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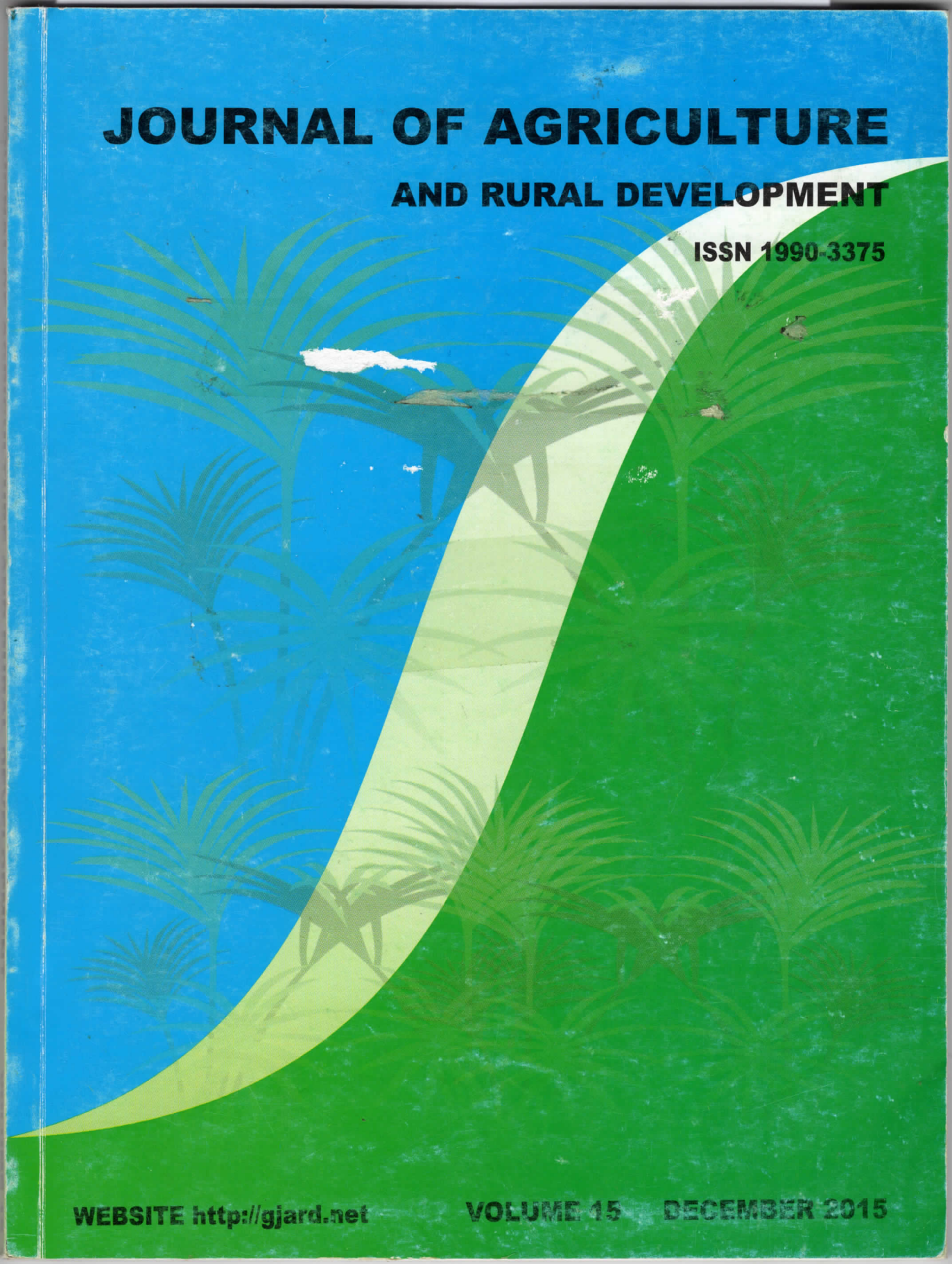

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ABOUT THE JOURNAL

The *Journal of Agriculture and Rural Development* focuses on advancing knowledge in the various areas of agriculture and rural development including crops, livestock, soils and water, agricultural extension, education, economics, home economics and other disciplines interested in sharing knowledge for the development of agriculture and the rural sector. The Journal therefore publishes peer reviewed research based articles, reviews, theory construction, new experimental and methodological techniques, and significant field experiences.

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EFFECTS AND CONSTRAINTS ASSOCIATED WITH ICT USE BY YAM FARMERS IN BENUE STATE, NIGERIA

Tsado, J. H., M. Ibrahim, O. J. Ajayi, P. Fatoki, P. and J. Momo
Federal University of Technology Minna, Niger State, Nigeria.
Corresponsing author's cell phoe number: +2348065268096
Corresponsing authoe's e mail addres: jacobtsado2007@yahoo.com

ABSTRACT

The study examined the effects and constraints associated with the use of ICT facilities by yam farmers in Benue State, Nigeria. The objectives of the study were to describe the demographic characteristics of the farmers, identify the determinants of ICT use and analyze the effects of ICT on the output of yam farmers. Data were analysed using descriptive and inferential statistics. The results showed that majority (68.3%) of the farmers were within the active and innovative age. Majority (71.25%) were married and have one form of education or the other. Most of the farmers (67.5%) used mobile phones for communication. The respondents perceived all the constraints identified as severe with the exceptions of lack of confidence and lack of interest. Quantity of yam sett, labour and access to ICT facilities were significant determinants of yam output (there is no where in the body of the the work where "Decision to use ICT" stand as the dependent variable. Rather, it is "Yam Output"). Yam farmers however, have room to increase their output by increasing their fertilizer and quantity of staking materials (these recommendations are not from your findings. Include recommendations from the findings). Yam yield after the use of ICT was significantly higher than before ICT use with z-value of 3.33, as such it can be concluded that there is a significant relationship between ICT use and yam farmers productivity. Include some z scores, r squared. End with a major recommendation.

Key words Capital letters: Effects, constraints, ICT use, yam farmers

INTRODUCTION

Yam is a fundamental cash and food crop grown in many parts of the country and around the world. Nigeria accounted for about 70% of the total production of yam, while West Africa accounts for about 95% of yam production globally. It is in the class of roots and tubers, a staple of the West African diet, which provides some 200 calories of energy per capital daily. Ayanwuyi *et al.* (2011) stated that yam (*Dioscorea spp.*) is among the oldest recorded food crops, and ranks second to cassava in the study of carbohydrate in West Africa. It is a principal source of food in other tropical regions including East Asia, Africa, South America, South East Asia (including China). Six species are considered the chief edible yams of the tropics, namely white yam, watey yam, yellow yam, (name the six and possibly put their botanical names) Yam tubers are edible in boiled, fried, roasted or pounded forms

and could be chipped, dried and mashed into yam flour. It also has potential for livestock feed and industrial starch manufacture (Ref).

Information and communication technology is now been used (in all matters involving information dissemination, processing, storage, and retrieval) by virtually every sector (Meera *et al.,* 2004; Okwu and Iorkae, 2011). Processing, storage, transfer, and retrieval of information has now been made easy with the use of ICT facilities which access information at a relatively high speed and more accurately. ICT has high capacity for use in agricultural extension and are increasingly being used in many ways and in the various sectors of agriculture for purposes like sourcing for inputs, record keeping (i.e. using computers as database for day to day happenings on the farm), sourcing for viable market, and linking farmers with useful information. ICT can also be used during workshops as well to aid farmers' assimilation of the improved techniques being taught (Onumadu, 2011).

Nowadays, information dissemination depends on computers and internet network to reach a wider but targeted audience, and thereby create awareness of production information among farmers and enhance widespread dissemination of improved techniques and practises in farming. ICT facilities also make it easy to help farmers create a network among themselves, as they share both ideas and challenges to improve their farming efficiency. In Nigeria, the information technology approach is gradually spreading and obviously will take time to be fully integrated into the agricultural system (Adesope *et al.,* 2007).

Information and technology is fast becoming an increasingly powerful tool for improving the delivery of basic services and enhance local development opportunities (Gurstein, 2003). Recently almost all aspects of rural life have increased in their use of ICT. Ozor (2005) pointed out that rural communities require information, among others, on the supply of agricultural inputs, improved technology, and agricultural credit, market price and competitors. Ani (2007) summarized the role of ICT in extension as follows: faster access to expert knowledge and information, faster and more efficient delivery of information, more relevant and adopted content and dissemination of information to people hitherto unreached and a deeper geographic penetration, especially to rural areas. ICT use in agriculture plays a vital role in agricultural extension (Adedoyin, 2005), therefore, constraints associated with its use will greatly affect the information flow in the agricultural hierarchy and prevent the economic potentials in the various agricultural information sources from being fully harnessed (Ozor, 2005; Agwu and Alu, 2005)

Several constraints affect the use of ICT more specifically as most of the current ICT facilities are sophisticated, highly computerised and difficult to operate. Studies have however, shown that farmers have a rather passive attitude toward the use of ICT facilities because of these constraints (Adegbidi, 2012).

Furthermore, recent research work like that of Iorkae (2011) have shown the role of ICT in the adoption of new technologies and the slow implementation of ICT in agriculture as a result of some constraints faced by the farmers. The problems of adoption of research findings will be adequately addressed if farmers can, at least, first have access to this knowledge. ICT use in agriculture will help to minimise the constraints associated with adoption, because it will serve as a bridge between the knowledge bases and the beneficiaries (Adesope *et al.*, 2007 and Adedoyin, 2005).

Objectives of the study The objectives of this study were, to: :

1. describe the socio-economic characteristics of the yam farmers,;
2. identify the ICT facilities yam farmers mostly relied on in the study area,;
3. determine the effects of ICT use on yam farmers in terms of their output;
4. t determine the factors affecting yam farmers yield; and
5. examine the constraints affecting ICT use by yam farmers.

METHODOLOGY

Benue State is one of the States in North Central Nigeria. It is located approximately between latitude 61′ 2°N to 81′ 2°N and longitude 71′ 2°E. Agriculture accounts for over 75% of the State's economic activities. It has a tropical climate with distinct seasons: the rainy season and dry season (Agwu and Alu 2005). The major occupation of the people is agriculture. The major agricultural produce includes: cassava, yam, fruits.. Major animals reared include cattle goat, sheep.

Multi-stage sampling technique was adopted for this study; two Local Government Areas (Oturpko and Gboko) were purposively selected, because the people are predominantly yam farmers. Four communities were also purposively selected from the two Local Governments Areas owing to their large scale production of yam. Twenty yam farmers were randomly selected from each of the four communities, to give a total of 80 sampled yam farmers.

Data collection and analysis

A well-structured questionnaire/interview schedule was administered through trained enumerators, for eliciting relevant information from the respondents. The analytical tools used include descriptive statistics (such as mean, frequency count and percentages) Likert-type scale was used to ascertain the major constraints to ICT use as perceived by yam farmers, a list of possible constraints to ICT use was compiled and respondents were asked to indicate the perceived constraints on a four point Likert-type scale of very severe, severe, undecided and not severe, scaled 4 to 1. Ordinary least square (OLS) regression and Z-test were also used as inferential statistics.

The implicit form of the linear function used is expressed as
$Y = (X_1, X_2, X_3, X_4, X_5)$. The error term should not be part of the implicit function.
Where Y = Output (kg)
X_1 = yam sett (N)
X_2 = labour (N)
X_3 = fertilizer (N)
X_4 = staking materials (N)
X_5 = ICT use (N)
ei = Random Error Terms
Where y, $x_1 \ldots x_5$ is as defined above
b_0 = constant term
$b_1 \ldots b_5$ = coefficients
ei = Random error term
The linear function was the lead equation for this study and its explicit form is given by:
$y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_{4+} b_5x5 + e_i$
Where y, $x_1 \ldots x_5$ is as defined above
b_0 = constant term
$b_1 \ldots b_5$ = coefficients
ei = Random error term
Also, t-test:

$$T = \frac{X_1 - X_2}{SEX}$$

Where, SEX = Standard error
X_1 =mean of first sample
X_2 =mean of second sample

RESULTS AND DISCUSSION

Describe each Table first before inserting the Table

Table 1: Socio-economic and personal characteristics of respondents

Variables	Frequency	Percentages
Age		
30 years and less	17	21.25
31-40 years	20	25
41-50 years	18	22.5
51 and above	25	31.25
Access to ICT		
Had Access	79	98.75
No access	1	1.25
Access to extension service		
Had Access	21	26.25
No access	59	73.75
Farming experience		
1-10	8	10
11-20	11	13.75
31-40	56	70
Above 41 years	5	6.25
Length of exposure to ICT		
2-4 years	62	77.5
5-6 years	5	6.25
7-8 years	7	8.75
10 years & above	6	7.5

Source: Field survey, 2015

The findings in Table 1 show that majority (68.5%) of the respondents were less than 51years, it is obvious that the yam farmers were still in their active age and consequently can positively affect their extent of ICT usage. Table 1 also reveal that majority (98.75%) of the respondents had access to ICT tools, while (1.75%) did not have access to ICT facilities. This implies that information and communication facilities were available in the study area, since majority claimed they had access to them. This will directly or indirectly affect their use as accessibility is directly associated with utilization. This finding is in agreement with that of Onumadu, (2011) who pointed out that accessibility of ICT facilities to a large extent affects their utilization. Majority (73.75%) of the respondents claimed that they did not have access to extension services while (21.25%) claimed that they had contact with extension agents. This will negatively affect the ability of the respondents in using ICT facilities, since extension is the major means through which the farmers learn new technologies, because extension agents can teach farmers the use of some categories of ICTs such as e mails, record keeping through the use of computers. This result is in line with the findings of Okwu and Iorkaa (2011) who affirmed that farmers use of new information was directly linked to their access to extension education. The entries in Table 1 also revealed that 70% of the yam farmers had work experience of between 31- 40 years, implying that majority of the yam farmers had relatively high working experience; this could directly or indirectly affect their extent of ITC usage.

Table 1 also shows that a majority (77.5%) have being exposed to ICT for between 2-4 years, indicating low exposure of Yam farmers to ICT. According Adebayo and Adesope (2007), ICT made a significant entry into Nigeria around year 2000, which probably accounted for their finding of low exposure to ICT. The same reason cannot however, be responsible for the present findings, the present situation could be as a result of the numerous constraints faced by yam farmers today.

Table 2: Distribution of the respondents by ICT facility mostly relied upon

ICT Tools	Frequency	Percentages	Rank
Computer	1	1.25	3rd
Radio	24	30	2nd
Television	1	1.25	3rd
Video Player	-	-	5ft
Mobile phone	54	67.5	1st
Internet	-	–	5ft

Source: Field survey, 2015

The entries in Table 2 indicate that the yam farmers relied mainly on mobile phones and radio which ranked 1st and 2nd respectively; this result reflects the low level of computer knowledge of the yam farmers as majority only relied on the common ICT facilities. This implies that a lot still needed to be done for farmers to have more access to other ICT facilities. This finding is in line with that of Adebayo and Adesope (2007) who pointed out that there was grossly under-utilization of ICT facilities by farmers, and that there is still a lot to be done if the Nigerian agricultural sector must meet up with the global challenges of ICT.

Table 3: Perception of the constraints faced by yam farmers in utilizing ICT

Perception of constraints		
Constraints	**Mean**	**Remark**
Financial constraint	3.81	SC
Lack of awareness	3.16	SC
Lack of confidence	2.1	NSC
Dynamic nature of ICT	3.43	SC
Inadequate power supply	3.56	SC
Complexity of ICT facilities	3.45	SC
Language barrier	3.16	SC
Skill on how to apply ICT in yam farming	3.66	SC
How to retrieve information	3.61	SC
Lack of interest	2.4	NSC

SC – Severe Constrain; NSC – Not a Severe Constrain ;
Source: Field surveys, 2014

Entries in Table 3 reveal that the respondents were faced with several severe constrains like: financial constraint, lack of awareness, dynamic nature of ICT facilities, inadequate power supply, complexity of ICT facilities, language barrier, lack of skill on the application of ICT to agriculture, and lack of skill on how to retrieve information via ICT facilities. On the other hand, lack of confidence and lack of interest were not perceived as severe limitations to the use of ICT by yam farmers. This shows that majority of the constraints under consideration were major limitations to use of ICT.

The result in Table 4 indicates that the linear functional form which is the lead equation has R^2 value of 0.850 which implies that about 85.0% of the variable in yield of yam production is explained by variable X_1-X_5(yam sett, labour, fertilizer, staking materials and rate of ICT use included in the model therefore, the remaining 15.0% is as a result of non-inclusion of some very important explanatory variables as well as errors in estimation. The result reveals that there is a positive and significant relationship between the variables (yam sett, labour, fertilizers, staking materials and ICT use) and the output of yam farmers. Also it implied that if these sets of inputs increase the output will increase correspondingly, other conditions being equal.

Table 4: Regression estimates of factors affecting yield of yam

Variables	Coefficient	T-value
Constant	-9735.579	-1.523^{Ns}
Yam sett	2.964	5.496***
Labour	2.118	2.736***
Fertilizer	0.773	0.920^{Ns}
Staking materials	-1.329	-0.605^{Ns}
Rate of ICT use	10756.840	1.995*
$R^2 = 0.850$		

*** = significant at 1% level of probability
* = significant at 10% level of probability
Ns= Not significant
Source: Field survey, 2015

Table 5: Z-test of the Yam farmers' output before and after ICT use

N=80	Mean	Z- value	Sig. level
Before Adoption	64202.5	3.33	000***
After Adoption	83718.75		

Source: Field survey, 2015

Data in Table 5 show the result of Z-test that there was a significant mean difference in yield before and after the use of ICT, which implied a positive and significant difference in the respondents' output at 1% level of significance. This meant that the respondents realized a higher output when they utilized ICT compared with when they did not use ICT.

CONCLUSION

The study has showed that ICT use by yam farmers was profitable in terms of the yam output of farmers. output. The Z-test result revealed that there was a significant difference in the output of the respondents before and after the used ICT at 1% level of probability. The study revealed that the respondents were computer non-literates as only (1.25%) relied on computers. From the result it can be concluded that the use of ICT had a significant effect on yam farmer's output and the constraints under consideration were major limiting factors to the respondents' use of ICT at different level except lack of confidence on the use of ICT facilities and lack of interest which the respondents claim were not severe constraints.

RECOMMENDATIONS

Based on the findings of this study the following recommendations were made:

1. Provision of infrastructural facilities for example, stable electricity is immensely needed to motivate farmers to use ICT tools.
2. Rural dwellers should be empowered finically to be able to use and have access to ICT facilities
3. Opportunity should be given to interested private persons and non-governmental organisations to invest in the area of communication in the study area to enhance economic viability of the area and advance the use of ICT by the rural dwellers, especially teyam farmers.

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ASSESSMENT OF SMALL-SCALE FARMERS WILLINGNESS TO PARTICIPATE IN RECEIVING NEW AGRICULTURAL INFORMATION IN PAIKORO LOCAL GOVERNMENT AREA OF NIGER STATE, NIGERIA

***Ajayi, O. J., Muhammed, Y., Tsado, J. H., Muhammad, H. U. and Muhammed, H. A.**
Department of Agricultural Economic and Extension Technology, Federal University of Technology, P. M. B. 65, Minna, Niger State.
Corresponding author's e mail address: mohd.yak@futminna.edu.ng
Corresponding Author Phone number: +2348030754302

ABSTRACT

This study assessed small-scale farmers' willingness to participate in receiving new agricultural information in Niger State, Nigeria. It aims at identifying the level of participation of small-scale farmers and their attitudes towards receiving new agricultural information in the study area. A multi-stage sampling technique was used to select 86 respondents who were interviewed with structured questionnaire to obtained primary data. Both descriptive and inferential statistics were used to analyze the data. Findings of the study revealed that the mean age of the respondents was 36 years, which implied that they were young and agile for agricultural production. Majority (81.4%) of the respondents were married, 70.9% had primary education, and household size was 1 – 5 people. Respondents had high level of willingness to participate in receiving information on eradication of pests and diseases (M = 4.24), vaccination of livestock (M = 3.78) and agro-chemical application (M = 3.70) which ranked 1st, 2nd and 3rd respectively. Some of the constraints encountered by the respondents, and their mean scores were inadequate number of Extension Agents (M = 4.61), poor infrastructural facilities (M = 4.50) and high cost of extension service delivery (M = 3.79). The chi-square result of the hypothesis testing revealed that education and income had significant relationship with respondent's willingness to participate in receiving new agricultural information. It was therefore recommended that more Extension Agents should be posted to the study area in order to have a greater coverage of farmers, especially in the area.

KEYWORDS: Agricultural information, respondents, participation, small-scale farmers.

INTRODUCTION

Small-scale farmers are the major source of agricultural production in developing nations particularly in Africa (Nagayets, 2005). According to Food and Agriculture Organization (2008), estimated 36 million small-scale farmers in Africa had access to two or less hectares of land for agricultural production. Spencer (2004) posited that 90% of all the agricultural production in Africa is derived from the output of small-scale farmers. The roles of agriculture remain significant in Nigerian economy despite the strategic

importance of the oil sector. Nigerian small-scale farmers account for the cultivation of about 90% of the total cultivable land area and producing nearly 90% of the total agricultural output (EEPC, 2003). Crop production by small-scale farmers is characterized by low productivity, typically because of the adoption of low production inputs. Limited accessibility cuts small-scale farmers off from sources of inputs, equipment and new technology that keep their output low (Danilo, 2002). Sustainability and productivity of agricultural sectors world-wide depend on the quality and effectiveness of new agricultural information among other factors. Chukwudi (2008) posited that new agricultural information, wherever it existed, consists of those services which are set up in order to change the knowledge, skills and attitude of rural farmers. For many years, new agricultural information has been made available by the Government to the rural people without due consideration given to whether the clientele really need the information being provided. Therefore, farmers' need for new agricultural information is anticipated by relevant information on technologies that will reach a desired target effectively and efficiently.

Agwu *et al.* (2008) reported that public extension is known as extension activities provided by the Government under the authority of the Agricultural Development Programme (ADP) in all the States, to cater for agricultural needs and development of rural farmers. However, demand for new agricultural information has been known through establishing the willingness to pay for the services among rural farmers. Research had shown that farmers are willing to pay for extension services (Ajayi, 2006). According to Farinde and Atteh (2009) arable farmers in Niger State are willing to pay for new agricultural information through their cooperative societies. Rural farmers' willingness to pay for extension services will enhance their participation in successful and sustainable extension service delivery. It could be a more efficient way to achieve the goals of extension programme, than has hitherto been the situation.

In assessing the willingness of rural farmers to participate in extension activities, it is worthy to note that weaknesses of most new agricultural information in Nigeria are due to lack of Subject Matter Specialist (SMS). As a result of low level of training, most of the Village Extension Agents lack the capacity to actually discharge their responsibilities of disseminating new agricultural information to rural farmers. They are not highly motivated in their work and supervision is weak. The complex line of communication is too long and tends to distort information. This has lead to deterioration in dissemination of new agricultural information and also contributed to a decline in agricultural productivity, hence discourage rural farmers' willingness to participate in paying for new agricultural information. It was against the above background that this study was conceived to assess small-scale farmer's willingness to participate in receiving new agricultural information in Paikoro Local Government Area of Niger State, Nigeria.

Objectives of the study

The objectives were, to:

i. describe the socio-economic characteristics of small-scale farmers in the study area;
ii. assess the level of involvement of respondents in receiving new agricultural information, and
iii. identify constraints hindering respondents' participation in receiving new agricultural information in the study area.

Null hypothesis

The null hypothesis tested in this study was that there was no significant relationship between small-scale farmers' willingness to participate in receiving new agricultural information and their socio-economic characteristics.

Alternative hypothesis

The alternative hypothesis was that there was a significant relationship between small-scale farmers' willingness to participate in receiving new agricultural information and their socio-economic characteristics.

METHODOLOGY

Study area

This study was conducted in Paikoro Local Government Area (LGA) of Niger State, Nigeria, which is one of the 25 LGAs of the State. It is on the latitude $9^0 26^1$ and $9^0 47^1$ North and longitude $6^0 38^1$ and $7^0 02^1$ East of the equator. The land mass area is 2,066 kilometres square with a total population of 158,086 (NPC, 2006). The projected population in 2014, using 3.2% growth rate was 203,391. The study area is characterized by tropical climate marked by dry and wet weather. The predominant population are the Gwaris with small fraction of Koros, Fulanis and Nupes. Agriculture is the primary occupation of the people in the study area with few engaged in civil service and artisan activities such as tailoring, blacksmith, carpentry and others.

Sample selection

A multi-stage sampling technique was used to select respondents for this study. The first stage involved random sampling of six wards out of the eleven wards in Paikoro Local Government Area. Second stage was the stratified sampling of respondents into small-scale farmers who possessed farm size of less than two hectares. Third stage was the proportionate sampling of 40% of the respondents out of the list of 217 active farmers in both crop and livestock production, obtained from Niger State Agricultural Development Project (NSADP), to get 86 respondents for the study.

Data collection and analysis

Primary data was obtained directly from the respondents through interviews with the aid of a structured questionnaire. Data collected was analyzed using descriptive and inferential statistics. A 5-point attitudinal measuring scale of very high (5), high (4), moderate (3), low

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while below 3.0 as low.

Model Specification

Chi-squared was used t
investigation. The model

RESULTS AND DISCUS

Socio-economic character

Socio-economic variables
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(2) and very low (1) was also employed. The mean score for decision was 3.0 (5+4+3+2+1 = 15, 15/5 = 3). Calculated mean scores of 3.0 was considered moderate, above 3.0 as high, while below 3.0 as low.

Model Specification

Chi-squared was used to test the relationship between two or more samples under investigation. The model is mathematically expressed as:

$$\chi^2 = \sum \sqrt{\frac{(O - E)^2}{E}}$$

Where:

χ^2 = Chi Square

$\sum$ = summation sign

O = observed score

E= expected score

$\sqrt{}$ = Square root

RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

Socio-economic variables described were age, gender, marital status, educational level, farm size and others. The result of analysis in Table 1 reveal that majority (79.1%) of the respondents fall within the age range 21 – 40 years with a mean age of 37 years, which implied that they were in their productive age range. In addition, majority (90.7%) of the respondents were male, while 81.4% were married which implied that they should have a high sense of responsibilities to carry out farming activities. Majority (70.9%) had primary school education, and 10.5% had secondary school education, with 6 years the average period spent in schooling. Majority (72.1%) had farming experience ranging from 11 – 15 years with a mean 10.5 years. Oladele (2008) posited that level of education of farmers is positively related to their willingness to participate in extension services that bring about new agricultural information, and that the longer the farming experience the greater the willingness to participate in agricultural services. All the respondents were small scale farmers, with the majority (62.8%) having about one hectare of farm land. Over three-quarters (75.6%) had contact with Extension Agents on the course of seeking new agricultural information, while 77.9% of the respondents were not members of any cooperative society in the study area.

Table 1 Socio-economic characteristics of the respondents

Descriptions	Frequency	Percentages
Age (yrs)		
< 20	5	5.8
21 – 30	35	40.7
31 – 40	33	38.4
> 40	13	15.1
Sex		
Male	78	90.7
Female	8	9.3
Marital status		
Married	70	81.4
Single	9	10.6
Widowed	4	4.7
Divorced	3	3.5
Household size		
1 – 5	61	70.9
6 – 10	9	10.5
11 – 15	12	14.0
> 15	4	4.6
Education		
Non formal	16	18.6
Primary	61	70.9
Secondary	9	10.5
Farming experience		
1 – 5	18	20.9
6 – 10	6	7.0
11 – 15	62	72.1
Farm size		
0.1 – 0.5	27	31.4
0.6 – 1.0	54	62.8
1.1 – 1.5	5	5.8
Extension contact		
Had contact	65	75.6
No contact	21	24.4
Cooperative association		
Member	19	22.1
Not member	67	77.9
TOTAL	**86**	**100**

Source: Field Survey, 2014.

Level of involvement of respondents in receiving new agricultural information

Small-scale farmer's level of involvement in receiving new agricultural information is presented in Table 2. It reveals that eradication of pest and diseases (M = 4.24), vaccination of livestock (M = 3.78) and agro-chemical application (M = 3.70) were found to be high among the various new agricultural information the respondents received in the study area. This implies that the respondents were very much concerned about problem of pest and diseases, vaccination and chemical application in the study area. Hence, respondents had high levels of involvement in receiving new agricultural information that would help tackle the aforementioned problems. Other new agricultural information they were involved in receiving included packaging and storage (M = 3.57), harvesting techniques (M = 3.17), while the least involvement was on new enlightenment programme on marketing (M = 2.29).

Table 2. Distribution of respondents based on their level of involvement in receiving agricultural information

Level of involvement	Sum Weight	Mean Score	Remark
New harvesting techniques	273	3.17	High
Eradication of pest and disease	365	4.24	High
New planting techniques	215	2.50	Low
Skill acquisition on use of farm machine	263	3.06	Moderate
Enlightenment programme on marketing	197	2.29	Low
Fertilizer application	252	2.93	Moderate
Agro-chemical application	318	3.70	High
Vaccination of livestock	325	3.78	High
Packaging and storage	307	3.57	High

Mean scores of 3.0 was considered moderate, above 3.0 as high, while below 3.0 as low
Source: Field Survey, 2014. M = Mean score on a scale of 1 - 5

Constraints hindering respondents' participation in new agricultural information

Constraints raised by the respondents in accessing new agricultural information are presented in Table 3. The constraints were categorized using 5-point Likert scale to make a decision on its levels of being high, moderate or low. The findings revealed that inadequate extension personnel (M = 4.61), poor infrastructural facilities (M = 4.50) and high cost service delivery (M = 3.79) ranked 1st, 2nd and 3rd respectively among the constraints the respondents encountered in accessing new agricultural information in the study area and were high. This implies that Extension Agents' ratio to farmers in the study area was very poor, which could necessitate high cost of services on the part of the small-scale farmers to get the required information that could help them improve their production capacity. The least constraint was low motivation from Extension Agents which could have resulted from poor staffing with the Extension Agents, and inadequate facilities for the Extension Agents to discharge their responsibility effectively.

Table 3. Distribution of respondents based on their constraints

Constraints	Sum Weight	Mean Score	Remark	Ranking
Inadequate extension personnel	396	4.61	High	1st
Poor infrastructural facilities	387	4.50	High	2nd
High cost of service delivery	326	3.79	High	3rd
Infestation of pest and diseases	307	3.57	High	4th
Problem of marketing	302	3.51	High	5th
Inadequate credit facilities	280	3.26	High	6th
Problem of flooding	156	1.81	Low	7th
Low motivation from extension agents	147	1.71	Low	8th

Mean scores of 3.0 was considered moderate, above 3.0 as high, while below 3.0 as low
Source: Field Survey, 2014. M = Mean score on a scale of 1 - 5

Test of hypothesis

The hypothesis tested using chi-squared was that there was no significant relationship between willingness to participate in new agricultural information and the respondents' socio-economic characteristics. The results are presented in Table 4 which reveals that education ($p = 0.009$) and income ($p = 0.016$) of the respondents were significant at probability level of 5% ($p < 0.05$). This implies that the level of education and income of the respondents influence their willingness to participate in new agricultural information.

Table 4. Relationship between respondent's willingness to participate in receiving new agricultural information and their socio-economic characteristics.

Variables	DF	X^2 - value	P - value	Remark
Age	1	0.662	0.416	Not significant
Gender	1	0.060	0.807	Not significant
Education	1	2.565	0.009	Significant
Household	1	1.955	0.162	Not significant
Income	1	2.330	0.016	Significant

CONCLUSIONS

Most of the respondents were male and married. These implied that they had a high sense of responsibility and willingness to participate in receiving new agricultural information that will assist them to improve on their production capacities. Majority of respondents were non-members of cooperative societies. There was a high level of involvement by the respondents in receiving new agricultural information on how to eradicate pests and diseases, and vaccination of livestock. Farmers experienced many constraints in accessing new agricultural information including inadequate number of extension personnel, poor infrastructure and high cost of service delivery. Furthermore, there was significant relationship between some socio-economic variables namely, education and income of the respondents, and willingness to participate in receiving new agricultural information in the study area.

RECOMMENDATIONS

From the findings and conclusions of this study, the following recommendations were made:

1. There is need for the Extension Agents to encourage the respondents to participate in agricultural cooperatives, in order to get access to better extension service delivery with regards to receiving new agricultural information.
2. There is need for government and other extension organizations to appoint more extension personnel to enhance a greater coverage of farmers. It is also necessary to provide the Extension Agents with logistic support to facilitate efficient service delivery and increase their motivation through various incentives and packages.
3. It is also recommended that Government, Non-Governmental Organizations and relevant stakeholders should assist in the provision of basic infrastructures like good road network that will enhance mobility of extension staff and communication network for efficient dissemination of new agricultural information.

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MEASREMENT TEC
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A. A. Jibowo
Department of Agricultu
University of Swaziland
P. O. Luyengo
Swaziland
E mail: aajibowo@yaho
Cell +268 7624 3128

ABSRACT

The purpose of this paper
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Definition and characteris

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