Assessment of Food Security Situation among Farming Households in Rural Areas of Kano State, Nigeria

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Abstract

Achieving food security is still a major problem for households in most rural areas of Nigeria. This study was therefore designed to assess the food security status among farming households in rural areas of Kano state, Nigeria. The study utilized a multi-stage random sampling technique to select a sample of 120 rural farm households for interview. Data collected were analysed using percentages, mean score, logistic regression and food security index. Using the food security index approach, the study revealed that 74% of the respondents were food secure while 26% were food insecure. The results of the logistic regression revealed that educational level ($p \leq 0.05$; $z = 1.95$), sex ($p \leq 0.05$; $z = 1.99$), household size ($p \leq 0.05$; -4.29) and access to credit ($p \leq 0.05$; $z = 2.4$) were significant determinants of food security. Also, the major effect of food insecurity on the households include reduction in household income/ savings due to increased expenditure on food (M= 3.58), among others. The perceived coping strategies in cushioning the effects of food insecurity include engaging in off-farm and non-farm jobs to increase household income, (M= 2.77), among others. The study therefore recommends the fast tracking of already established policy measures aimed at reducing food insecurity in the country. Also, efforts aimed at reducing food insecurity among rural farming households should focus on increasing household income and food supply.

Key words: Agriculture, coping strategies, food security, logistic regression, rural farming households

Introduction

Food is a basic necessity of life. It is regarded as the basic means of sustenance, and an adequate food intake in terms of quantity and quality, is a key for healthy and productive life (FAO, 2005). Food accounts for a substantial part of a typical Nigerian household budget. Various foods serve as important vehicles for taking nutrients into the body and bringing about a healthy state, hence the need for food to be taken in the right quality and quantity. To measure the quality of any food taken, there are classes of essential nutrients, which must be combined in appropriate proportion to ensure an adequate food intake. These include: carbohydrates, proteins, fats and oil, vitamins and minerals (Omonona, Agoi and Adetokunbo, 2007).

The need for food is topmost in the hierarchy of needs as it is essential for a healthy living. Thus, achievement of food security is important in any given country. Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preference for an active and healthy life (Mohammed, 2003). For food security to exist at the national, regional and local levels, food must be available, accessible and properly utilized.

Food availability means that enough safe and nutritious food is either domestically produced or imported from the international market. Food availability does not ensure food accessibility. For food to be accessible, individuals or families must have sufficient purchasing power or ability to acquire quality food at all times while utilization demands sufficient quality and quantity of food intake (Omonona *et. al.,* 2007). These elements of availability, accessibility and utilization in a larger context, embraces the supply, demand and adequacy of food at all times.

Mohammed (2003) noted that food insecurity exists when there is physical unavailability of food, lack of social and economic access to adequate food and/or inadequate food utilization. Food insecure households are households whose food intake falls below their minimum calorie (energy) requirements, and those who exhibit physical symptoms caused by energy and nutrient deficiencies resulting from inadequate diets. The dimensions of food security make it clear that the concept of food problem is a complex one with many dimensions. At one level, the concern is with national food security, which is the ability of countries to produce or increase sufficient food all the year to meet their requirement for both private and public distribution. At another level, the concern is more with the problem of malnutrition.

In the last decade, attention has been focused on means of eliminating food insecurity and hunger worldwide. Hence, the Millennium Development Goal (MDG) agenda, to eradicate extreme hunger and poverty, becomes one of the goals of nations as an effort to reduce/eradicate food insecurity/crises. In the wake of this new push, the MDG was launched, bringing together the international communities to work together to achieve the set goals by the year 2015 (Migotto, Davis, Carrietto and Kathleen, 2005). Less than 4 years to the target year, available statistics still cast doubt on whether this goal could be achieved by the year 2015.The incidences of food insecurity and poverty are particularly devastating in the developing countries, and a lot of resources are being channelled toward programmes aimed at eradicating food insecurity and poverty by various international organizations and governments of developing nations including Nigeria (Millennium Development Goals Report, 2006).

In Nigeria, the most populous country in Africa, the majority of households are food insecure, especially the rural farming households. Several evidences have suggested that majority of the world's food insecure live and work in the rural areas (IFAD, 2001). This indicates that reducing rural food insecurity is very important to reducing overall food insecurity. Given the role of agriculture in the Nigerian economy, food insecurity and poverty could be attributed to the poor performance of the agricultural sector, which in turn, creates food availability and accessibility problems at the household and national levels (Akinsanmi and Doppler, 2005). In other words, the poor performance of the sector directly creates supply shortages and indirectly creates demand shortages by denying the rural farming households access to sufficient income.

In Kano State where environmental and macroeconomic conditions are unfavourable, poor rural farming households have been facing significant food deficits and limited livelihood options (Dirorimwe, 2000). Employment opportunities, such as construction work and transportation, have been adversely affected by water shortages, fuel scarcity, and high prices, and as a result, poor households are now limited to casual agricultural labour and reliance on remittances. This results in their inability to meet basic food needs. In addition, while the cash income of poor households is deteriorating, their expenditures are increasing due to high food prices and seasonal farming expenses. Thus, Kano State is facing worsening food insecurity, as noted by FAO (2000), and this has led to a high incidence of malnutrition related diseases, which not only undermine health, but hinders agricultural production in the region traditionally considered the bread basket of Nigeria.

As part of the state's contribution to increase food production, the Kano State Government implemented a Special Mass Food Production Programme (SMFPP) between 2003 and 2005 to stimulate sustainable growth in agricultural production and enhance food security for the teaming population (KNARDA, 2006). The pertinent questions therefore are; what is the food security situation in Kano State presently? Is the state food secure or insecure? It therefore becomes imperative to assess the food security situation among farming households in rural areas of Kano State. The specific objectives of the study were to:

(1) describe the socio-economic and institutional characteristics of the farm households

(2) determine the food security status of the respondents

(3) identify determinants of food security among the respondents

(4) determine the perceived effects of food insecurity and

(5) identify effective coping strategies employed by the respondents in cushioning the effects of food insecurity.

Research Methodology

Area of study

Kano State is one of the 36 states in Nigeria, located at the northwestern part of the country. It lies between latitudes 9°30' an d 10°33' North of the equator and longitudes 7°34' and 9°25' East of the Greenwich Meridian. It borders Kastina state to the northwest; Jigawa state to the northeast and Bauchi and Kaduna states to the south. The state has an altitude of 500m to 750m above sea level (http://www.kanostate.net).

A tropical wet and dry climate prevails over the state and it has two distinct seasons; the wet and dry seasons. The wet season lasts between May and early October while the dry season lasts between November and April. The southern part of the state lies in the northern Guinea savannah agro-ecological zone while the northern part covers the Sudan savannah. Annual rainfall varies from 600-1200mm in the Guinea savannah to 300-600mm in the Sudan savannah. The mean annual temperature is about 26 c in the coolest months (December/ January) and 31°c in the hottest months (April/May). The humidity is relatively low (KNARDA, 2001).

According to the 2006 census, Kano state is the most populous state in the country with a population of 9,383,683 people, 75% of who are involved in agriculture, which is the mainstay of the state (NPC, 2007). The total land area is 20,760 square kilometer. Kano state has more than 18,684 square kilometer of cultivable land and is the most irrigated in the country (http://www.kanostate.net).

Kano state has 44 local Government Areas. The Local Government Areas are classified as Kano urban and rural areas. Kano urban area comprises six LGAs which includes Kano municipal, Fagge, Dala, Gwale, Tarauni and Nassarawa. The rural areas comprises 38 LGA- Ajingi, Albasu, Bagwai, Bebeji, Bichi, Bunkure, Dala, Dambatta, Dawakin Tofa, Doguwa, Gabasawa, Garko, Garum-Mallam, Gaya, Gezawa, Gwarzo, Kabo, Karaye, Kibiya, Kiru, Kumbotso, Kunchi, Kura, Madobi, Makoda, Minjibir, Rano, Rimin Gado, Rogo, Shanono, Sumaila, Takaila, Tofa, Tsanyawa, Tundu Wada, Ungogo, Warawa and Wudil (http://www.nigeriagalleria.com/Nigeria/States_Kano_State).

Study design and data collection

Primary data for this study were collected from the farming households through the use of structured interview schedule, comprising closed and open-ended questions. A multi-stage random sampling technique was employed in selecting a sample of 120 farming households from 24 communities across six rural local government areas of Kano State. The local government areas include Kura, Bunkure, Ungogo, Gezawa, Gurun malam and Makoola.

Information were collected on age, occupation and sex of household head including other household characteristics such as monthly income, perceived effects of food insecurity and coping strategies employed by the households in cushioning the effects of food insecurity. Data were also collected on monthly household expenditure on food and non-food items.

Analytical techniques

Descriptive statistics such as frequency counts and percentages; mean scores, food security index and logistic regression were employed to fulfil the objectives of the study.

To determine the food security status of the rural farming households, the households were classified into food secure and food insecure households, using the food security index. The food security index formula is given by:

$$F_i = \frac{\text{Per capita food expenditure for the } i^{th} \text{ household}}{\text{2/3 mean per capita food expenditure of all households}}$$

Where F_i = Food security index

When $F_i \geq 1$ = Food secure i^{th} household

$F_i \leq 1$ = Food insecure i^{th} household.

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

households in the state was determined by taking the frequency of the food secure/insecure households. The headcount ratio (H) of food security was calculated to measure the percentage of the population of households that are food secure/insecure. The headcount index formula is given by;

$$\text{Headcount index (H)} = M/N$$

Where M = number of food secure/insecure households

N = the number of households in the sample

Based on the food security index (Fi), multivariate logistic regression was estimated to identify determinants of food security among the respondents. Logistic prediction equation used is:

$$Z = bo + b1X1 + b2X2 + \ldots + bkXk + u$$

Where Z = Logit for food security = Logit (p)

bo= Constant

b1, b2,…,bk = the regression coefficients which interpret the effect of X on Z

X = independent variables

K = number of independent variables

P = probability of presence of characteristic of interest

u = error term

In the logistic regression analysis, the independent variables are as follows;

X1 = age of household head (years)

X2 = gender of household head (D=1 for male; D=2 for female)

X3 = educational status of household head (D =1 for educated; D =2 for not educated)

X4 = household size (number of household members)

X5 = household head participation in social organization

(D = 1, if yes; D = 0, otherwise)

X6 = household head access to credit facilities (D = 1 for access; D = 0 for no access)

X7 = extension contact (number of contacts)

To ascertain the perceived effects of household food insecurity a four point Likert-type scale was used. Respondents were required to indicate their opinions by checking any of the four options namely, “To a very great extent”, To a great extent”, “To a little extent” and “Not at all”. Values assigned to these options were 4, 3, 2 and 1 respectively. These values were added to obtain 10, which were further divided by 4 to obtain 2.5, which was regarded as the mean. Variables with mean scores less than 2.5 were regarded as not having any perceived effect on household food insecurity while variables with mean score equal to or above 2.5 were regarded as having an effect on household food insecurity.

To ascertain the perceived coping strategies employed by households in cushioning the effects of household food insecurity, a three point Likert-type scale was used. The response options and values assigned were as follows: Very effective = 3; Effective = 2; and Not effective = 1. These values were added and divided by 3 to obtain 2.0, which was regarded as the mean. Strategies with mean scores greater than or equal to 2.0 were regarded as "effective" while strategies with mean responses lower than 2.0 were regarded as not effective.

Results and Discussion

Socio-economic and institutional characteristics of the households

Data in Table 1 show that 35.9% of the household heads were between the ages of 40 and 49 years with an average of 41.7 years, implying that majority of them were predominantly in their economically active age. Hence, they are energetic to cultivate large size farms for increased food production and engage in off–farm jobs so as to increase household income. Also, about 89.2% of the household heads were males. According to Ziervogel *et. al.,* (2006) men have easier access to farmland through paternal inheritance than women in Nigeria. Based on this, male headed households are expected to have more access to farmland for food production. It was further indicated on the table that a greater proportion (35.8%) of the farming household heads had Quarnic education. According to Babatunde *et. al.,* (2007) education is a social capital, which could impact positively on a household's ability to take good and well–informed production and nutritional decision. This enhances their knowledge and comprehension of new farm technologies, practices and systems aimed at improving their food security situation. The average household size in the area was 9 persons. This implies that most of the farmers had large household sizes, which could probably serve as an insurance against shortfalls in the supply of farm labour. According to Sule, Ogunwale and Afala (2002) household size has a great role to play in family labour provision in the agricultural sector. The average farm size was 2 hectares. This shows that the households are subsistence farmers. According to Akinsanmi and Doppler (2005) the size of farmland that a household cultivates directly affects their production and hence food security. In the study area, population growth has led to a high level of fragmentation of farmland. Hence, acquiring a relatively large plot(s) of land for farming is becoming a difficult task. This may affect their agricultural output, since food production increases extensively through expansion of areas under cultivation (Najafi, 2003). Table 1 show that greater proportions (52.5%) of the farmers were members of cooperative groups. According to Akinsanmi *et. al.,* (2005) cooperatives are vehicle for development since it provides informal credit to farmers. In the rural areas, access to cooperative loans depends on membership and it is expected that access to credit should increase household's income, food production and food consumption. The data also reveal that majority (60.8%) of the respondents do not have access to credit facilities due to the non-availability / accessibility of institutional credit sources as well as their inability to meet the conditions in terms of interest rates and payment periods. Entries in Table 1 further show that majority (60.8%) of the farmers have been visited by extension agents in the last one year. The average contact period of extension agents was two times per year. These contacts could be considered as being very low probably as a result of the inadequate funding of extension in Nigeria by the government (Ozor, Agwu, Chukwuone, Madukwe and Graffort, 2007). This may reduce the chances of households having access to better crop production

techniques, improved inputs as well as other production incentives, provided by extension agents. This could pose constraints to households achieving sustainable food security. Table 1 further reveals that a greater proportion (37.5%) of the households realized between ₦40,001 and ₦50,000 monthly from their agricultural activities, while 51.7% of the respondents earned between ₦10,001 and ₦20,000 from non–agricultural activities monthly. According to Akinsanmi and Doppler (2005) income from off-farm activities in rural areas has not proven to be adequate to meet household needs. Hence, households source their income mainly from agricultural production so as to meet their food needs.

Table 1: Percentage distribution of respondents by socio-economic and institutional characteristics

Socio-economic characteristics	Frequency	Percentage	Mean
Age (years)			
20-29	9	7.5	
30-39	40	33.3	
40-49	43	35.9	41.7
50-59	19	15.9	
60 and above	9	7.4	
Sex			
Male	107	89.2	
Female	13	10.8	
Educational status			
No formal education	6	5.0	
Primary school education	25	20.8	
Secondary school education	38	31.7	
Vocational education	2	1.7	
Quarnic education	43	35.8	
Post-secondary school education	6	5.0	
Household size (persons)			
1-5	28	23.4	
6-10	57	47.6	9
11-15	31	25.8	
16-20	4	3.2	
Farm size (hectares)			
Less than 2	72	60.0	
2-4	41	34.2	2.0
More than 4	7	5.8	
Participation in social organization			
Yes	63	52.5	
No	57	47.5	
Access to credit			
Have access	47	39.2	
No access	73	60.8	
Estimated household monthly income from agricultural activities			
₦1001 – ₦10,000	6	5.0	
₦10,001 – ₦20,000	30	25.0	
₦20,001 – ₦30,000	13	10.8	
₦30,001 – ₦40,000	14	11.7	43,447.50
₦40,001 – ₦50,000	45	37.5	
₦50,001 and above	12	10.0	
Estimated household monthly income from non-agricultural activities			
Less than ₦1000	1	0.8	
₦1001 – ₦10,000	12	10.0	
₦10,000 – ₦20,000	62	51.7	
₦20,001 – ₦30,000	17	14.2	15,225
₦30,001 – ₦40,000	17	14.2	
₦40,001 – ₦50,000	5	4.2	
₦50,001 and above	6	5.0	
Extension contact			
Yes	73	60.8	
No	47	39.2	

Food security status of rural farming households

Households were profiled into food secure and food insecure groups based on their per capita food expenditure. The food insecurity line is defined as two-third of the mean per capita food expenditure of the total households studied. The food insecurity line as defined is shown in table 2.

Table 2: The food insecurity line for the households

Deciles	Mean per capita food expenditure – MPCFE (₦)
First	339.952
Second	292.420
Third	348.737
Fourth	298.686
Fifth	318.840
Sixth	389.065
Seventh	344.154
Eighth	368.016
Ninth	307.394
Tenth	390.109
Eleventh	308.904
Twelfth	336.156
MPCFE	4042.431
2/3 MPCFE	2694.954

**MPCFE = mean per capita food expenditure*

Therefore, households whose per capita food expenditure falls below ₦2,694.954 were designated food insecure, while households whose per capita food expenditure equals or is greater than ₦2,694.954 were food secure. It was observed that 74.2% of the households were food secure while 25.8% were food insecure.

In other words, based on the headcount ratio, 74% had their per capita food expenditure equals or above N2, 694.954, while 26% had their per capita food expenditure below N2, 694.954.

Table 3: Summary statistics of food security status in the study area

Variables Food security status	Mean		
	Food secure	Food insecure	All
2/3 Mean per capita food expenditure is N2694.954			
Percentage of households	74.2	25.8	100
Number of households	89	31	120
Head count ratio (H)	0.74	0.26	-

Determinants of the food security status of rural farming households in the study area

The result of the logistic regression in Table 4 shows that educational level (p≤0.05; z = 1.95), sex (p≤0.05; z = 1.99), household size (p≤0.05; -4.29) and access to credit (p≤0.05; z = 2.4) were significant determinants of the food security status of the rural farming households. These findings are in consonance with that of Omonona et al.,(2007), Babatunde et al., (2007) and Amaza et al., (2008).

The positive relationship between educational level of household heads and food security implies that households with an educated household head are more likely to be food secure than those with an uneducated household head. Also, the higher the number of years the household head spends in school, the probability of the household being food secure.

The sex of the head of the household reveals a significant positive relationship with household food security status. This indicates that households headed by males have a higher probability of being food secure than households headed by women. This may be as a result of the fact that in male headed households, both heads and their spouse are involved in income generating activities while in female headed households, the head (who may be unmarried or widowed) solely provide necessities for the family.

Household size has a negative coefficient that is significant at 5% level implying that a large household size may likely be food insecure, while a small household size could be food secure. Farmers' access to credit facilities is also a crucial factor in determining the food security status of an individual as it had a positive and significant coefficient at 5%. Babatunde et al., (2007) noted that farming households with good access to credit facilities have greater probability of being food secure than those without credit facilities.

Table 4: Determinants of food security status of rural farming households

Food security status	Coefficient	Std. Error	z	P>|z|	[95% conf. Interval]
Educational level of household head	.1323189	.0679211	1.95	0.051*	-.000804 .2654418
Age of household head	.0623022	.037277	1.67	0.095	-.107593 .1353638
Sex of household head	1.889632	.9489601	1.99	0.046*	.0297041 3.749559
Household size	-.57702	.1343759	-4.29	0.000*	-.8403919 .3136482
Extension contact	.1904537	.6190581	0.31	0.758	-1.022878 1.403785
Participation in social organization	-1.219616	.6827025	-1.79	0.074	-2.557688 .1184566
Access to credit facilities	1.518889	.6302999	2.41	0.016*	.2835236 2.754254
Constant	.8547712	1.258391	0.68	0.497	-1.611631 3.321173

*Dependent variable: Food security status. *significance at p≤0.05.*

Perceived effects of food insecurity on households

Data in Table 5 revealed the perceived major effects of food insecurity on households to include: reduction in household income/ savings due to increased expenditure on food (M= 3.58), increase in the price of food (M=3.56) and increased government expenditure on food importation/production (M= 3.45). Food insecurity results in limited access to accessible food as a result of low income and reduced household savings to meet other needs and demands. Olarinde and Kuponiyi (2005) further noted that the government increased her expenditure on food importation / production in order to curb the food security problems at the expense of other sectors of the economy.

Other perceived effects of household food insecurity were: reduction in agricultural productivity due to poor health status (M= 3.43), inability of children to perform well in school (M= 3.38); sale of household tangible assets such as land (M= 3.20); withdrawal of children from school to work in or off the farm for wages (M= 3.19); borrowing from informal sources or money lenders (M= 3.12); reduction in the nutritional status of children (M= 3.07); and reduction in farm labour due to hunger which may prevent individuals from doing farm work (M= 3.06); increased criminal activities such as theft, prostitution (M= 3.05); and decreased ability to resist infection and illness (M= 2.77).

Other aspects of the food security problem facing the farm households involve the utilization of the food consumed. As a result of various forms of deprivation of basic amenities of life, like the sub-standard health care facilities, absence of potable water, prevalence of poor sanitation, diseases, low level of literacy, among other, the productivity of most households is reduced and their ability to utilize food to their maximum benefit is hampered. The resultant effect of these problems is that most of them are not having enough to subsist on, the year round. They are therefore, closely identified with food insufficiency (FAO, 2000).

Table 5: Mean score of perceived effects of household food insecurity

Effects of household food insecurity	Mean	Std. Deviation
High mortality rates of children	2.10	0.94
Decreased energy levels	2.44	0.70
Delayed maturation	2.17	0.86
Growth failure	2.39	0.82
Decreased ability to resist infection and illness	2.77*	0.69
Shortened life expectancy	2.45	0.70
Low birth weight	2.39	0.68
Increase in the price of food	3.56*	0.70
Inability for children to perform well in school	3.38*	0.82
Increased government expenditure on food importation / production	3.45*	0.77
Anger	2.38	0.71
Increased criminal activities such as theft, prostitution etc	3.05*	0.74
Sale of household tangible assets such as land	3.20*	0.77
Borrowing from informal sources and money lenders	3.12*	0.79
Reduction in the nutritional status of children	3.07*	0.74
Withdrawal of children from school to work on or off the farm for wages	3.19*	0.84
Reduced household income/savings due to increased expenditure on food	3.58*	0.69
Reduction in farm labour due to hunger which may prevent individuals from doing farm work	3.06*	0.89
Reduced agricultural productivity due to poor health status	3.43*	0.68

** perceived effects*

Perceived coping strategies employed by households in cushioning the effects of food insecurity

Entries in Table 6 indicate that the perceived major coping strategies employed by households in cushioning the effects of food insecurity include: engaging in off-farm and non-farm jobs to increase household income, (M= 2.77), diversion of money meant for other purposes to buy food (M= 2.69) and reduction in the quantity and quality of food consumed (M= 2.59). This finding is in agreement with Haile *et. al.,* (2005) which noted that employment in off-farm and non-farm activities is essential for diversification of the sources of farm households' livelihood. This is because it enables households to modernize their production by giving them the opportunity to apply the necessary input, and reduce the risk of food shortage during periods of unexpected crop failures through food purchase. Diversification of sources of income is a strategy, which allows household heads to reduce the risk of starvation for themselves and their families during periods of chronic or transitory food insecurity. In the study area, households diversify their income by engaging in trading, driving, civil service, brick – making, selling firewood and other income – generating activities and this is in agreement with Diromriwe (2000).

Ibrahim *et. al.,* (2009) further reported that some coping strategies employed by households include reducing the quality and quantity of meals and the purchase of less preferred food. These were also major strategies employed by the households in the study area to cushion the effect of food insecurity. The high market price of basic foodstuffs was the driving force behind the use of these two strategies. Due to high food prices and lower income, households resort to the consumption of less preferred and less expensive food so as to feed and produce more food.

Other coping strategies employed by the households include: eating foods that are less preferred (M= 2.50); borrowing money to buy food (M= 2.36); reducing the number of people eating in the house (M= 2.29); mortgaging and selling of assets (M= 2.08); short–term alterations in crop and livestock production pattern (M= 2.07) distress migration (M= 2.03); and skipping one or two meals per day (M= 2.03).

According to Amaza *et. al.,* (2008) household assets is considered one of the measures of household resilience, which cushions the effect of adverse circumstances, such as crop failure or drought on household food security. Household assets include livestock, machineries and land which could be sold, if need be, so as to purchase food used in feeding the households in times of adversity. Kang'ara *et al.* (2001) noted that livestock are considered a means of security and means of coping during crop failure and other calamities. In addition to arable farming, pastoralism is a major economic activity in the study area. The products of these livestock serve as an asset and may provide a reserve that can be converted to cash in times of need.

Table 6: Mean score of perceived coping strategies employed by households in cushioning the effects of household food insecurity.

Coping strategies	Mean	Std. deviation
Eating foods that are less preferred	2.46*	0.59
Reduction in quality and quantity of food consumed	2.59*	0.57
Borrowing food from friends and relatives	1.63	0.75
Borrowing money to buy food	2.36*	0.66
Mothers limiting their own food intake in order to ensure that their children get enough to eat	1.98	0.55
Skipping one or two meals per day	2.03*	0.65
Skipping eating for whole days	1.26	0.59
Engaging in criminal practices like prostitution and theft	1.86	0.63
Parents abandoning children to fend for themselves	1.72	0.71
Reducing the number of people eating in the household	2.29*	0.64
Depletion of stores	1.99	0.54
Increased reliance on wild food	1.73	0.68
Short-term alteration in crop and livestock production pattern.	2.07*	0.45
Begging for food on streets	1.56	0.74
Mortgaging and selling of assets	2.08*	0.50
Distress migration	2.03*	0.56
Eating cheaper meals out of home	2.47*	0.66
Engaging in off-farm jobs to increase household income e.g. trading, driving, civil service etc	2.77*	0.48
Buying food on credit	2.50*	0.61
Diversion of money meant for other purposes to buy food.	2.69*	0.55

**perceived coping strategies*

Conclusion and Recommendations

The study revealed that 74.2% of the households were food secure while 25.8% were food insecure. Also, the educational level of household head, sex of household head, household size and access to credit facilities were significant determinants of household food security status in the study area. The major perceived effects of food insecurity on households were reduced household income/savings due to increased expenditure on food and increase in the price of food. From the respondents' opinion, engaging in off–farm and non-farm jobs to increase household income and diversion of money meant for other purposes to buy food were major coping strategies that are employed to cushion the effects of household food insecurity.

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

1. Educational level of household head was a significant determinant of food security status of the farm households. Hence, there is need for formal education to be promoted as a means of improving food security as it opens up more income –earning opportunities for the farm households especially in the non-farm sector.

2. Household heads should be properly educated on the importance of family planning and birth control measures so as to have a manageable family size that will subsist on the available resources.

3. Policies should be aimed at ensuring that Institutional credit sources reduce the current high interest rates of 12% on loans and the procedural difficulties in securing institutional facilities, so as to encourage farmers access to such credit facilities for increased agricultural production and hence, food security.

References

Akinsanmi A. and Doppler, W., (2005). Socio-economic and food security of farming families in Southeast Nigeria. Paper presented at Tropentary, 2005, Conference on international agricultural research and development, University of Honhentiem, Stuttgart, Germany.

Amaza, P.S., Umeh, J.C., Helsen, J. and Adejobi A.O., (2006). Determinants and measurement of food insecurity in Nigeria: Some empirical policy guide. Contributed paper prepared for presentation at the international association of agricultural economics conference, Gold coast, Australia. August 12-18, 2006, 3-8.

Amaza, P.S., Adejobi, A.O. and Fregene, T., (2008). Measurement and determinants of food insecurity Northeast Nigeria: Some empirical policy guidelines. Journal of Food, Agriculture and Environment, 6 (2), 92-96.

Babatunde, R.O. Omotesho, O. and Sholotan, O.S., (2007). Socio-economic characteristics and food security status of farming households in Kwara State, North-Central Nigeria. Pakistan Journal of Nutrition, 6, 49-58.

Dirorimwe C., (2000). Participatory development of household food security and nutrition improvement programme in Kano State, Nigeria: Food, nutrition and agriculture. *FAO Corporate Document Repository*. 213-225. Retrieved from http://www.fao.org/docrep/x00517/x0051T06./HTM (Accessed on 4th May, 2009).

FAO, (2000). Food and agricultural organization of the United Nations. The state of food and agriculture, Rome, Italy.

FAO, (2005). Food and agricultural organization. The state of food insecurity in the world, 2005, Rome, 2.

Haile, H.K. and Alemu, Z.G., (2005). Causes of household food insecurity in Koredegaga peasant association, Oromiya zone. Ethiopia working paper. Department of Agric Extension, Faculty of Natural and Agricultural Sciences at the University of Free State, Africa. 2-8.

http://www.kanostate.net. Accessed on 15th February, 2009.

http://www.nigeriagalleria.com/Nigeria/States_Kano_State. Accessed on 18th March, 2009.

Ibrahim, H., Uba-Eze, N.R, Oyewole, S.O. and Onuk, E.G., (2009). Food security among urban households: A case study of Gwagwalada area council of the federal capital territory Abuja, Nigeria. Pakistan Journal of Nutrition, 8 (6). 810-813.

IFAD (2001) The rural poverty report, 2001. International Fund for Agricultural Development: Rome, Italy. Retrieved from http.//www.ifad.org/poverty/index.htm (Accessed on 4th May, 2009).

Kang'ara, J.N, Ngoroi, E.H., Muturi, J.M., Amboga, S.A., Ngugi, F.K. and. Mwangi, I., (2001). The role of livestock in soil fertility, biodiversity, land use, cultural and welfare change in Nduuri, Embu, Kenya.

Kano State Agricultural and Rural Development Authority, (2001). Meteorological station reports – temperature record book. Kano state government, publication, no. 4.

Kano State Agricultural and Rural Development Authority, (2006). Mission, vision and achievements of the special mass food production programme, Kano State. Kano state government publication no. 31,2-10.

Migotto, M., Davis, B., Carietto, G. and Kathleen, B., (2005). Measuring food security using respondents' perception of consumption adequacy. FAO agriculture and economic development analysis division (ESA) Working paper no. 05-10.

Millenium Development Goal Report, (2006). Millennium development goals report. United Nations, New York.

Mohammed, A., (2003). Food insecurity vulnerability and information mapping system. A paper presented in the annual meeting of the inter-agency working group. Abuja, Nigeria 1-3 October, 2003.

Najafi, B., (2003). An overview of current land utilization and their contribution to agricultural productivity. Report of the APO seminar on impact of land utilization system of agricultural productivity. productivity organization, Islamic Republic of Iran Asian.

National Population Commission 2007. National population of Nigeria, 2007.

Olarinde, L.O. and Kuoniyi, F.A., (2005). Rural livelihood and food consumption pattern among households in Oyo State, Nigeria: Implications for food security and poverty eradication in a deregulated economy. Journal of Social Science, 11 (2). 127-132.

Omonona, B., Agoi, T. and Adetokunbo, G., (2007). An analysis of food security situation among Nigerian urban households: Evidence from Lagos State, Nigeria. Journal of Central of European Agriculture. 8 (3), 399-406.

Ozor, N., Agwu, A.E., Chukwuone, N., Madukwe, M.C. and Graffort, C., (2007). Cost sharing of agricultural technology transfer in Nigeria: Perceptions of farmers and extension staff. The Journal of Agricultural Education and Extension. 13 (1), 23-37. (Published by Wageningen University, The Netherlands). Website: http://www.jaee.nl

Ziervogel, G., Nyong, A., Osman, B., Conde, C., Cortes, S. and Downing, T., (2006). Climatic variability and change implications for household food security. AIACC working paper. No 20. An electronic publication of the AIACC project. Retrieved from: www.aiacc project.org (Accessed on 15th June, 2009).