ASSESSMENT OF ADOPTION OF INNOVATIONS BY ARABLE CROP FARMERS IN YEWA NORTH LOCAL GOVERNMENT AREA OF OGUN STATE, NIGERIA

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ABSTRACT

The study assessed adoption of innovations by arable crop farmers in Yewa North Local Government Area of Ogun State, Nigeria. A total of 150 respondents were randomly selected and interviewed through structured interview schedule. Descriptive statistics such as frequency distribution tables, means and percentages were used in analyzing the data while chi-square analysis was used in testing the hypotheses. The results revealed that the average age of respondents was 48 years and 50.0%of the respondents had secondary education. About 84.0% were males, 57.3% were married and 62.0% were Muslims. About 74.4% had household size more than10 members and 59.2% had more than 20 years of farming experience.78.0% had farm size of less than 5 hectares. Findings also showed that 48.0% were full time farmers, 36.7% sourced finance for farming activities through personal savings, 32.0% had access to cooperative loans for agricultural production and 79.7% were aware of extension agents` activities. Results further revealed that respondents had favourable perception towards extension activities and farmers` adoption was high. Chi-square analysis showed that there were positively significant relationships between performance of extension agents`activities and socio-economic characteristics of respondents such as sex (χ^2=15.61); marital status (χ^2=8.08); education (χ^2 =17.74) and farm size (χ^2=3.69)andextent of adoption.(χ^2=77.78).Government assistance to farmers was recommended by way of making improved agricultural inputs available at subsidized cost to farmers.

Keywords: Assessment, adoption of innovation, arable crop farmers, performances.

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Introduction

Agriculture engages about 70% of the Nigerian labour force and contributes over 40% of the Gross Domestic Product (FMARD, 2000). Agricultural Extension is an educational system that makes available to farmers technical information and advice on credit, inputs and marketing with the aim of increasing farm output and income. It also provides information about farmer's conditions to research institutes and credit institutions (Bello and Salau, 2009). The role played by extension service in every sector of agricultural production cannot be over emphasized; for the prominent role it plays in making farmers aware of vital agricultural information. The responsibility of dissemination of research findings to increase farmers production is that of extension service. From government perspectives, whatever priority is given to agricultural production, extension will remain a key policy tool for promoting ecologically and socially sustainable farming practices (Oladoja, 2004). As Evenson (2001) puts it, agricultural extension is a service provider by which information on new technologies, better farming practices and better management can be transmitted to farmers. In many developing countries including Nigeria, provision of effective and sustainable agricultural extension services to majority of the resource-poor farmers is a major concern. Resource-poor farmers belong to a

complex, diverse and risk-prone agriculture, which produces the bulk of agricultural production and supports several millions of people in Africa(Ayansina, 2011).. In this country a number of rural development programmes which include but not limited to Operation Feed the Nation (OFN), Green Revolution (GR), River Basin Development Authority (RBDA), National Directorate of Employment (NDE), Directorate of Food, Road and Rural Infrastructure (DFRRI) were embarked upon in order to boost production. While many of these development programmes were agricultural oriented and established to raise the living standard of rural people and boost their share of Gross Domestic Product, several studies have indicated the inadequacy and ineffectiveness of some of these development programmes (Ayansina, 2011). Adejo, Okwu and Ibrahim (2012) posited that to determine the effectiveness of extension services we have to look at awareness created among farmers, visits paid to farmers by extension workers, regularity of field meetings, farmers' training sessions and farmers trained. A model was put forward as indicators of the effectiveness by Ajayi (2005)for evaluating effectiveness of extension service which stresses assessment of the activities of extension personnel in training, supply of inputs and technologies, and creation of awareness about innovations. The function of extension services among others include taking problems from the farm and rural households to research centers for solutions. Thus agricultural extension service trains the rural people to make independent decisions and good use of local resources (Maunder, 2002). Agricultural extension workers must master the culture of the people where he wants to implement a programme to improving their livelihood through increasing farm production and their physical environment (Leagen, 2002). Provision of food for the teeming population and raw materials for industries is faced with problems which militated against agricultural development. Some of these constraints include low productivity, poor marketing and distribution infrastructure, inadequate access to credit, weak extension services and inadequate database among others (FMARD, 2000). There existed a gap between the strategies and the utilization of the many impressive research results, hence no appreciable impact on the overall agricultural production. The accomplishment of extension service goals depends on the effectiveness of the extension agents achieving the programme objectives (Omotayo, *et al,* 2001).The Nigerian agricultural extension service is bedeviled with several problems such as inadequacy and instability of funding, poor logistic supports for field staff, use of poorly-trained personnel at local level, ineffective agricultural research and extension linkages, insufficient and inappropriate agricultural technologies for farmers, disproportionate ratio of extension agents to farm families and lack of clientele participation in programme development(Agbamu 2005). Others problems of Extension service are poor input supply, irregular evaluation of extension programmes and policies. This study therefore assessed arable crop farmer's adoption of innovations disseminated by village extension agents in Yewa North Local Government Area of Ogun State, Nigeria.

Objectives of the study

The specific objectives of the study were to:

i. describe the socio-economic characteristics of arable crop farmers in the study area;
i. investigate the extent of adoption of innovations among the respondents.;
iii. identify the constraints militating against adoption of agricultural innovations by arable crop farmers in the study area.

Hypotheses of the study

$\mathbf{H_0^1}$ There is no significant relationship between selected socio-economic characteristics of arable crop farmers and performance of extension agents` activities.

$\mathbf{H_0^2}$ There is no significant relationship between extent of adoption of innovation and performance of extension agents` activities.

METHODOLOGY

Area of study

The study was conducted in Yewa North (formerly Egbado North) Local Government Area of Ogun State, located around 7°14'00″N and 3°02'00″E. The area is bounded in the West by the Republic of Benin, North by Imeko/Afon Local Government, South by Yewa South Local Government and East partly by Abeokuta North and Ewekoro Local Government Areas. Its headquarters is in Ayetoro

with an area of 2,087 km² and a population of 181,826 (NPC,2009). The area is the food basket of Ogun state. The inhabitants are mainly Yorubas of Yewas and ketus with some fulanis. Their main occupation is farming, they produce food and cash crops which include cassava, maize, melon, cashew, vegetables, fruits and spices, citrus and kolanut.

Method of data collection

Using random sampling technique, fifteen (15) farming households were selected from ten (10) villages each to make one hundred and fifty (150) respondents for this study. The primary data were collected by administering interview schedule on farmers in the villages and interpreting to them in Yoruba language while their responses were recorded for them..

Measurement of variables

The Socio-economic characteristics of respondents were measured in interval scale, such as age in years, household size, years of experience, hectares, Nominal scale for education, occupation, source of finance. gender, marital status and religion. Effectiveness of extension Agents professional services rendered were measured in 4-points scale of highly effective =5 Effective =3 Slightly effective =1 and not effective=0. Farmers adoption index was measured by listing thirteen innovations disseminated to farmers which they responded to on a 3-points scale of adopted, had used and still use while the constraints to adoption were listed and farmers responded on a 4-points scale of very serious, serious , occasionally and seldom.

Statistical Analysis of Data

The data collected were analyzed with simple arithmetic computations of frequency counts, percentages, and means. The scored were later ranked. The inferential statistics used was chi-square analysis of simple relationship between variables.

RESULTS AND DISCUSSIONS

Socio-economic characteristics of arable crop farmers

The results in Table 1 revealed that majority (60.0%) of respondents were between 40 and 49 years of age while the average age was 38 years, implying that respondents are still very strong and energetic to engage in productive activities that will enhance household income and welfare. This agrees with Obeta and Nwagbo (1999) who noted that young farmers are always ready to accept innovations. Result showed that 50% had secondary education, about 26% had primary education, 13.3% had no formal education while 10.0% had tertiary education. Most respondents had at least one form of education serving as a tool in the adoption of innovation. This is corroborated by Bekele and Mekonnen (2010), which revealed that increase in level of education of respondent increases the intensity of adoption of innovation. The more educated a farmer is the more he embraces the benefits of new technologies and this attracts increase in hectares of land he puts into use for more cultivation of improved hybrid crops.(Agbelemoge and Issa, 2009). Majority (57.3%) of the respondents were married and 36.7% were single. Married people tend to have more mouths to feed hence will invest in enterprise that enhances household food security and income. The unmarried are not left out as everyone needs to adequately prepare against economic recession that bites hard on the nation's economy. Majority (84.0%) of the respondents were males while 16.0% were female implying that farming activities were mainly the duty of male folks. This is because most rural households were male headed and would have to take care of the family. However, despite the huge responsibility of women in taking care of the home and processing some farm produce, it is commendable that 16.0% of women still got engaged in arable crop farming activities. Majority (62.0%) belong to the Islamic faith while 38.0% were Christians, hence both religions are represented in farming activities in the study area. Majority (74.4%) have household size of more than 10 members, signifying the likelihood of employing family labour for most of the farming activities. Production of arable crop is mostly done manually rather than mechanically simply because most of the farmers are still very conservative, not easily adopting the new modern technology. Majority (59.2%) of the respondents had more than 20 years of experience in farming. Hence, must have acquired enough experience to be able to weather the challenges that accompany agricultural production. About 19.3% had less than 10 years

while 21.3% had between 10 and 20years farming experience, implying that all (100.0%) the farmers have one form of experience or the other in farming. Majority (78.0%) had less than 5 hectares of farm land. This is in agreement with Bamire and Manyong, (2003); Surri, (2005) and Onu, (2006) that reported that farm size influences farmers' adoption of innovation significantly. Most of the farm labour force is supplied by family members in the study area, large family sizes remain an asset to the farmers. Farmers with very large farm sizes can afford to use part of their farms to try innovations they received without significantly affecting their cultivated land area (Table 1).

Table 1: Socio -economic characteristics of arable crop farmers (n=150)

Variables	Frequency	Percent	Mean
Age group			
30--39yrs	54	36.0	
40-49yrs	90	60.0	48.1
50--60yrs	6	4.0	
Educational status			
No formal education	20	13.3	
Primary education	40	26.7	
Secondary school	75	50.0	
OND/NCE	15	10.0	
Marital status			
Single	55	36.7	
Married	86	57.3	
Widow/Widower	9	6.0	
Sex			
Male	126	84.0	
Female	24	16.0	
Religion			
Christianity	57	38.0	
Islam	93	62.0	
Household size			
<10	33	22.0	
10 and above	112	74.7	6.0
Farming experience			
<10yrs	29	19.3	
10-19yrs	32	21.3	
20yrs and above	89	59.3	
Farm size			
<5ha	117	78.0	
5ha and above	33	22.0	
Primary occupation			
Trading	31	20.7	
Farming	72	48.0	
Driving	33	22.0	
Civil servant	7	4.7	
Artisan	7	4.7	
Source of finance			
Personal savings	55	36.7	
Cooperative societies	48	32.0	
Friends and relatives	7	4.7	
Money lenders	32	21.3	
Others	8	5.3	
Awareness of extension activities			
Yes	119	79.3	
No	31	20.7	

Primary occupation of arable crop farmers.
About 48.0% of the respondents have farming as primary occupation, 20.7% of the arable crop farmers were traders, 22.0% were into the transportation business, 4.7% were civil servants and artisans. Only 36.7% of the respondents got their finance through personal savings that have accumulated over time. However, 32.0% got cooperative loans for farming operations. This is a cheery one, as this result contradicts most of the recent literature which indicated that farmers did not have access to loans and credits. Also 4.7% obtained their finance from their friends and relatives, 21.3% from money lenders while 5.3% obtained money from other sources. Majority (79.3%) were aware of extension activities in the area. This showed that activities of the extension agents were not a strange thing to farmers in this area. However, 20.7% claimed that they were not aware if there is any extension activity going on around them.Table1

Adoption index of arable crop farmers
The results revealed that innovations adopted by respondents include organization of field meetings (68.7%), training on the efficiency of production (65.3%), improved production 63.3%), supply of improved agricultural inputs (66.7%), provision of technical advice (58.0%), linkage with credit institutions (62.7%), disease and pest control (68.7%), marketing of farm produce (62.7%), land cultivation techniques (52.0%), use of herbicides (62.0%) and fertilizer application (58.7%). As shown in table2, on the extent of adoption of innovation, respondents indicated that all (100.0%) the innovations were still in use in the study area.

Table 2: Distribution of respondents by adoption and extent of adoption

Innovations disseminated	Adopted	Used	Still use	Index
Organization of field Meetings	103(68.7)	15(10.0)	95(63.3)	505
Training on the efficiency of production	98(65.3)	23(15.3)	87(58.0)	481
Help farmers to improve production	95(63.3)	17(11.3)	85(56.7)	459
Supply of improved agricultural inputs	100(66.7)	32(21.3)	70(46.7)	414
Provision of technical advice	87(58.0)	9(6.0)	101(67.3)	523
Linkage with credit institutions	94(62.7)	15(10.0)	70(46.7)	380
Disease and pest control in crop animals	103(68.7)	9(6.0)	95(63.3)	493
Marketing of farm produce	94(62.7)	9(6.0)	86(57.3)	448
Land cultivation techniques	78(52.0)	9(6.0)	101(67.3)	523
Modern processing techniques	52(34.7)	9(6.0)	95(63.3)	493
Improvedharvestingtechniques	45(30.0)	9(6.0)	95(63.3)	493
Use of herbicides/pesticides	93(62.0)	9(6.0)	95(63.3)	493
Fertilizer application techniques	88(58.7)	9(6.0)	103(68.7)	533

Extension Services rendered to arable crop farmers
Table 3 presents extension services rendered to arable crop farmers in the study area. The results revealed that provision of advice on marketing has the highest mean of 3.78 and was rated highly effective by 30.7%, closely followed by advice on use of inputs with 3.47 mean and highly effective by 30.7% of respondents and advice on credit facilities with 3.43 mean. Training and visits of farmers was slightly effective (51.3%) and the mean score was 1.62. Organization of methods, techniques and result demonstration was effective by 52.7% and the mean score was 2.81. However, other extension services rendered to arable crop farmers were listed in Table 3.

Table 3: Distribution of respondents by extension services rendered

Extension Services	Yes	Highly effective	Effective	Slightly effective	Mean score
Provision of advice on marketing situations	95(63.3)	46(30.7)	40(26.7)	9(6.0)	3.78
Advice on use of inputs	94(62.7)	46(30.7)	32(21.3)	-	3.47
Advice on credit facilities	95(63.3)	46(30.7)	32(21.3)	-	3.43
Supply of improved animal stocks	18(12.0)	-	13(8.7)	18(12.0)	3.17
Supply of agrochemicals	31(20.7)	-	31(20.7)	-	3.00
Organization of field meetings	94(62.7)	9(6.0)	69(46.0)	8(5.3)	2.83
Organization of methods, techniques and result demonstrations	103(68.7)	9(6.0)	79(52.7)	7(4.7)	2.81
Supply of tools and equipment	31(20.7)	-	22(14.7)	9(6.0)	2.42
Supply of improved animal stocks	31(20.7)	-	22(14.7)	9(6.0)	2.42
Provision of technical advice	86(57.3)	33(22.0)	24(16.0)	13(8.7)	2.21`
Organization of research linkage workshops	86(57.3)	-	55(36.7)	-	1.92
Supply of tools and equipment	40(26.7)	-	22(14.7)	9(6.0)	1.88
Training on efficiency of production, processing and storage	103(68.7)	22(14.7)	-	73(48.7)	1.78
Training and visits of farmers	103(68.7)	18(12.0)	-	77(51.3)	1.62

Constraints to adoption of innovation

Adoption of agricultural innovation was bedeviled by myriads of challenges. The results showed that lack of fund was indicated by 55.8% of respondents as a constraints hindering adoption of agricultural innovation. Also, lack of adequate extension officers was also indicated as a constraint by 80.0% of the respondents. When there are no adequate extension agents to disseminate and education farmers properly on a given innovation, this may hinder adoption. Others were non-availability of equipment (70.0%), poor communication channel (75.0%) and lack of incentives from government (85.0%), all constituted constraints bedeviling arable crop farmers` adoption of innovation in the study area. Table 4

Table 4: Respondents constraints militating against adoption of innovation

Constraints	VS	S	OCC.	SELD.	CI	R
Lack of incentives from government	102(85.0)	15(12.5)	33(22.0)	-	669	1st
Non availability of equipment	84(70.0)	33(27.5)	33(22.0)	-	651	2nd
Lack of fund	67(55.8)	50(41.7)	33(22.0)	-	634	3rd
High cost of technology	91(75.8)	26(21.7)	5(3.3)	28(18.7)	602	4th
Poor communication channel by extension agents	90(75.0)	27(22.5)	-	33(22.0)	591	5th
Lack of adequate extension officer	96(80.0)	-	21(17.5)	33(22.0)	576	6th
Technology not culturally compatible	52(43.3)	65(54.2)	-	33(22.0)	553	7th
Extension agents not friendly in their approach	2(1.7)	115(95.8)	15(10.0)	18(12.0)	533	8th
Villages not accessible	18(15.0)	99(82.5)	20(13.3)	13(8.7)	509	9th
Lateness in supplying input	33(22.0)	58(48.3)	-	59(49.2)	456	10th
Lack of understanding of innovation processes	20(13.3)	18(15.0)	13(8.7)	99(82.5)	310	11th
Not better than previous practices	13(8.7)	15(12.5)	20(13.3)	102(85)	287	12th

VS =Very serious; S = Serious; OCC=Occasionally;SELD=Seldom; CI= Constraints Index;R=Ranks

Test of hypothesis 1

The hypothesis of no significant relationship between socio-economic characteristics of the arable crop farmers and performance of extension agent's activities was tested and the chi-square analysis showed that the coefficient of age does not establish any relationship with the performance of extension agents in the study area. By implication, age does not influence the performance of extension agents` activities. The coefficient of sex of respondents showed a positive significant relationship with extension agents' performance. However, performance is seen to be high among the male extension agents, implying that village extension work is a tedious work and dominated by men. The result further revealed that education established a positive significant relationship with extension performance implying that educated famers perceived the activities of extension agents better. The coefficients of farm size and farming experience showed positive significant relationship with extension agent's performance. This means that the farmers with larger farm size have more likelihood to adoption innovations (Table 4)

Hypothesis 2

The hypothesis of no significant relationship between extent of adoption and extension agents performance was tested with the chi-square As contained in table5, the χ^2 calculated (77.783) is greater than χ^2tabulated (63.866) indicating that

there existed a significant relationship between extent of adoption and performance. The result implies that performance of the extension agents among arable crop farmers in the study area is determined by the extent to which agricultural innovations were adopted.

Table 5: Chi-square analysis of extent of adoption and performance ofextension agent's activities

Variables	χ^2-cal.	χ^2*tab*.	df	Remark
Extent of adoption	77.78[a]	63.86	12	Significant

CONCLUSIONS

Based on the findings of the study, it can be concluded that age, marital status and educational qualification established significant relationship with performance of extension agents in the study area. Also the performance of extension agents in the study area is determined by the extent to which farmers adopted improved agricultural technologies. Farmers`adoption was high and their performance improved tremendously as a result of the trainings they participated in..

RECOMMENDATIONS

The study recommended that extension agents should organize training and retraining programmes for farmers in the study area on the adoption of improved agricultural innovations, Government should also assist farmers in making available these improved agricultural inputs at subsidized cost to farmers. Technologies slated for dissemination should be compatible with clientele socio-economic and cultural situations and emphasis should be focused on follow-up activities, after initial group meetings. This would help to practicalize disseminated technologies on the farms and in the homes of potential adopters of technological innovations. It may also be necessary to attach credit schemes to the extension agents` activities, in terms of linking the various arable crop farmers to various credit agencies. The farmers should be properly enlightened and educated about the innovations and improved crop practices in farming so as to boost their production.

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