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## Food Security and Poverty of the Rural Households In Kwara State, Nigeria

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### ABSTRACT

A fundamental challenge the world faces today is ensuring that millions of households living in poverty have access to enough food to maintain a healthy life. Africa over the years has been looking for ways to solving the problem of food security and it is an important topic in discussions of Africa leaders. While there are national data on food security and poverty, information on rural food security and poverty are not readily available especially in Nigeria. This study, therefore, employed discriminant analysis to examine the levels and the major determinants of food security and poverty among the rural households who are the major producers of food in Nigeria. Using the basic calorie and protein requirement per capita of households, our result revealed that accessibility to health facilities; household size, farm size and household expenditure on food were the major determinants of a household's food security status. Non-farm income was a major determinant of the probability of a household being non-poor. The study suggests family planning as well as specific programmes targeted at the rural poor and food insecure as policy options.

Keywords: Discriminant Analysis, Food security, Nigeria, Poverty

### Introduction

World wide, about 852 million men, women, children are chronically hungry due to extreme poverty; while up to 2 billion people lack food security intermittently due to varying degree of poverty (FAO, 2003). More than two-thirds of Nigerian people are poor, despite living in a country with vast potential wealth. Food security for a household means access by all members at all times to enough food for an active healthy life. Food security includes at a minimum the ready availability of nutritionally adequate and safe foods; and an assured ability to acquire acceptable foods in socially acceptable ways (i.e. without resorting to emergency food supplies, scavenging, stealing or other coping strategies). Aside from food production, which a large proportion of the Nigerian populace is involved in, accessibility is very important to attain food security level. Food security at national level does not therefore guarantee that all people, especially the poor, will have access to the minimum nutrition requirement because of existing regional, economic and social inequalities, (Alderman and Garcia (1993). There may be food insecurity for some rural populations because they do not produce sufficient food and/or do not have sufficient purchasing power to cover their food needs. Rural poverty is a very important issue in Nigeria, that needs redress as over 90% of agricultural production is

from the rural farming households with little access to productive resources(resource poverty), (Obamiro et al, 2003). Many factors which may vary from region to region are known to be determinants of poverty. However, household endowments (assets) which help households to diversify their sources of income and thus reduce the risk of overall income failure have been identified as important determinants of poverty, (Ellis, 1998). This study, therefore, seeks to identify the proportion of sampled rural households that is food secure; the factors that determine household food security status; develop a poverty profile of the study area and determine the effect of household assets on household poverty.

### Materials And Methods

This study was conducted in Kwara State, Nigeria. The State has sixteen Local Government Areas (LGAs) and each LGA is divided into districts which are made up of villages. It has a population of 1,566,469 and a total land size of 3,682,500 hectares and 247,975 farm families with majority living in rural areas, (KWADP CAYS, 1999). It is located between latitudes  $7^{\circ}45'N$  and  $9^{\circ}30'N$  and longitude  $2^{\circ}30'E$  &  $6^{\circ}25'E$ . The topography is mainly plain lands to slight gentle rolling. The annual rainfall ranges between

1,000mm and 1,500mm. Average temperature ranges between 30<sup>o</sup> C and 35<sup>o</sup> C.

The population for this study comprise of all rural farming households in the State. With the exclusion of LGAs with cosmopolitan nature four LGAs were randomly selected for the study: These are Asa, Ifelodun, Ekiti and Moro LGAs. The second stage involved the random selection of two districts from each of the four LGAs. In the fourth stage, two villages from each of the districts were randomly selected. In the final stage, six households were randomly selected from each of the villages making a total of 96 households. Primary data were obtained using a structured interview schedule. Secondary data were obtained from reports and publications.

Food security index constructed in this study involved identification and aggregation. The process of identification involved the definition of a minimum level of nutrition necessary for the maintenance of a healthy living. This is the food security line below which rural households in this study area were classified as food insecure. The aggregation step helped to generate the food security statistics for the household. The food security index was derived based on the daily-recommended 2470 kcal and 65g protein as the food security line. Household calories availability was estimated using food nutrient composition in Deville de Goyet(1978). The ratio of the number of food insecure to the total sample number is referred to as the head count ratio. To identify the determinants of the rural household food security, a backward stepwise discriminant analysis was used. At each step, variables that contribute least to the prediction of the group membership were determined and removed using the F-values. The function used is of the form:  $L = X_i\beta_i + \epsilon_i \dots\dots(ii)$

Where,  $\beta_0 \dots\dots\beta_m$  are regression coefficients and  $L = 1$ , if food secure; and  $0$ , if food insecure;  $X_1 =$  farm size(ha);  $X_2 =$  age of household head

(years);  $X_3 =$  adjusted household size;  $X_4 =$  non-farm income (naira value);  $X_5 =$  total expenditure on food (naira value);  $X_6 =$  access to health services (1= yes; 0 otherwise);  $X_7 =$  educational level of household head (years);  $X_8 =$  farm income (naira value.); and  $X_9 =$  gender of household head (0 if female and 1 if male).

The discriminant analysis used to determine the effect of household assets on household poverty is of the form:  $\Pi = Z_i\theta_i + \epsilon_i \dots\dots\dots(iii)$

Where  $\Pi = 1$ , if non-poor and  $0$  if poor.  $\Theta$  are the estimated parameters. The household assets are classified as  $Z_1 =$  ownership of land (1= yes; 0 = no) ;  $Z_2 =$  age of household head (years);  $Z_3 =$  adjusted household size;  $Z_4 =$  non-farm income (naira);  $Z_5 =$  gender of household head (1 = male; 0 = female);  $Z_6 =$  ownership of a house (1= yes; 0=no) ;  $Z_7 =$  educational level of household head (years); and  $Z_8 =$  farm income (naira). In developing poverty profile, this study adopted the Foster, Greer and Thorbecke (FGT) (1984) class of poverty measure, which represents the level of income below which households are considered to be poor. The FGT class of poverty measures is defined as

$$P_a(x;z)=\frac{1}{n}\sum_{i=1}^q(g_i/z)^a \dots\dots\dots(iv)$$

where  $x =$  total household income,  $q =$  number of households with income not greater than  $z$ ,  $n =$  total number of households,  $g_i = (z-x_i)$  is the income shortfall of the  $i^{th}$  household,  $z > 0$  is the predetermined poverty line, 'a' is a measure of poverty aversion.

When  $a = 0$ ,  $P_a$  will be equal to the poverty headcount ratio;  $a =1$ ,  $P_a$  will be equal to the normalized poverty gap. It measures the depth of poverty; and when  $a =2$ ,  $P_a$  will be equal to the squared normalized poverty gap ratio. It measures the severity of poverty.

Food security index = Household's daily per capita calories and Protein Availability(A).     (1)

Household's daily per capita calories or Protein requirements.

### Results And Discussion

The socio-economic characteristics of household head may influence the food security and poverty levels of the households. Household heads in the area are mostly male (97.70%) and married to a wife (71.78%) with children (85%). The average physical household size is 7 and the adjusted size is 5. In this study, 18.39% of household heads do not have any form of formal education. The remaining 81.61% have one form of education or the other hence; there may not be much problem in the adoption of new scientific techniques and innovations in agriculture. About 72.0% of household heads are mainly farmers earning their major source of income from farming. The average farm size in the area is 1.21 hectares with about 82% of the households having 1 to 2 hectares of land.

The study revealed that 49.43% of the farming households rented their farmland, while 28.74% of them owned their farmland. Others use communal land for their farming business. Average annual off-farm income in the study area is N 36,913.00 and this forms part of the current assets of the households.

Although all the sampled farming households are food producers, only about 48% of them are food secure (Table 1) The mean daily energy and protein available to the food-secure households are 13,655.24 Kcal and 340.34g respectively.

This suggests that food availability is not enough indication of food security. There must be accessibility to and utilization of food by the people. The canonical correlation of 0.804 associated with the discriminant function a high

Table 1 Household Food Security

	Food secure	Food insecure
Household percentage	48.28	51.72
Mean adjusted household size	4.62	6.21
Household daily energy availability (Kcal)	5.24	13,593.62
Household daily per capita energy	2,955.53	2,190.56
Household daily protein availability (g)	340.34	334.41
Household daily per capita protein availability (g)	73.67	53.85
Head count ratio	0.48	0.52

Table 2 Standardised Discriminant Function Coefficients

	Coefficients	Ranking of absolute values
Farm size( $x_1$ )	0.337	4 <sup>th</sup>
Adjusted Household size ( $x_3$ )	-1.299	1 <sup>st</sup>
Household expenditure on food ( $x_5$ )	0.897	2 <sup>nd</sup>
Access to health facilities ( $x_6$ )	0.345	3 <sup>rd</sup>
Wilks' Lambda	.354	

Chi square	Degree Freedom	Level of significance	Cannonical correlation	Degree of correct classification
86.14	4.00	0.000	0.804	96.60%

degree of effectiveness in the separation of food secure from the food insecure households (Table. 2). The absolute values of the estimated parameters shows that the adjusted household size is the most important determinant of household food security, this is followed by household's expenditure on food, household's accessibility to health facilities, and farm size. The sign of the coefficients shows that an increase in farm size, household's expenditure on food and accessibility to health facilities increase household's probability of being food secure. Increase in the adjusted household's size will increase the probability of a household's food insecurity.

The study further revealed a high degree of effectiveness in separating poor and non-poor (Table 3). Non-farm income is the major determinant of poverty level in the study area. Households that have non-farm sources of income tend to easily get out of poverty than households that do not have other sources of income outside the farm. This is followed by the educational level of the household head. A household tend to be poor as its size increases. It was also observed that ownership of physical assets was another important determinant of rural poverty. Households with physical assets receive some rents from these assets and they do not pay for such asset, thus reducing cash outflow. Our poverty profile revealed that 66% of the sampled households fall below the poverty line and therefore could be said to be poor (Table 3).

However, the severity of poverty is 3% meaning that the poorest of the poor is 3% of the rural household. Fifty two percent of the households have been confirmed to be food insecure. This connotes that 14% of the population, though food secure, are poor. The study further confirms that food security does not guarantee escape from poverty and food insecurity is a characteristic of poverty.

In conclusion, specific programmes should be developed and targeted at reducing rural poverty and food insecurity. This has a resultant effect on national poverty and food insecurity reduction. In view of the negative impact of large family size on the food security situation of rural households in the study areas, farming households should be educated on the need to adopt the modern family planning techniques so that they may bear the number of children which their resources can accommodate. Diversification of

business activities could also be encouraged among the farming households.

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Table 3 Standardised Discriminant Function Coefficients

Asset	Description	Coefficient			
Human capital asset	Educational level of household head ( $Z_1$ )	0.386	2 <sup>nd</sup>		
	Age of household head ( $Z_2$ )	-0.322	4 <sup>th</sup>		
	Adjusted household size ( $Z_3$ )	-0.234	5 <sup>th</sup>		
Physical assets	Ownership of house ( $Z_4$ )	0.382	3 <sup>rd</sup>		
	Ownership of land ( $Z_5$ )	0.207	6 <sup>th</sup>		
Income	Farm income ( $Z_6$ )	0.188	7 <sup>th</sup>		
	Non-farm income ( $Z_7$ )	0.439	1 <sup>st</sup>		
<i>Wilks' Lambda</i>	<i>Chi square</i>	<i>Degree of Freedom</i>	<i>Level of significance</i>	<i>of Canonical correlation</i>	<i>Degree of correct classification</i>
0.507	55.01	8	0.000	0.702	82.80%