectation of the probability of a household becoming food secure is stated as:

**Age of household head:** The age of household head is expected to impact on his or her labour supply for food production. Young and energetic household heads are expected to cultivate larger farms compared to the older and weaker household head. It also determines the ability to seek and obtain off farm Jobs and income which younger household heads can do better. Arene and Anyaeji, (2010) on the other hand, found older household heads to be more food secure than the younger household heads. Hence the expected effects of age of household head on food security could be positive or negative.

**Sex of household head:** Sex of household head looks at the role played by the individuals in providing households needs including acquisition of food. Female headed households have higher dependency ratios which hinder household capacity to allocate labour to on-farm or other income generating activities. Also female headed household tend to be older and have fewer years of education than male heads of household (FAO, 2012). The expected effect of this variable is positive.

**Household size:** The size of household determines the food security status of the households. It is expected that as the household size increases, the probability of food security decreases. This could mean that as the household size increases there is larger number of people to be taken care of by the same source of income. Hence the effect of the variable is negative.

**Income of Household:** This refers to the sum of earnings of household from both off-farm and on farm sources (Babatunde et al, 2007). The more household head engage in gainful employment, the higher he/she earns income and the greater the chances of being food secure. The income is expected to increase household's food production and access to more quantity and quality food. The expected effect of this variable on food security is positive.

**Education of Household Head:** Education is expected to have positive influence on household food security. As the level of education increases, the percentage of food secure households increases. This is expected because with increase in the level of education, individuals will be able to adopt more modern farm technologies on their farms thus improving their productivity and again have access to better job opportunities in the labour market. The expected effect of this variable on food security is positive.

**Farm Size:** Farm size is the total area of land cultivated to food and cash crops by households measured in hectares. The larger the farm size of the household, the higher the expected level of food production, it is therefore, expected of a household with a larger farm size to be more food secure than a household with a smaller farm size. Hence the expected effect on food security is positive.

**Off-Farm Activity:** Off-farm activity is additional work engaged in by household aside farming to supplement household income. Level of off-farm activity influence household food security but this can either be positive or negative depending on the level and gains from the activity (Babatunde et al., 2007). This is because engagement in an activity can bring in money thereby corroborating the food security situation of the household. On the other hand, if farmers spend more of their time on off-farm activities at the expense of working on their farm and particularly if the wage they earn does not commensurate with the foregone farm income, their food security situation could be worsened. The expected effect of this variable on food security could be positive or negative.

**Quantity of Own Farm Production:** This is the total quantity of food and cash crop produced by households from their own farm measured in kilogram. The quantity of household own production increases the probability of food security (Pappoe 2011). The expected effect of this variable on food security is positive.

**Table 1. Socio-Economic Characteristics of Respondents**

Variable	Rural Area		Urban Area	
	Frequency	Percentage	Frequency	Percentage
<b>Age (Years)</b>				
≤ 20	4	4.4	1	1.1
21-40	26	28.9	33	36.7
41-60	41	45.6	47	52.2
61 and above	19	21.1	9	10.0
Total	90	100.0	90	100.0
<b>Sex</b>				
Male	69	76.7	61	67.8
Female	21	23.3	29	32.2
Total	90	100.0	90	100.0
<b>Level of Education (yrs)</b>				
None formal education	14	15.6	5	5.6
Primary	17	18.9	9	10.0
Secondary	39	43.3	39	43.3
Tertiary	20	22.2	37	41.1
Total	90	100.0	90	100.0
<b>Household size</b>				
≤ 5	14	15.6	19	21.1
6-10	36	40.0	42	46.7
11-15	27	30.0	19	21.1
16 and above	13	14.4	10	11.1
Total	90	100.0	90	100.0
<b>Farm size (ha)</b>				
≤1	27	30.0	39	43.3
2-3	15	16.7	17	18.9
4 and above	48	53.3	34	37.8
Total	90	100.0	90	100.0
<b>Household Income (₦)</b>				
≤ 100000	15	16.7	3	3.3
100001-200000	21	23.3	20	22.2
200001-300000	14	15.6	17	18.9
300001 and above	40	44.4	50	55.6
Total	90	100.0	90	100.0
<b>Quantity of own production (kg)</b>				
≤5000	25	27.8	45	50.0
5001-10000	41	45.6	33	36.7
10001-15000	11	12.2	7	7.7
15001 and above	13	14.4	5	5.6
Total	90	100.0	90	100.0

### **3. Results and Discussion**

#### **3.1 Socio-Economic Characteristics of Respondents**

The data on socio-economic characteristics of respondents is presented in table 1. The key socio-economic characteristics of interest are age, sex, educational status, house hold size, farm size, household income, quantity of own production and off-farm activities.

The result of analysis on the age of respondents in the study area revealed that majority of the rural (45.6%) and urban (52.2%) food secure households head were between the ages of 41 and 60 years. It implies that most of them were still active young adults who could apply maximum physical labour and skills needed in the farming business as well as their ability to obtain off-farm jobs to boost their income in order to access for more food. According to Yinusa (1999) this age bracket contained the innovative and adoptable individuals. The result agrees with the findings of Babatunde *et al.*, (2007) which revealed that younger household heads are stronger and are expected to cultivate large size farm than their older counterparts.

Analysis of sex indicated that the proportion of food secure households was more in male-headed households than the female-headed households. The analysis showed that the rural areas had fairly higher proportion of male-headed households (76.7%); only 23.3% of the household heads were female. In urban areas, 67.8% of the household heads were male while the remaining 32.2% of the household heads were female. It could be those males were stronger to face the tedious nature of work involved in farming business. According to Amaza *et al.*, (2006) households headed by male have higher probability of being food secure. The result further agrees with the findings of Oguntola (1988) and Olorunsanya (2009) who concluded that farming is male dominated profession and female are however more involved in processing of agricultural products. This could be attributed to the fact that most women in the study area do not own farm lands due to tradition.

With reference to household size, the analysis showed that household heads with 6-10 persons per household were majority accounting for 40% in rural areas and 46.7% in urban areas. The result implies that families with small household size are more food secure than those with large household size. This is because increase in members of household added more responsibilities to household heads especially when many of the family member depend totally on the household head. Again, as household size increases, income per head declines and the less food secure the household becomes. This result agrees with the findings of Babatunde *et al.*, (2007) which revealed that as the household size increases, the probability of households being food secure decreases.

The data on educational status of respondents revealed that majority of the rural household heads (84.4%) had formal education; only 15.6% had no formal education. The urban centers had a higher percentage of educated household heads (94.4%) while only 5.6% of the urban household heads were illiterates. This implies that majority of them were in the better position to access information, have better understanding and adopt new improved farm techniques. Njoku (1991) observed that formal education has a positive impact on food security. This is because education enhances understanding and adoption of improved technology which will rapidly increase food production and increase the probability of a household being food secure. This study also agrees with the findings of Riber (2003) which revealed that an increase in the number of years in educational attainment will increase the probability of households being food secure.

The results of analysis on farm size revealed that majority of the rural household heads (53.3%) operated on the small scale farm holdings of between 2-3 hectares of farm lands



while majority of the household heads (43.3%) in urban centers had between  $\leq 1$  hectares of farm lands scattered in different plots. The findings indicated that majority of the respondents in the study area were small scale farmers who produce mainly for household consumption and little or no surplus for the market. This small farm size in urban areas is as a result of land ownership which was characterized by fragmentation of farm lands. This result agrees with Oladele (2001) who reported that agricultural production is still highly dominated by the small scale farmers.

Table 1 shows that household heads generating income of ₦300, 000 and above per annum were in the majority accounting for 35.6% and 55.6% in rural and urban areas respectively. Only 17.8% and 3.3% of the rural and urban household heads had the income of below ₦100, 000. It is believed that as the income of the household improves, the probability of households being food secure increases. This result further corroborates with the findings of Babatunde *et al.*, (2007) which revealed that the higher the household's income, the higher the probability that the household would be food secure.

Furthermore, the analysis on the quantity of own production in the study area showed that majority of the rural households (45.6%) produced between 5001 and 10,000 tons of food per annum; while majority of the urban households (50%) had less than 5000 tons of food output per annum. The quantity of own production in rural areas was more than that of urban areas, implying that more farming activities were done in rural areas than in urban centers.

In terms of participation in off-farm activities, 65.6% of the rural household heads participated while 34.4% did not. In urban centers, 72.2% of the household heads engaged in off-farm activities to earn more income for the households while 27.8% did not. The more the household heads engage in off-farm activities to source for more income, the more food secured the household will become.

### 3.2 Food Security Status of the Respondents

The summary of the food security status of farming households is presented in Table 2. The study area could be regarded as food secure given the fact that majority of the rural households (53.3%) and urban (62.2%) households were able to meet the recommended calorie intake of 2500kcal per capita per day. Only 46.7% and 37.8% of the rural and urban households were food insecure and unable to meet the recommended daily per capita calorie requirements of 2500kcal.

**Table 2. Food Security Status of Farming Households**

Variables	Rural Area Food Secure	Food Insecure	Urban Area Food Secure	Food Insecure
Recommended per capital daily intake (R) is 2500 kcal				
Number of households	48	42	56	34
Percentage of households	53.3	46.7	62.2	37.8
Mean food security index (z)	1.45	0.72	1.49	0.70
Per capita daily calorie availability	3392	1916	3488	1801
Surplus index/food insecurity gap (p)	0.39	0.24	0.42	0.26
Head count ratio (H)	0.53	0.47	0.62	0.38

**Source:** Field Survey, 2014

The mean food security indexes for rural and urban food secure households were 1.45 and 1.49, while that of rural and urban food insecure household were 0.72 and 0.70 respectively. The result of Surplus Index (p) showed that the rural and urban food secure households exceeded the calorie requirements by 39% and 42%, while that of Food Insecurity Gap showed that the rural and urban food insecure households fell short of the recommended calorie intake by 24% and 26% respectively. The result further revealed the head count ratio of 53% and 62% for rural and urban food secure households while the rural and urban food insecure households showed the head count ratios of 47% and 38% respectively.

### 3.3 Factors Influencing the Food Security Status of Households

Table 3 presents the result of probit model analysis on the factors influencing food security status of farming households in rural and urban areas of Benue State. The result showed that the probability of households being food secure or food insecure in rural areas of Benue state is determined by age, household size and household income.

The coefficient of age was found to be negative and significant at 5% implying that food security declines with increase in age. The negative and significant effects of the age of household heads decrease the probability of households being food secure. This result agrees with the findings of Agboola, (2004) who reported that increase in age decreases food security.

**Table 3. Probit Model Results On Factors Affecting Food Security Status**

Variables	Rural Area			Urban Area		
	Coeff.	Std error	p>/z/	Coeff.	Std Error	p>/z/
Sex	0.3860	0.3650	0.916	-0.4536856	0.3012	0.132
Age	-0.022798	0.0116	0.050**	0.008471	0.0143	0.554
HH size	0.1366482	0.0466	0.003***	-0.0651126	0.0391	0.096*
Farm size	1640809	0.1075	0.127	0.1827719	0.1007	0.070*
Education	0.00554	0.0325	0.865	-0.0127226	0.0341	0.709
HH income	1.35e-06	7.4800	0.071*	1.10e-07	3.0700	0.721
Off-farm activity	-0.3120722	0.3949	0.429	0.2282203	0.3383	0.500
QOP	0.000015	0.00001	0.219	0.000237	0.00003	0.449
Constant	-1.252466	0.8415	0.137	-0.0606167	0.7806	0.938
Chi-square	31.67			10.18		
Log L/hood	-46.348374			-57.091961		

**Source:** Field Survey, 2014

**Note:** \*, \*\* and \*\*\* means coefficients significant at 10%, 5% and 1% respectively.

The coefficient of household size in rural areas was observed to be positive and significant at 1% implying that increase in household size increases the food security status of households in rural areas. The result implies easy access to cheap family labour to increase food production and reduce cost of labour. This is because the number of persons in the household is the source of family labour to work on the farm for increased food productivity. This contradicts the finding of Babatunde *et al.*, (2007) who reported that as the household size increases, the probability of food security decreases.

The coefficient of total annual household income was positive and significant at 10% consistent with *a priori* expectation that the greater the income of household heads, the higher the probability of a household being food secure. This is expected because increased income means increased access to food. This result is in line with the findings of Arene and Anyaeji, (2010) which revealed positive and significant relationship between household income and food security.

Table 3 further reveals the major determinants of food security status in urban areas as household size and farm size. The coefficient of household size in urban areas was found to be negative and significant at 10%, implying that increase in household size decreases the food security status. This is expected because increases in the members of household means more people are eating from the same resources; hence the household members may not be able to take enough food. This result conforms to *a priori* expectation that the probability of households being food secure decreases with increasing household size.

Farm size was observed to be positive and significant at 10% consistent with *a priori* expectation that food security of households increases with increase in farm size. This is expected because as farm size increases, farmers take more interest in farming business and would likely search for needed information on how to improve their yields.

### 3.4 Problems Affecting Household Food Security in Benue State

Table 4 presents the Varimax- rotated principal component analysis of factors constraining the achievement of food security in rural and urban farming household in Benue State, Nigeria. In this study, two constraining factors were identified, factors 1 (environmental factors) and factor 2 (social economic factors).

**Table 4. Constraints Affecting Household Food Security In The Study Area**

Variable	RUAL AREA		URBAN AREA	
	*Factor 1	**Factor 2	*Factor 1	**Factor 2
Poverty	.282	.775	.603	.241
Infertility of the soil	.082	.687	.787	.210
Storage and processing problems	.209	.761	.662	.235
Limited land for farm expansion	.809	.170	.853	.095
Unfavorable weather/climatic condition	.736	.335	.610	.262
Lack of access to credit	.089	.700	.823	.138
High cost of food items	.844	.167	.361	.450
Crop and animals diseases	.701	.290	.263	.671
Lack of non-farm income generating activities	.245	.772	.665	.290
Limited land by women	.472	.283	.263	.718
Crisis/war	.740	.254	.090	.851

**Source:** Field survey, 2014

**Note:** Rotation method: varimax with Kaiser Normalization, \*Factor 1: environmental factors and \*\* Factor 2: socio-economic factors

In rural area, variables that loaded high under factor (environmental problems) were limited land for farm expansion (.809\*) unfavourable weather/climatic conditions (.736\*), crisis/war (.740\*), crop and animal diseases (.701\*), and limited land by women (.472\*).

Factor 2 (social-economic factors) included poverty (.775\*), lack of non-farm income generating activities (.772\*\*), storage and processing problem (.761\*\*) and lack of access to

credit (.700\*\*). Poverty is largely a rural phenomenon with some 900 million (about 75-80%) of the 1.2 billion extremely poor people live in the rural areas in sub-Saharan Africa (Tollen, 2002). According to Diagne and Zeller (2002) the poor nature of household developing countries is mostly due to lack of adequate access to credit and this is believed to have significant negative implications on the technology adoption, agricultural productivity, food security, nutrition and overall household welfare.

Credit serves as a powerful instrument for alleviation of poverty, enabling the adoption of new technology and increasing the agricultural output. Though the high cost of food items is a factor under socio-economic problems, it is not significant in the rural area with low loading, implying that rural people spend less on food items. This result agrees with the findings of Roy-Macaulay (2002) which found that rural people strive to feed themselves while the urban population spends more than 70% of its earnings on food, leaving only 30% for other minimum basic needs such as housing, education, healthcare, water and livelihoods.

In urban areas, variables that loaded high under factor 1 (environmental problems) include limited land for farm expansion (.853\*), infertility of the soil (.787\*) and unfavourable weather/climatic conditions (.610\*).

Generally, Nigeria's agricultural production landscape is dominated by small-scale, subsistence farmers who represent over 80% of the total food production population (CBN, 2005). This problem of limited land for farm expansion in the study area was further complicated by unfavourable weather/climatic conditions and infertility of the soil which resulted in low yields of agricultural products. Even though, crisis/war, crop and animal diseases and limited land by women are some of the environmental factors constraining household food security in urban areas, they are not significant because of their low loadings. The low loading against crisis/war is an indication that the urban centre of the study area has embraced peace and the people might have devised ways of tackling land disputes and overcoming other crises in the area. Apart from the high cost of food items, all other constraining variables under factor 2 (socio-economic problems) in urban areas had loadings that were below 0.40, which was used in naming the factors. They were therefore not included in the extracted factors.

#### **4. Conclusion**

The study examined the factors affecting household food security status among rural and urban farming households of Benue state. It may be concluded from the above results that the proportion of food secure households is more than the food insecure households. The result also revealed that income of household head, farm size and rural household size had a positive impact on household food security while age of household head and urban household size had a negative relationship with household food security. Lack of access to credit facilities, infertility of the soil, unfavourable weather/climatic conditions, poverty, storage and processing problems, crisis/war and lack of non-farm income-generating activities were the major constraints affecting household food security in the study area.

#### **5. Recommendations**

Based on the findings of the study, the following recommendations are made in an attempt to improve the food security status of households.

i. Government should give to farming households' consumption and production credits at minimum interest rate. This will reduce the constraint of lack of access to credit faced by households in the study area.

ii. Family planning programs should be made effective as to control the rapidly growing population so as to reduce the number of children to that which the household can adequately cater for.

iii. Farmers be provided with informal education through extension services on nutritional awareness and non- farm income earning opportunities.

iv. The agricultural policies that promote access of farmers to land and other farm inputs can lead to increased farm household productivity and income. This call for effective implementation of existing land use policy which was intended to enable farmer's access to land in any part of the country for agricultural purposes.

v. Poverty alleviation programmes should focus on how to boost non-farm income of farmers by educating them on off-farm businesses so as to increase their income and subsequently improve food security situation.

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