

CROP FARMERS' WILLINGNESS TO PAY FOR AGRICULTURAL EXTENSION SERVICES IN KWARA STATE, NIGERIA



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ABSTRACT

This study emanated from the need for improved agricultural extension system in Nigeria. The study investigated the willingness of crop farmers in Kwara State, Nigeria to pay for agricultural extension services. Specifically, the study examined the farmers' history of payment for extension, estimated their willingness to pay and identified the determinants of same. A sample of 261 farmers was drawn across the state using a two-stage random sampling procedure. Data for the study were collected with the use of structured questionnaire and were analyzed with descriptive statistics and the probit regression Analysis. Findings revealed that about 75% of the respondents had never contributed towards any extension effort and only about 38% were willing to do so. The farmers preferred that payment be made per extension visit and through farmer-groups. The mean amount that the farmers' willingness to pay were age, income, education, farm size, extension contact, membership of farmer-group and access to credit and training. The study therefore recommends a multidimensional approach involving the government at all tiers, farmer-groups, and the public sector to enhance farmers' access to credit. Farmers' awareness and literacy level should also be improved through adult education programs and continuous training.

Keywords: Information flow, willingness to pay, crop farmers, determinants.

INTRODUCTION

Agricultural extension in Nigeria is financed almost solely by the Government. Following the withdrawal of the World Bank intervention through the Agricultural Development Projects (ADPs), the government has continued to support extension from its budget, while the ADPs have remained under the management of the Ministries of Agriculture in the states. The agricultural extension system in the country has been severally criticized as being supply-driven, top-bottom oriented, and ineffective thereby failing to address the felt needs of the farmers. Poor funding as a result of increasing dwindling budgetary provisions and poor governance which are notable among the challenges associated with the system resulted in poor quality of extension staff as well as abysmally low extension personnel to farmer ratio (Budak et al., 2010, Falola et al., 2012). Furthermore, paucity of essential needs of extension work such as mobility, accessibility to information and communication technology is evidence of the funding level of extension in the country. The effect of this situation is manifested in the huge gap between available research findings and the farmers' knowledge and skill with poor yield for most crops. The inevitable need for additional sources of funds for extension is a major justification for the introduction of fee paying extension. Experts in the field opined that payment for extension will enhance the participation and the commitment of farmers to the extension process while fostering accountability of extension to farmers. Shekara (2004) remarked that payment for extension services by farmers will increase the efficiency and effectiveness of extension. This is because the right message is delivered to the right individual or group who will use such information; hence the system is demand-driven (Umali and Schwartz, 1994). To buttress this assertion, Yapa and Artyawardana, (2005) recognized the Australian state of Tasmania as having the longest history of fee for service extension. Other countries where this system has been successfully practiced include; the United Kingdom, Netherlands, New Zealand, Sweden, Germany, Chille, and Portugal (Rivera and Cary, 1997).

In preparing the stage for possible introduction of feepaying for extension service, a documentation of farmers' history of previous payment for agricultural extension related activities is posited. The perception of the farmers as to their capability to pay for extension is also likely to affect their judgment. Information on farmers' preference such as mode and frequency of payment will be of assistance in the design of a fee paying extension system. Lastly, knowledge of the determinants of their willingness to pay will be important to the successful introduction of fees for extension services. The objectives of the study were therefore to:

- 1. describe farmers' history of payment for extension services in Kwara State,
- 2. examine farmers' perceived capability to pay for extension services,
- 3. investigate farmers preferences in payment for extension services and;
- 4. investigate the determinants of farmers' willingness to pay for extension in Kwara State.

METHODOLOGY

The study was carried out in Kwara State, Nigeria. The state is located within the North-central area of Nigeria and lies between latitudes 7°45'N and 9°30'N and longitudes 2°30'E and 6°25'E. The state shares international boundaries with the Republic of Benin. Projected from the 2006 census figures, the state has a population of about 2.959 million and about 325,858 farm families.

The population for the study comprised of all registered crop farmers in the study area. A two-stage random sampling procedure was used to select 261 respondents across the 16 Local Government Areas in the State. Data for the study was collected through the use of a structured questionnaire. Descriptive statistics involving frequency counts, percentages and means and the probit regression analysis were used to analyze the data.

The probit regression model was fitted to assess the factors that influenced farmers' willingness to pay (WTP) for extension services. The choice of the probit regression analysis was borne out of its ability to model dichotomous or binary outcome variables. The model effectively measures the relationship between categorical dependent variables and usually continuous independent variable (or several) by converting the dependent variable to probability scores (Hosmer and Leneshow, 2000). The probit equation for the purpose of the study is presented as;

 $Z = \beta_0 + \beta X_1 + \beta X_2 + \dots + \beta X_{12} + \mu \dots \dots (1)$

Where Z = willingness to pay for agricultural extension services

- $X_1 = Age of the respondents in years$
- X_2 = Gender of the farmer (1 if male and 0 if otherwise)
- X_3 = Marital status (1 if married, 0 if otherwise)
- X_4 = Total income (Naira). This is an addition of farm income, non-farm income and available income from other household members.
- X_5 = Highest level of formal education attained.
- X_6 = Land tenure (1 for owned, 0 otherwise)
- $X_7 =$ Farm size (hectares)
- X_8 = Farming experience (number of years spent in farming)
- X_9 = Access to extension services (number of extension contact in the past 12 months)
- X_{10} = Membership of farmers' groups (1 if yes, 0 otherwise)
- X_{11} = Access to farm credit (1 if yes, 0 otherwise)
- X_{12} = Access to training by agricultural development organizations (1 if yes, 0 otherwise)
- β =are the coefficients to be estimated
- μ =the error term

Two methods have been used in the determination of WTP. They are; the Contingent Valuation Method (CVM) and the indirect or estimation of demand and supply of agricultural extension services method. The CVM has been several used. (Holden and Shiferaw, 2002; Horna et al., 2005; Ajayi, 2008; Oladele, 2008). Studies involving the use of estimation of demand and supply of extension method include Dinar (1996), Holloway and Ehui (2001) and IFPRI (2011). Models relied upon for the analysis of factors determining farmers' WTP for extension services include; the linear probability models (Capps et al., 1988), the logit model (Jones and Landwehr, 1988) and the Probit model (Hausman and Wise, 1978; Mcfadden, 1981). The generalized least square method has been attempted (White 1980) but with limitations. This study adopted the contingent valuation method using the Probit Regression Analysis.

RESULTS AND DISCUSSION

Socio-economic Characteristics of the Respondents

Table 1 shows the summary of the relevant socio-economic characteristics of the respondents. Majority of the respondents were male, married and had formal education. The modal age group of 40-50 years and the mean age of 51 years obtained in the study area suggest that the farmers were still in their active/productive age. The modal farm size of the respondents was between 1.1 - 2.0 hectares while the mean was 2.05 hectares. These suggest that the respondents are small scale farmers. The majority (77.4%) of the farmers did not own their farmlands. More than half of the respondents are members of farmer-groups, and have accessed credit and training over the immediate past 12 month period. Although number of extension contact per year recorded include 36 times, the mean number of extension contact per annum was 8. This findings surports those of Fakayode et al 2011, in which it was reported that farmers in Kwara State were predominantly male (80.6%), married (84%) and possessed formal education (74.1%). The study also gave the modal age of Kwara State farmers as 46-55 years and modal years of farming experience as 11-20years.

Respondents' History of Payment for Agricultural Extension Services

This section presents the result of investigation made into the respondents' history of payment for agricultural extension services. Table 2 presents the findings of this investigation. Only about 25% of the farmers had ever contributed towards extension services. The mean amount contributed was $\frac{1}{2}21,524.01$ per year. Further investigations revealed that the payments were in the form of equity contributions towards specific projects or activities towards which they received direct benefits. Projects/activities to which the contributions were made were provision of water supply, farm machinery, input supply and procurement of farm implements.

Perception and preference on Payment for Agricultural Extension

Table 3 presents the respondents' capabilities and willingness to pay for agricultural extension as well as the preferred mode of payment. As shown in the Table, only about 38% of the respondents expressed willingness to pay for extension services. Similarly, only 33% of the respondents also perceived themselves as capable of paying. Payment through farmer-groups was preferred to making individual payment to extension agencies/service providers among the respondents (77.39%). These findings collaborates those of Ajavi (2006) among farmers in Ovo State, Nigeria. Majority of the respondents also preferred that payments for extension services should be made per visit rather than cumulated into monthly or annual payments. Table 4 also reveals that of the 99 respondent who were willing to pay for extension services, majority (71.72%) were not willing to pay above N20, 000.00 per annum. The mean amount the respondents were willing to pay was N20, 555.11. However, Ajavi, (2006) reported a Lower Bound Mean of ¥391.47 in Oyo State, Nigeria. The wide variation could be attributed to differences in the scale of operation of the respondents and the types of crops grown i.e. food vs. cash crops.

Determinants of Farmers' Willingness to Pay (WTP) for Agricultural Extension Services

The results of the probit analysis to determine the factors influencing willingness to pay (WTP) for agricultural extensions by the farmers in the study area are presented in Table 5. As shown in Table 5, the model fitted for the study was good, based on the high Chi-square value which was significant at one percent. Eight of the twelve variables tested for relationship with willingness to pay for agricultural extension services were significant in predicting the farmers' willingness. Three of the eight significant variables namely, age, access to extension services and membership of farmer-groups were inversely related to the farmers' willingness to pay. The remaining five variables: total income, level of education, farm size, access to credit and total income had direct relationships with the willingness of the farmers to pay for agricultural extension services.

Table 1: Selected Socio-economic Characteristics of Respondents

Socio-economic Characteristics	Minimum Values	Maximum Values	Modal Group (%)	Mean
Age (Years)	30	70	40-50 (33.00)	51.03 years
Gender	-	-	Male (87.40)	-
Marital Status	-	-	Married (92.7)	-
Educational Level	-	-	Formal Education(73.2)	-
Farming Experience (Years)				
	3	55	11-20(39.5)	21.37 years
Farm Size(ha)	0.5	4	1.10-2.00(37.1)	2.05 hectares
Land Tenure	-	-	Rented(77.4)	-
No of Extension Contact	0	36	1-10 times (41.4)	
				8
Membership of Farmer-groups	-	-	Non-member (65.5)	-
Access to Credit	-	-	No access (52.1)	-
Access to Training	-	-	Had access (56.0)	
Total Annual Income(N)	70,000.00	854,000.00	200,001-400,000 (53.6)	290,416.86
Note: Figures in parentheses are	percentages			

Source: Field Survey, 2013

Age of the farmers had a negative relationship with the farmers' willingness to pay (WTP) at p<0.01. This indicates that the older the farmer is, the less his/her willingness to pay for agricultural extension services. Similar findings have been reported in other studies on farmers' WTP (Oladele, 2008; Mwaura et al., 2010; Falola et al., 2012; and Zakaria et al., 2013). Payment for agricultural extension services being a relatively new development may not be readily adopted by the older farmers giving the scientifically reported inverse relationship between age and the adoption of innovation methods. Younger farmers have been reported to adapt more to changes and to adopt innovations at a higher and faster rate (Akudugu et al., 2012; Baffoe-Asare et al., 2013). The inverse relationship between farmers' access to extension services (measured as number of extension contacts) and WTP implies that the more access a farmer had to agricultural extension services, the less willing such a farmer was, to pay for the services. This may be due to the fact that the farmers will less likely desire to pay for services he already receives for free. It may however suggest also that the farmer does not consider the benefit he derives from extension contact worth paying for. This may therefore also be an indication of the level of a farmers' satisfaction with the agricultural extension services he presently enjoys. This finding is in agreement with those of Ulimwengu and Sanyal, (2011) who established a similar relationship between access to agricultural extension and farmers' WTP for agricultural extension services in Uganda. Membership of farmer-groups significantly but inversely influenced farmers' WTP at one percent level of significance. Therefore, WTP reduced with farmers' membership of farmer groups. This may also be related to the fact that their membership of groups exposes them to more agricultural information and hence their lack of enthusiasm to pay for agricultural extension services (Sseguya et al., 2013). In contrast to a previous related study (Foti *et al.*, 2007), this study shows a direct relationship between farm size and farmers' WTP for agricultural extension services at one percent level of significance. This implies that the larger the farm size, the more willing the farmer was to pay for agricultural extension. This may be attributed to the fact that farm management becomes complex as farm size increases. Thus, managing such large farms effectively may require some crucial information which may not be available easily to small farms. This may prompt farmers with large farm size to pay for agricultural extension services. Gender was not significant in determining WTP. This finding contradicts that of Oladele, (2008) who reported that male farmers were more willing to pay for agricultural

extension services than female farmers in Oyo State, Nigeria. Also, though being married has been linked to some degree of social and economic stability (Sanderson, 2004), the results of this study shows no significant relationship between marital status and WTP. A significant and positive relationship was also observed between total income and WTP at one percent level of significance. This means that the higher the total income, the higher the WTP for agricultural extension services. This finding is in accordance with the reports by Oladele (2008), Mwaura et al. (2010) and Falola et al. (2012). Higher income may connote availability of more funds from which to pay for agricultural extension services. Educational level directly influenced WTP at one percernt level of significance. Therefore, the more educated a farmer is, the more his/her WTP. This trend has been reported by similar studies (Oladele, 2008; Mwaura et al., 2010; Abu et al., 2011; Falola et al., 2012). Cereris paribus, farmers with high level of education have positive attitude to innovations (Uematsu and Mishra, 2010). This may be as a result of improved ability to understand and communicate better with extension officers. It may also be as a result of the general skepticism and trust issues usually common among

illiterate farmers. Table 5 shows that access to training positively and significantly influenced farmers' WTP for agricultural extension services at five percent level of significance. The direct nature of the relationship between the access to training and WTP indicates that the more access a farmer has to training, the more the farmer's WTP.Access to farm credit was also found to be a determinant of farmers' WTP.The more access a farmer had to credit, the higher the farmer's WTP. This may be a function of available financial resource which is enhanced by the access to farm credit.

Table	2: Res	pondents'	History of	Payment for
Agricu	Itural	Extension	Services	

Investigations made and the responses	Frequency	Percentage
Ever paid for		
Agric. Ext	66	25.29
services	195	74.71
Yes	261	100.00
No		
Total		
Nature of		
service paid for	_	
beneficiary	9	11.8
Water project	9	11.8
Water project	24	31.6
	13	17.1
Training	10	13.2
Farm implements	11	14.5
Farm road and	76*	100.0
culverts		
Total		
Amount paid in		
the last 12	19	28.8
months	46	69.7
<10,000	1	1.5
10,000-20,000	500	
>20,00	60.000	
Minimum	21.524.01	
Maximum	66	100.0
Mean		

Table 3: Distribution of Respondents by preference on payment for Agricultural Extension

	Frequency	Percentage
Are you willing to		
pay for agric. Ext.		
services?		
Yes	99	37.93
No	162	62.07
Are you capable of		
paying for agric. Ext.		
services?		
Yes	87	33.33
No	174	66.67
Preferred mode of		
payment		
Individual	59	22.61
Group	202	77.39
Preferred frequency		
of payment		
Per visit	177	67.82
Monthly	60	22.99
Annually	24	9.19

Source: Field survey, 2013

Table 4. Distribution of Respondents by Total				
Amounts they are Willing to Pay for Agricultural				
Extension Per Annum				

Amount	Frequency	Percentage	
0	162	62.07	
1 - 20,000	71	27.20	
20, 001 - 40,000	17	6.51	
40,001 - 60,000	4	1.53	
60,001 - 80,000	2	0.77	
80,001 - 100,000	2	0.77	
>100, 000	3	1.9	
Total	261	1.16	
Minimum	0	100	
Maximum	69,000		
Mean(willing	20, 551.11		
respondents)	-		
Source: Fi	eld	survey, 2	2013

* Multiple Responses; Source: Field survey, 2013

Table 5: Parameter	Estimates from Probit Regression	on Model to Investigate	Determinants of Willingness	to Pay among
Respondents				

Variable	Regression Coeff.	Standard Error	t-value
Constant	-2.09889	.51870	-4.04646
Age	11508***	.00803	-14.32722
Gender	.40836	.27929	1.4621
Marital Status	.14795	.33070	.44738
Total Income	.07230***	.01945	3.71814
Educational Level	.23555***	.03048	7.72724
Land Ownership	07323	.12386	59129
Farm Size	.20796***	.04456	4.66670
Farming Experience	01013	.00650	-1.55778
Access to extension services	01797***	.00370	-4.85084
Membership of other Farmers' Groups	34027***	.09977	-3.41043
Access to Credit	.43828***	.10465	4.18792
Access to Training	.23557**	.11186	2.10581
Pearson Goodness of fit (chi square value)	5.968E+11		
DF	247		
Р	.000		

Note: ***, and ** denote significance at 1% and 5%, respectively

CONCLUSION AND RECOMMENDATIONS

One can infer from this study that just a limited number of farmers had ever made equity contributions towards extension related projects in the study area. Similarly, only about a third of the respondents were willing to pay for agricultural extension services. The study further revealed that farmers preferred to pay per extension visits and through their farmer-groups. The factors that significantly influenced farmers' WTP were; age, income, education, farm size, extension contact, membership of farmer-groups, access to credit and training.

Based on these findings therefore, the following recommendations are put forward:

- 1. Farmers should be assisted and encouraged to increase their farm size through measures such as; subsidies, incentive payments, welfare payments, and provision of infractures.
- 2. A multidimensional approach involving all stake holders such as the government, private sector, strengthened farmer- groups and other nongovernmental organizations should be adopted to enhance agric-financing in the study area.
- 3. Policies that will enhance farmers' income, such as improved produce marketing, should also be put in place or given more attention.
- 4. Adult literacy programmes and continuous training should be made available to improve farmers' level of education and awareness.

REFERENCES

- Abu, G.A., Taangahar, T.E. and Ekpebu, I.D. (2011). Proximate Determinants of Farmers' WTP (willingness to pay) for Soil Management Information Service in BenueState, Nigeria. *African Journal of Agricultural Research*, 6(17): 4057-4064.
- Ajayi, A.O. (2006). An Assessment of Farmers' Willingness to Pay for Extension Services Using the Contingent Valuation Method (CVM): The Case State, Nigeria. *The Journal of Education* and Extension, 12(2): 97 - 108.
- Ajayi, A.O (2008). Farmers' Willingness to Participate in the Financing of Agricultural Extension Services in Oyo State, Nigeria: A factor Analysis. *Journal* of Sustainable Development, 1(2): 2 - 11.
- Akudugu, M. A, Guo, E. and Dadzie, S. K. (2012). Adoption of Modern Agricultural Production Technologies by Farm Households in Ghana: What Factors Influence their Decisions? *Journal* of Biology, Agriculture and Healthcare, 2(3): 1-13.
- Baffoe-Asare. R., Danquah, J.A and Annor-Frempong, F. (2013). Socio-economic Factors Influencing Adoption of Codapec and Cocoa High-tech Technologies among Small Holder Farmers in Central Region of Ghana. *American Journal of Experimental Agriculture*, 3(2): 277 - 292.
- Budak, B.D, Budak, F. and Kacira, O.O. (2010). Livestock producers' Needs and Willingness to Pay for Extension Services in Adana Province of Turkey. *African Journal of Agricultural Research*, 5(11): 1187 - 1190.
- Capps, O. D., Moen, D. S, and Branson, R. E (1988). Consumer Characteristics Associated with the Selection of Lean Meat Products. *Agribusiness* 4, 549-557.
- Dinar, A.,(1996). Extension Commercialization: How Much to Charge for Extension Services. American Journal of Agricultural Economics, 78: 1 - 12.

- Fakayode, S.B., Falola, A., Babatunde, R.O. and Adedoyin, J. (2011). Economic Analysis of Rural Households Access to Non-farm Activities in Kwara State, Nigeria. Global Journal of Science Frontier Research, 11(3): 5 - 10.
- Falola,A.,Banjoko,I.,K., and Ukpebor, P. O. (2012). Willingness to Pay for Agricultural Extension Services by Fish Farmers in Nigeria: A Case Study of Kwara State, Nigeria. Journal of Sustainable Development in Africa, 14 (5): 197-207.
- Foti, R., Nyakudya, I., Moyo M., Chikuvire J., Mlambo, N. (2007). Determinants of Farmer Demand for "Fee-for-Service Extension in Zimbabwe: The Case of Mashonaland Central Province. Journal of International Agricultural and Extension Education, 14(1): 95 – 104.
- Hauseman, J.A and Wise, D.A, (1978). A Conditional Probit Model for Qualitative Choice: Discrete Decisions Recognizing Interdependence and Heterogeneous Preferences, *Econometrica*, 46:403 - 426.
- Holden, S.T, and Shiferaw, B. (2002). Poverty and Land Degradation: Peasants' Willingness to Pay to Sustain Land Productivity. In The Adoption of Natural Resource Manageement Practices: Improving Sustainable Agricultural Production in Sub- Saharan Africa (Ed.) Barrett, C.B, Place, F.M, and Abound, A.A, CABI Publishing.
- Holloway, G.J and Ehui, S.K, (2001). Demand, Supply and Willingness-to-Pay for Extension Services in an Emerging-Market Setting, *American Journal of Agricultural Economics*, 83: 764 - 768.
- Horna, T.D and Smale, M. Oppen, M.V, (2005). Farmers' Willingness to Pay for Seed Related Information: Rice Varieties in Nigeria and Benin. Environment and Technology Division, International Food Policy Research Institute. Discussion Paper 142. Washington, DC.
- Hosmer, D. and Lemeshow, S. (2000). *Applied Logistic Regression* (Second Edition). New York: John Wiley & Sons, Inc.
- IFPRI (2011). Joint Estimation of Farmers' Stated Willingness to Pay for Agricultural Services. *IFPRI Discussion Paper 01070.*
- Jones J. M, and Landweehr, .T, (1988). Removing Heterogeneity Bias from Logit Model Estimation. *Marketing Science* 7 (1): 41 - 59.
- McFadden, D. (1981). Econometric Models of Probabilistic Choice. In Structural Analysis of Discrete Data with Econometric Applications, (Ed.) Manski and McFadden, 198-272. Cambridge, MA, US: MIT Press.
- Mwaura, F., Muwanika, F. and Okoboi, G. (2010). Willingness to Pay for Extension Services in Uganda among Farmers Involved in Crop and Animal Husbandry. Economic Policy Research Centre Contributed Paper presented at the Joint 3rd African Association of Agricultural Economists (AAAE) and 48th Agricultural Economists Association of South Africa (AEASA)

Conference, Cape Town, South Africa, September 19 - 23.

- Oladele, O.I (2008). Factors Determining Farmers' Willingness to Pay for Exteension Services in Oyo State, Nigeria, Agricultura Tropica et Subtropica, 41(4): 165 - 170.
- Rivera, W.M and Cary, J. W. (1997). Privatizing Agricultural Extension in Swanson B.E, Bentz, R.P, and Sofranko, A.J (eds) *Improving Agricultural Extension: A Reference Manual*, FAO, Rome.
- Sanderson, C.A. (2004). Health psychology, Hoboken, NJ: John Wiley &Sons, Inc.pp. 180 - 212.
- Shekara, P. C. (2004). Status of Private Extension in India. Available online at: http://www.manage.gov.in/pvtext/pvtExt.htm\
- Sseguya, H., Mazur, R.E., Njuki, J.M., Owusu, F.Y. (2013). Determinants of participation and leadership in food security groups in Southeast Uganda: Implications for development programs and policies. *Journal of Rural and Community Development*, 8(1): 77 - 97.
- Uematsu, H.and Mishra, A. (2010). Can Education Be a Barrier to Technology Adoption? Selected Paper Prepared for Presentation at the Agricultural &

Applied Economics Association 2 AAEA, CAES, & WAEA Joint Annual Meeting, Denver, Colorado, July 25 - 27, 2010.

- Ulimwengu, J. and Sanyal, P. (2011). Joint Estimation of Farmers' Stated Willingness toPay for Agricultural Services. *Ifpri Discussion Paper* 01070, March, 2011.
- Umali, D.L. and L. Schwartz (1994). Public and Private Agricultural Extension Beyond Traditional Frontiers, World Bank Discussion Paper, Washington D.C., U.S.A.
- White, H. (1980). A Heteroskedastic-Consistent Covariance Matrix Estimator and a Direct Test of Heteroskedasticity, *Econometrica*, 48: 817 - 838.
- Yapa K.D.A.J. and Ariyawardana, A. (2005). Willingness to pay for a fee-based extension service by tea smallholders in Galle District. Sri Lankan. *Journal of Agricultural Economics*, 7: 66 - 84.
- Zakaria, H., Abujaja, A.M., Adam, H., Nabila, A.Y and Mohammed, I. (2014). Factors Affecting Farmers' Willingness to Pay for Improved Irrigation Service: A Case Study of Botanga Irrigation Scheme in Northern Ghana. International Journal of Agricultural Economics and Extension, 2(1): 068 – 076.