Journal of Community & Communication Research
ISSN: 2635-3318
Volume 5, Number 2, June 2020
Pp. 104-113

Effects of Selected Rural Innovations in Promoting Food Security among Small-holder Farmers in Kano State, Nigeria.

Accessible at: https://jccr.sccdr.org.ng

Abdullahi, A.
Department of Agricultural Economics and Extension, Faculty of Agriculture, Bayero University, P.M.B. 3011, Kano, Nigeria.
Corresponding Author's Email: hummaz14@yahoo.com

Karaye, U. I
Department of Agricultural Economics and Extension, Faculty of Agriculture, Bayero University, P.M.B. 3011, Kano, Nigeria.

Yahya, M.K.
Department of Agricultural Economics and Extension, Faculty of Agriculture, Federal University, Dutse, Jigawa State, Nigeria

Review Process: Received: 04/05/20 Reviewed: 19/05/20 Accepted: 19/05/20

ABSTRACT
The study analysed the effects of selected rural innovation practices in promoting food security among smallholder farmers in Kano State, Nigeria. Three LGAs were initially selected randomly from each of the 3 Agricultural zones of the State. Two rural communities were further selected randomly from each LGAs to form the six communities. Data were collected using structured questionnaires from 111 farmers using random sampling technique. Data collected were analysed using descriptive and inferential (Logit regression) statistics. Findings revealed that majority of the rural dwellers were arable crop farmers, within active and productive years, married with an average household size of 9 members. Planting, organic and inorganic manuring, weeding, triple bagging, early harvesting and mulching were some of the rural innovations identified. The study further revealed that, age, household size and farming experience were the socio-economic factors that influenced the use of rural innovation practices in the state. The findings also revealed that; triple bagging, early harvesting and mulching were the innovations that had positive effect on household food security in the area. Major constraints militating against the use of rural innovation in the area include; poverty, shortages of land and other resources among others. Therefore, this study recommended that, farmers should make good use of post- harvest innovation practices such as triple bagging and early harvesting for effective household food security.

Key words: farmers, food, innovations, rural, security.

INTRODUCTION

Rural communities in Nigerian had been greatly endowed with rural innovations with which activities were carried out that led to significant progress especially in realization of food security.

Notwithstanding, people fail to realize the effectiveness of the rural innovations that were indigenous in the enhancement of sustainable development resulting in household food security. These traditional practices have not been properly mainstreamed into development projects in Nigeria (Nnadi, Chikaire, and Ezudike, 2013). Efforts from researches have been made by different scholars to highlight this problem in order to give a meaningful development. Yet, Nigeria suffers unsteady development from generation to generation and Kano is not exempted.

An innovation refers to any idea which solves the specific challenge(s) to achieve the goals and objectives it is designed for, Organisation for Economic Cooperation and Development (OECD, 2005). The view that innovation is critical to the growth and sustainability of agriculture (and other businesses), government, education and industry is present everywhere and this cut across discipline areas as diverse as Management, Education, Design and Economics OECD, (2005). Innovation is perceived to be necessary tool for survival, and hence the means by which organizations are renewed, achieve growth, and remain competitive. Rural innovations (RIs) constitute an area with vast potentialities needed for agricultural sustainability and development goals to be realized. Rural innovations which form the identities and practices of indigenous and local communities are recognized under the United Nation Convention (UNC). The convention was based on biological diversity that contains ways of life relevant for conservation and sustainable use of ecosystems; and by others as generated by the purposeful interaction of physical and intellectual materials embedded in place based on cultures and identities (Odoemelam and Ajuka (2015).

Tella, (2007), define rural innovations as a systematic body of knowledge acquired by local people through accumulation of experience, informal experiment action and final understanding of their environment, while Horsthemken, (2008) summed up rural innovations as a total knowledge and skills that are acquired by people in a given area which enable them to get the best of their environment. It refers to the unique, traditional local knowledge existing within and developed around the specific conditions of a particular area. It includes a system of self-management that governs resource use (Appiah-Opoku, 1999).

Although research is gradually recognizing the importance of rural innovation system in development studies, the value of rural innovations in realization of food security has not been receiving the desired attention in terms of consideration of existing condition, use of locally available resources, culture, norms and ethics are all not fully recognized. So also, the use of an appropriate technology that will go in line with the ethics of technical feasibility; economic viability; environmental adaptability; social acceptability and cultural compatibility in relation to the culture of the end users or beneficiaries. The ruralites are the ones mostly engaged in using rural innovations, whose main occupation is agriculture, serve as the main agricultural producers and labour source to agricultural sector (Ekwe, *et al.,* 2011). Therefore, RIs need to be considered as an entry point to attune the new technologies in order to make them culturally acceptable, environmentally friendly and economically viable for easier diffusion and adoption.

Objectives of the Study

i. describe the selected rural innovation practices and their sources,
ii. determine the effect of the use of rural innovations on household food security and
iii. describe major constraints that limits the use of rural innovations in promoting food security in the study area.

METHODOLOGY

Description of the Study Area

The study was conducted in Kano State. The State was created in July, 1967 and has a total of 44 Local Government Areas, divided into three Kano Agricultural Development Project (ADP) zones known as Kano Agricultural and Rural Development Authority (KNARDA). According to 2006 population census Kano State had population of 9,383,683 people (NPC., 2006). There are two distinct seasons; wet season (May-

September) with average rainfall of 600mm- 1000mm annually and dry season (October - April). The maximum temperature ranges between 21°C - 39°C (KNSG, 2006). It is partly situated in guinea and Sudan savanna within latitudes 13.53°N and 10.25°N and longitudes 7.40°E and 10.53°E equivalent to a landmass of 20,131km² area (KNARDA, 2001). Farming is the main occupation of its people, who are predominantly Hausa/Fulani. They engage in the production of cereal crops like millet, sorghum, maize, rice; legumes such as cowpea, groundnut, Soybeans, and vegetables including, pepper, onion and rearing of animals like cattle, sheep, goat, and poultry.

Sampling Procedure and Sample Size

Multistage random sampling was employed in this work. First stage involved random selection of one Local Government Area (LGA) from each of the three agricultural zones in Kano State. Rural communities from each LGAs per zone were segregated from the Local Government headquarters based on the following parameters: Land size, population density, major occupations/ businesses and availability of modern infrastructures (Table 1). Land size is seen as a determinant of farmland availability; population is considered to serve as the determinant of human labour availability; population density as a determinant towards which infra-structural facilities are geared to (dividends of democracy); major occupation(s) as determinant of labour force required in the area under consideration. All these parameters were considered as the determinants of rurality or otherwise. The followings LGAs were randomly selected for this research purpose,

- Kibiya (out of 8 rural LGAs in zone I),
- Makoda (out of 9 LGAs in zone II) and
- Ajingi (out of 8 LGAs in zone III).

The second stage considered random selection of two rural communities from each of the LGAs chosen. Third stage, quota sampling was employed where: 10% of farmers were randomly selected from each of the two communities for each LGA to give a sample size of 111 rural farmers in Kano state (Table 1).

Table 1: Sampling Technique Employed Showing Sample Size

Zone	LGA	Village	No. of Farmers	Respondents (10%)
1	Kibiya	Tarai	350	35
		Sayasaya	150	15
2	Makoda	Galoru	100	10
		Koren Tabo	75	8
3	Ajingi	Gulya	225	23
		Ung/Bai	200	20
Total	**3**	**6**	**1100**	**111**

Source: Field survey, 2018

Data Collection

Primary data was collected using Structured- questionnaire to elicit information from the farmers on their socio-economic characteristics, identifying rural innovations, socio- economic factors influencing the use of rural innovations, effect of the use of RIs on household food security in the area as well as the major constraints militating the use of rural innovations in the area.

Tools of Analysis

Analytical tools such as simple descriptive statistics was used to analyze the socio- economic data generated from the study to achieve objectives i, and iii, while Logit regression was used to achieve objective ii. For objective ii, some socio- economic variables (age, education, household size, farm size (ha) and farming experience (yrs) were used in determining the influence that socio- economic variables have on the use of rural innovation practices. While rural innovations (independent variables) were used to determine their effect on household food security in the area.

Logit Model for Effect of Use of Rural Innovations on Household Food Security;

$Y = X_n \beta_n + u$ (i)

Y = 1 or 0

1 = Food secured, 0 = Food insecure.

Where,
Y= Food security status (1= food secured, 0= otherwise)
β = Intercept.
X= Vector of Independent Variables.
u = Error term.
n = Number of observations.

Explicit model:

$$Y= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + u \quad (2)$$

Where,
X_1 = Land Preparation (1= use the variable otherwise 0)
X_2 = Seed Dressing (1= use the variable otherwise 0)
X_3 = Seed planting (1= use the variable otherwise 0).
X_4 = Weed control (1= use the variable otherwise 0).
X_5 = Triple Bagging (1= use the variable otherwise 0).
X_6 = Minimum Tillage (1= use the variable otherwise 0).
X_7= Organic Manuring (1= use the variable otherwise 0).
X_8= Early Harvesting (1= use the variable otherwise 0).
X_9= Sun Drying (1= use the variable otherwise 0).
X_{10}= Mulching (1= use the variable otherwise 0).
X_{11}= Tie Ridging (1= use the variable otherwise 0).
X_{12}= Use Jerry can (1= use the variable otherwise 0).
β_0 = Constant
β_1------ β_7 = Regression coefficients of X variables from X_1 - X_{12}.
u= Stochastic error term

Determination of Food Security Status

This started with the construction of food security index in which food expenditure was used as proxy for income to establish food security lines of farming households. In the first place, according to Omonoma *et al.* (2014), monthly food expenditures would be expressed in per capita terms i.e. monthly per capita household food expenditure (MPCHHFE) by dividing each household's MPCHHFE by the total number of members of each household. Then, mean of MPCHHFE (MMPCHHFE) would be calculated by summation of all MPCHHFE of the households and divided by the total number of the households (Food Security Line). Two thirds (2/3) of the MMPCHHFE of the sampled households would be used as food security line below which a household could is categorized as being food insecure and above which could deemed food secure.
In determination of food security status of the rural households, the households were categorized into food secure and food insecure using an index called food security index viz:

$$Fi = \frac{\text{Per capita food expenditure of ith household}}{\text{2/3 mean per capita food expenditure of all households}} \quad (3)$$

Where: Fi= Food security index
When Fi >1= Food secure ith household
Fi< 1= Food insecure ith household.

According to Omonona, *et al,* (2014), food secure household would therefore be considered as those whose MPCFE is more than or equals to 2/3 of the mean per capita food expenditure. On the other

hand, food insecure household were considered as those with MPCFE less than two third (2/3) of the mean per capita food expenditure. In addition to that, number of food secure or insecure households in the study area was determined by taking the frequency of food secure or insecure households and converted into percentages. Also type and frequency of food taken daily was sought and identified as part of identifying food security status of the respondents as a follow up to the type and frequency of time the food was consumed.

RESULTS AND DISCUSSION

The results revealed that age of the farmers range from 25- 74 years with mean age of 45 years, this implied that the farmers in the study area were relatively within the active and productive years for effective use of rural innovations. Farmers in the study area were all male (100%). This showed that males were mostly involved in farming in the study area. Thus most males who by virtue of being head of the family have access to land resources engage most in rural innovation initiation, transformation, adoption and use. Farm household sizes ranged from 1- 25 person(s). It also revealed that 49.5% had the highest household size with 6- 10 members, with a mean household size of 9 persons. This is in line with Debora, (2011) who reported that majority of farmers in Kano State (52.5%) had 1- 9 household size. In another development, the mean farm size of the farming household was 5 ha. Thus, majority of the farmers were small scale farmers. This is in line with the work of Ubale, (2014), who reported that Nigerian farms were classified into small scale; medium scale and large scale as judged by international standards whereby farms with less than 10 hectares are classified as small-scale farms. Farming experience in the study area ranged from 5- 43 years; a greater proportion (29.7%) of the farmers had 22-29 years of farming experience. Their mean farming experience was 22 years.

Rural Innovation Practices Used and their Sources in Kano State

Table 2 presents the result obtained from rural innovation practices in use in Kano State. They form part of the rural production practices attached to agricultural production in the area. Sources of Rural Innovation Practices in the area form the innovation base and serve as diffusion agents as per as innovation transfer in concerned.

Table 2 revealed the selected rural innovation practices used by the respondents in Kano State. From the result, It showed that 46% - 66% make good use of rural innovation practices and the innovation practices used include; seed dressing, tie- ridging, chemical weeding, sun drying, planting of hedges, chemical pests/ diseases control, weed control, organic manuring, fertilizer application and seed planting which were higher practices used. Thus, these innovation practices need not be promoted any further but should rather be allowed for further adoption and diffusion into larger rural populace and hence would lead to avoidance of resource wastage in the cause of their promotion.

Also, the result shows that about more than a quarter (38- 45%) of the farmers used rural innovation practices such as; wider space planting, farm boundary mounding, early harvesting, triple bagging, mulching and local seed preparation/ selection and lesser portion (1- 37%) from the sampled population practice rural innovations such as; shifting cultivation, bush fallow, mono cropping, local pest/ diseases control, use local storage structures, use insect repellant plants and minimum tillage. Thus, the effective innovation practices from these array need to be promoted in order to boost household food security in the area due to its minimal patronage. Therefore, promoting the least and yet useful innovation practices would seem to be a worthy productive effort in order to boost household food security among the smallholder rural farmers in Kano State.

Table 2: Distribution of Use of Rural Innovation Practices Identified in the Study Area

Rural Innovation Practices	Frequency	%	Cumm. Frequency
Fertilizer application	111	6.64	0.07
Seed planting	111	6.64	0.07
Organic manuring	107	6.40	0.06
Weed control	106	6.34	0.06
Chemical Pest/Diseases Control	98	5.86	0.06
Planting of hedge	85	5.08	0.05
Sun drying	84	5.02	0.05
Chemical weeding	81	4.84	0.05
Tie ridging	79	4.72	0.05
Seed Dressing	77	4.61	0.05
local seed preparation/selection	75	4.49	0.04
Triple Bagging	73	4.37	0.04
Mulching	73	4.37	0.04
Early harvesting	71	4.25	0.04
Furrow/ furrow planting	70	4.19	0.04
Farm boundary mounding	70	4.19	0.04
Wider space planting	63	3.77	0.04
Use of insect repellent plants	55	3.29	0.03
Minimum tillage	55	3.29	0.03
Use of local storage structure	52	3.11	0.03
Local pest/disease control	47	2.81	0.03
Mono cropping	11	0.66	0.01
Bush fallow	10	0.60	0.01
Shifting cultivation	8	0.48	0.00

Source: Field survey, 2018

According to Emery (1996), scientists now recognize that indigenous people have managed the environment in which they have lived for generations, often without significantly damaging local ecologies. Many feel that indigenous knowledge fondly called rural innovations can thus provide a powerful basis from which alternatives ways of managing resources can be developed. According to Chikaire and Nnadi, (2011), rural innovations are dynamic, changing through indigenous mechanisms of creativity and innovativeness as well as through contact with other local and international knowledge systems.

Table 3: Sources of Rural Innovation Practices

Sources of Rural innovation	Frequency	Percentage
KNARDA	33	29.7
Family & neighbor	27	24.3
Farmer groups	25	22.5
Opinion leaders	21	18.9
Sasakawa	4	3.6
IITA	1	0.9
Total	**111**	**100**

Source: Field survey, 2018

Results from table 3 showed majority of the rural of innovations used by the farmers (70.1%) were sourced locally (from family and neighbours, farmer groups and opinion leaders) while about 29.1% were sourced from non- local sources (KNARDA, SASAKAWA and IITA). It is opined that the more the local people experiment with non- local technologies, the more they strengthen their rural knowledge and practices (Lemma and Hoffman, 2005). Therefore, external knowledge is a key component in improving small-scale agricultural production and linking increased production to

remunerative markets, thus leading to food security and national economics (Asaba *et al*, 2006) and this result in developing more rural based innovative ways of earning livelihood. The above findings are also in line with Chikaire and Nnadi, (2011) who posited that rural innovations provide the basis for problem solving strategies for local communities especially the poor.

Food Security Status in the Study Area

The food security status determines whether the rural household is food secured or otherwise in the study area. It is hereby presented in Table 4 and discussed below:

Table 4: Food Security Status in the study area

Variables	Food secured	Food in-secured	Total
No. of household	69	42	111
% household	62.1	37.8	100
Average food expenditure (AFE) ₦/day	1250.53	208.37	
Food security line (FSL)	**1548.62**		
2/3 MPCHHE	**1032.41**		

Source: Field survey, 2018

Table 4 showed that majority (62.1%) of the respondent's households were food secured with high Average Food Expenditure (AFE) of ₦1250.53, while only 37.2% were food insecure with an average of ₦208.37. The average food expenditure for food secured household was ₦1250.53 while that of food insecure was ₦208.37. This showed that food secured household had higher mean per capita household expenditure (MPCHHE) while food insecure households had a lower MPCHHE. The result revealed 2/3 MPCHHE of ₦1032.41. This disagreed with the MPCHHE from findings of Ifeoma, Irohibe and Agwu, (2014) in their work 'Assessment of Food Security Situation among Farming Households in Rural Areas of Kano State, Nigeria'. The contradiction could be as a result of variation in location, time when the research was conducted and culture.

Effect of Use of Rural Innovations on Household Food Security in Kano State

This component revealed the effect of use of rural innovations on household food security of the farming households in Kano State. Various rural innovation practices were considered to test their effect on the household food security in the area and is contained in Table 5.

Table 5: Effect of the Use of Rural Innovations on Household Food Security in the Area.

Variables	Coefficient	S.E.	Wald	Df	Sign	Exp(B)
Constant	-.531	2.045	2.983	1	.318	.588
Land Preparation	-.531	.532	.998	1	.318	.588
Seed Dressing	-1.816	.942	3.721	1	.054***	.163
Seed planting	-1.053	1.319	.638	1	.424	.349
Weed control	.399	1.037	.148	1	.700	1.491
Triple Bagging	1.428	.635	5.054	1	.025**	4.168
Minimum Tillage	-1.652	.646	6.532	1	.011**	.192
Organic Manuring	-2.306	1.494	2.384	1	.123	.100
Early Harvesting	1.407	.749	3.533	1	.060***	4.084
Sun Drying	-1.464	.688	4.528	1	.033***	.231
Mulching	2.555	.981	6.789	1	.009**	12.877
Tie Ridging	-1.606	.827	3.771	1	.052***	.201
Use Jerry can	.902	.556	2.636	1	.104	2.466

Source: Field survey, 2018. Level of Significance at **= P<0.05 ***P<0.1

Result from Table 5 showed that, triple bagging, early harvesting and mulching have positive coefficients and significant at various probability levels and hence were found to contribute to

household food security positively and significantly: Triple bagging as means of cowpea storage was significant at P<0.1 which implied that Triple bagging alone can ascertain household food security due to its effort in preventing post- harvest losses such as insect pests from spoiling farm produce that may render households food insecure; early harvesting's significance at P<0.1 showed its propensity to impact on household food security by avoidance of loss due to harvesting, handling and pest attacks which would culminate into household food security and mulching which was significant at P<0.05 showed its propensity in achieving household food security by its ability to avert any form of attack that would destroy the newly germinated seedlings from which all yields would be obtained to make households food secured.

On the other hand, rural innovations such as seed dressing, minimum tillage, sun drying and tie ridging have negative coefficients and significant at P<0.1 probability levels: seed dressing were unable to impact on the household food security positively; minimum tillage also could not be a major contributing agent towards achieving household food security, also sun drying could not show any propensity to ascertain household food security in its avoidance from the total loss of the whole produce to achieve household food security and tie ridging also could not give any contribution towards achieving household food security.

Constraints Limiting the Use of Rural Innovations

These are the major problems that hinder development, experimenting, adoption and continual use of rural innovations.

Table 6: Constraints Militating the Use of Rural Innovations in the Study Area

Constraints	Frequency	Percentage
Poverty	101	91
Inadequate government support	98	88
Inadequate capital	95	86
Inadequate land	74	67
Lack of documentation	56	51
Single initiator ship	52	47
Time demanding	50	45
Soil variability	45	41
Obsoleteness of the innovation	31	28

Source: Field survey, 2018

Virtually all (91%) the farmers claimed that poverty was their major problem. Poverty is a multi-faceted affliction as well as a raging economic and social phenomenon that manifests in the inability of the victims to acquire the basic necessities of life, according to Olaolu, Akinnagbe, and Agber, (2013), poverty goes beyond material deprivation to include insecurity, vulnerability and exposure to risks, shocks and stress; (88%) of the farmers considered inadequate government support as the major constraint, while (86%) of the farmers claimed that inadequate capital was the major constraint. However, only, 28% of the farmers considered obsoleteness as problem militating the use of rural innovation in the study area.

CONCLUSION AND RECOMMENDATIONS

Analysis of rural innovation practices in the study revealed that male farmers, educated in one form or another with mean household size of 9 persons, per household, were mostly the people carrying out farming activities using rural innovation practices as influenced by age, household size and farming experience in Kano State. Rural innovations like planting, fertilizing, organic manuring, weeding and chemical pest/ diseases control were the most practices of rural innovations in the area. Triple bagging, early harvesting, and mulching were the rural innovations that had positive effect on rural household food security and need to be promoted in the area. Poverty, inadequacies in government support, capital and land size were the most pressing problems militating the use of rural innovation practices in Kano State.

In the light of the findings from the study, it is recommended that:

- Rural innovation practices with lower probability values (least used) yet effective and useful such as; triple bagging, mulching, minimum tillage, early harvesting, furrow/ furrow planting among others need to be promoted to boost household food security among smallholder farmers in the State.
- Rural farmers in the state are encouraged to make good use of post- harvest innovation practices such as triple bagging and early harvesting for effective household food security in the area.
- Rural farmers are encouraged to make better use of the efficient rural innovation practices like effective planting methods, mulching, and use of organic and inorganic manures to boost their yield for household food security.
- Rural farmers are encouraged use the innovation of early harvesting to minimize loss due to shattering, birds and conflict among others.

REFERENCES

Appiah-Opuku S., (1999). Indigenous economic institutions and ecological knowledge. A Ghanaian case study. *The environmentalist. 19:217.*

Asaba, E.B. (2006). Bridging the information and knowledge gap between urban and rural communities through rural knowledge centre: Cases studies from Kenga and Uganda. International Association of Agricultural Information Specialists (IAALD) *Quarterly Bulletin, 51:3-4.*

Debora, S.S. (2011). Commodity chain analysis of Benni seed along Kano and Jigawa State axis. M.Sc. Thesis submitted to the Department of Agric. Economics and Extension, BUK (Unpublished).

Ekwe *et al* (2011). Agricultural Innovations for Climate Change Adaptation and Food Security in Nigeria, Sierra Leone and Liberia: Empirical Evidence. African Technology Policy Studies Network. Research paper no. 12.

Emodi, A.I. (2009). Analysis of rice innovation system in southeast Nigeria, a PhD. Research findings seminar presented at the Department of Agricultural Extension, University of Nigeria Nsukka.

Horsthemken, K. (2008). The Idea of Indigenous Knowledge. *Archaeologies 4 (1).*

Ifeoma, J. Irohibe and Agwu, E.A. (2014). Assessment of food security situation among farming households in rural areas of Kano state, Nigeria. Journal of Central European Agriculture 2014, 15(1) p.94-157

Nnadi, F.N., Chikaire, J. and Ezudike, K.E. (2013) Assessment of Indigenous Knowledge Practices for Sustainable Agriculture and Food Security in Idemili South Local Government Area of Anambra State, Nigeria. *Journal of Resources Development and Management - An Open Access International Journal 1:14, 2013*

NPC (2006). Nigeria Census Figure. National population commission, Abuja.

Nwalieji, A.H. (2005). Evaluation of Fadama phase- I vegetable production project of the Anambra state agricultural development programme an M.Sc. research findings seminar presented to the Department of Agricultural Extension, University of Nigeria Nsukka.

Obinne, C.P. (1991). Adoption of improved cassava production technologies by small-scale farmers in Bendel state. *Journal of Agriculture, Science and Technology, 1(1):12-15.*

Odoemelam, L. E. and Ajuka, P. N., (2015). Indigenous Farm Management Practices among Rural Farmers: Implications for Sustainable Environment in South-East Agro-Ecological Zone, Nigeria. Discourse *Journal of Agriculture and Food Sciences 3(1): 7- 14.*

Olaolu M.O., Akinnagbe O. M. and Agber, T. (2013) Impact of National Fadama Development Project Phase (II) On Poverty and Food Security among Rice Farming Beneficiaries in Kogi State, Nigeria. *American Journal of Research Communication. 1 (10)* www.usa-journals.com

Omonona,O., Bolarin, O. Agoi, A. and Adetokunbo, G. (2007) An Analysis of food security situation among Nigerian urban Households: evidence from Lagos state, Nigeria. *Journal of Central European Agriculture 8(3):*398-400

Organisation for Economic Cooperation and Development (OECD) (2005). Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data, 3rd Edition, Measurement of

Scientific and Technological Activities, OECD Publishing. Statistical Office of the European Communities, Luxembourg.
Sani, U. (2014). Evaluation of Sasakawa Global (SG) 2000 stakeholder Needs Assessment for Enhanced Crop Productivity in Gombe and Jigawa States, Nigeria. An M.Sc. Thesis submitted to the Department of Agric. Economics and Extension, BUK (Unpublished).
Tella, R. D. (2007). Towards Promotion and Dissemination of Indigenous Knowledge. A Case of NIRD. The International Information and Library. Review 39:185.