CONSTRAINTS TO FEEDBACK PROVISION ON FORESTRY-RELATED TECHNOLOGIES

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ABSTRACT

This paper ascertained the constraints to feedback provision on forestry-related technologies. Interview schedule was used to elicit information from 163 randomly selected respondents. Descriptive (frequencies, percentages) and inferential (Chi square and Ordinary Least square regression) statistics were used to analyse data collected for the study. Chi square statistics shows significant relationship between gender, age, marital status, number of wives, education and constraints to feedback provision. The major constraints that were identified as affecting feedback provision on forestry related technologies include illiteracy, unstable government policy, busy schedule of extension agents, busy schedule of researchers, low ratio of extension agents to farmers, poor infrastructure. The regression result showed R^2 value of 0.67 which is an indication that 67 percent of constraints to feedback provision were explained by other independent variables and the multiple R of 0.82 shows a very strong correlation between the independent and dependent variables. Only farm size (t-value = -3.31, $p<0.05$) education (t – value = -2.71, $p<0.05$) and contract with extension agent (t- value =3.84, $p<0.05$) has significant relationship with constraint to feedback provision.

INTRODUCTION

One of the challenging problems facing Nigeria is the production of sufficient food and fibre to meet the need of the ever-increasing human population. The Nigerian population, as shown by the National Population Commission (NPC, 1992) has increased to 88.5 million and of the 93.321 million hectares of land available in Nigeria, about 75.3

percent may be regarded as arable, 10 percent is under forest reserves, and the remaining 14.7 percent is assumed to be made up of permanent pastures, built up areas and uncultivated wastes. The attempt to combat the resultant problem of food insecurity has led to various researches into the development of technologies which are aimed at increasing production of a wider range of products (food and other natural resources) to meet the requirements of the people and even improving their standard of living.

National extension services in Nigeria have recently been re-organised and achievements in passing agriculture research information especially in technology utilisation has been most encouraging but there are constraints that need to be overcome by farmers in order for them to be viable. These generally revolve around variables associated with technology changes and information needs. It is important to put into perspective the roles of information, communication and institutions activities in removing constraints which impede the acceptance and continued usage of technologies.

Part of the solution to the earlier mentioned constraint is firmly establishing the information flow between the users (farmers), deliverers (extension workers) and the developers (researcher) of information (Sabah, 1995). Apart from the already established functions being fulfilled by these three collaborators viz: research and development of appropriate new technology, adequate local testing of technological development, dissemination of information to farmers and the adoption of new practises, York (1991) suggested that it is very important to integrate into the system, a continuos flow of feedback and interaction among them.

In a related study, Coughenour (1995) commended the laudable work of extension but indicated that only few, if any, farmer could identify agricultural extension representatives who came back to request for feedback in relation to innovations and change, and this, he has said made farmers to be distrustful of many government

representatives who they feel "want something from them" rather than visualising any positive help. He illustrated this with the story of a researcher war king with farmers in one of the rural areas who was asked information concerning the animal traction programme. The researcher contacted the Agriculture Ministry and communicated relevant information back to the farmers but never went back to find out whether they actually got what they wanted and whether it worked for them.

In another development, Nuru (1993) posited that experience has shown that it is difficult to integrate the farmer-responsive approaches in a sustainable was within public sector research organisations and these have contributed successfully to improving researchers' understanding of diverse production system, identifying niches for new technologies and sharpening the focus of adaptive research. Though organisational and managerial constraints to integrating farmer-responsive approaches have been addressed in some National Agricultural Research System (NARS), the impact of feedback from farmers on the research information disseminated has been sporadic at best.

Feedback is a necessary way of overcoming the gap between farmers and research. It is the farmers who receive new innovations and decide to either accept or reject them and also work towards their sustainability. Any model of technology transfer that does not put feedback into consideration will go a long way to restricting the free flow and utilization of agricultural information needed for increased production – feedback is the pattern of relating information from farmers back to the researchers (through the extension agents) after having received or adopted the innovation earlier passed.

The most important characteristic of the information-sharing process is the communication circuit or network of circuits by which individuals within a system are inter-connected (Leonard, 1991). A circuit is a one-way link-a circular loop with the capacity for a two-way

exchange of information. This two-way exchange is a prerequisite for feedback. No system can function properly-that is, be coordinated to accomplish a set of goals without feed back.

Feedback produces action in response to an input of information and includes the results of its own action in the new information by which it modifies its subsequent behaviour (Rogers, 1981). According to him, the concept of feedback has been taken, in everyday vocabulary to mean "knowledge of results". It is a way of enforcing local participation through decision-making. When feedback is considered at one-cycle level, it is often thought of as an object or noun - knowledge of results-rather than a process over time. The term feedback refers to one-half of the cycle of information exchanged.

Jordan (1992) in emphasising its importance noted that the key element of success in promoting the adoption of technology, which previously had not appealed to farmers in Asia, was the introduction of feedback mechanism, a way which allowed farmers to say their views about the innovations. This supports the findings of White and Maldonado (1991) that in Katheka, Kenya, farmers as a result of local participation in decision making adopted an innovation, which, though they had known previously but not adopted, when it was reintroduced in early 80's .

Though the effectiveness of a research programme and system depends on the eventual communication of developed technology to the ultimate users (farmers), the introduction of farmers feedback on the impact of technology on them will go a long way to better enhance and bring about lasting changes in the farmers and thus work for a sustainable agricultural development.

Certain advantages have been accrued to farmers' feedback on research. With farmers' feedback, scientists cannot misinterpret a problem or attribute wrong causes to it. Also, it is necessary for the evaluation of research in that farmers are best positioned to explain reasons for the adoption or non-adoption of existing technologies,

which scientists can only speculate. Moreover, it is necessary so that farmers' understanding of the kind of technology they need and could fit within their production system can be known. Again, it is important for equity and efficiency considerations - that is, farmers are able to choose and rank projects and at the same time, say whether the resources allocated to such projects are sufficient and lastly, it provides the opportunity for strengthening farmers participation in setting the agenda for future research.

Many past efforts to reach research with feedback have been a failures. According to Sabah (1995), the lack of institutional infrastructure and services for farmers (that is concern about farmers' problem) has been a major factor contributing to these failures. A major constraint to effective farmers' feedback on research is the way and manner information from farmers are packaged to decision makers. Most of the time, such information are packaged in such a way that it cannot be channelled into institutional decision – makings.

Another constraint is the link with planning and priority-setting at the research programme level, which many research organisations have not had. Consequently, there has been no formal mechanisms for channelling information from farmers (feedback) back to research, and not until this is taken care of, not much can be achieved. For instance, in Guetemala, feedback from farmers was strengthened by inviting researchers and extension workers to the annual planning and reviews meeting where the issue was discussed. (Adu, 1992) and it was discovered that a major constraint to extension system is that provision has not been made for feedback from farmers to research. Hann (1993) noted that peasant farmers in Punjab area of India ran into social and political insecurity because there was no means of communicating back to researchers that the inputs to the newly-introduced high yielding variety of rice were beyond their reach economically – this is an indication of the existence of a gap between farmers and extension as

well as research. The process of disseminating agricultural technologies is basically a communication process, by which an idea or innovation communication is a process by which an idea or innovation is transferred from a source (extension agent) to one or more receivers (farmers) with the intent to change their behaviour. An adequate understanding of communication as a process requires the analysis of a series of cycles of information exchange over time (Rasheed 1997). Convergence and divergence are the most useful terms to describe what actually occurs during this process (Deutsch, 1993). Convergence is the tendency for two or more individuals to move towards one point, or for an individual to move towards another and to unite in a common interest or focus while divergence is the tendency for two or more individual to move away or apart.

The quality of communication as a spatio-temporal phenomenon existing in space and time actually makes it a process. Hence, a communication encounter has a beginning, middle and an end. All these parts combine to make a complete whole. Communication is thus the finished product of a 3-stage activity, which is transient in nature. These three stages are action, reaction and interaction (Rasheed 1997). According to him, action is complemented by reaction which is the measure of communication effectiveness while its continuity is produced by interaction between the two parties in a communication encounter that is, passing across an innovation by the extension agent to the farmer who then practises it and gives a feedback on whether it is good and acceptable, or not.

METHODOLOGY

The study area is made up of three states of the South Eastern Zone of Nigeria: Abia, Rivers and Edo states with all the farmers in three states as the target population. Umuahia, Onne and Sakpoba were purposively selected because of the concentration of Forestry Research Institute of Nigeria (FRIN) out-station activities around.

Out of the four villages which are FRIN catchment areas in Umuahia, fifty farmers (10 percent) were randomly selected from a farmers group of five hundred, at Onne, 10 percent (fifty) of the farmers group were randomly selected while at Sakpoba, sixty three farmers were also randomly selected from a farmers group of six hundred and thirty (10 percent).

Interview schedule was used for the study, as majority of the respondents are illiterates. It is divided into two sections. Section A solicited for demographic data on respondents age, gender, marital station, religion state of origin, source of land, farm location(s) and farm size (s), educational background, income generating activities (occupation) and years of farming experience while section B consists of questions designed to obtain information on contact with extension agents, the use of technologies, the frequency of use, provision of feedback, channel of feedback, frequency of use of channel, types of feedback, the benefits of, and constraints to feedback provision.

The Statistical Packages for Social Sciences (SPSS) was used to analyse the data. using Chi-Square for variables at nominal level and Pearson Product Moment Correlation (PPMC) was used for those at the interval level – Multiple Regression Analysis was used to determine the contribution of each of the independent variables in explaining the variance in the dependent variable such that:

$$Y = = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + b_{10}X_{10} + b_{11}X_{11}$$

Where:

Y = Constraint to feedback provision
X_1 = Benefit of feedback provision to farmers
X_2 = Type of feedback provision
X_3 = Number of farm locations
X_4 = Farm Size
X_5 = Forestry Technology Use
X_6 = Method of feedback provision

X_7 = Age of farmers
X_8 = Educational level of farmers
X_9 = Farming experience of farmers
X_{10} = Farmers' length of stay in the study area
X_{11} = Contact of farmers with extension agents
Other functional forms of the regression model were also applied to select the best that fits the regression line (Linear, Double-log, Semi-log and Exponential).

RESULTS AND DISCUSSION

Table 1 shows the findings on the demographic characteristics of farmers. Majority of farmers were males (52.1 percent). This suggests that farming is still dominated by males and not withstanding the description of the decade as the age of women farming renaissance (Egunjobi, 1991). It also supports the findings of Ipaye (1995) and Olukanmi (1995) that farming is still regarded as a male occupation. About 50.8 percent were between 41 and 60 years; an indication that the ascertion of Ekong, (1998) that farming has become an occupation of the aged is true.

About, 93.9 percent farmers were married and this is a reflection of the age category majority of them belong, the belief of the local people that married people are responsible and also for the fact that marriage provides additional farm labour for the farmers. Also, 47.9 percent of the farmers had between 7 children and above – indicating a large farm family. This may also affect their farm sizes as were recorded for large farm families by the World Bank (1988).

Christianity is the predominant religion in the study area. About 87.1 percent respondents were Christians while the only respondent (0.6 percent) who is a Muslim is a non-native. This may be due to the earliest intervention of missionaries in the area.

On farming experience, 51.8 percent of the respondents have been farming for 20 years and above which is closely followed by those with

10 – 20 years farming experience (30.4 percent). These long years of farming may be due to the fact that people in the study area start to take their children to farm as early as the age of five. Land source in the area is mainly by inheritance (87.9 percent). About 5.5 percent farmers farm on government land while purchase had the least response (1.2 percent). This may be due to the fact that the land tenure system is not fully in operation in the study area. Findings of the study shows that 47 percent of the respondents had formal education, which is an indication that education is no barrier to farming in the study area. However, 53 percent had non-formal education.

Table 1: Demographic characteristics of farmers

Variables		Frequency	Percentage
1. GENDER			
	Male	85	52.1
	Female	76	46.6
	No Response	2	1.2
2. AGE			
	Less than 30	23	25.1
	31 - 40	39	23.8
	41 - 50	52	31.9
	51 - 60	31	18.9
	Above 60	16	9.7
	No Response	2	1.2
3. MARITAL STATUS			
	Married	153	93.9
	Single	10	6.1
4. NUMBER OF WIVES			
	1	104	63.8
	2	9	5.5
	3	1	0.6
	4	1	0.6
	None	48	29.4

5. NUMBER OF CHILDREN		
1 – 3	41	25.2
4 – 6	34	20.9
7 and above	78	47.9
None	10	06.1
6. FARMING EXPERIENCE (YEARS)		
Less than 10	29	17.8
10 - 20	53	30.4
Above 20	81	51.8
7. LAND SOURCE		
Inheritance	142	87.1
Rent	8	4.9
Purchase	2	1.2
Government	9	5.5
No response	2	1.2
8. LEVEL OF EDUCATION		
Non formal	87	53
Formal	76	47

From the findings in figure 4.2, 61.5 percent respondents have their farms in less than five locations while only 6.7 percent farmers indicated that their farms are located in more than then places. This may be as a result of the fact that some areas are government reserves and a farmer is entitled to a certain measure and this makes them to look for other available location to farm.

Table 2 shows respondents' use of some forestry-related technologies and the frequency of their use. About 49.1 percent farmers engage in woody perennials for shelter. Out of these, 46 percent use it regularly. This may be for the fact that people in the study area like to plant trees round their houses to shade the house from the sun and of the 66.5 percent farmers that plant trees as windbreaks, 63.8 percent do it regularly. This is because they believe that if they plant trees as windbreaks both around their farms and houses, it will prevent destruction by wind.

Fuel wood production is common among farmers in the study area. About 96.9 percent farmers use this technology and 96.3 percent of them use it regularly. This probably may be due to the fact it is a village setting where majority use firewood for cooking and some even transport them to urban centres to sell. The higher percentage of the farmers not practising erosion control may (63.8 percent) be as a result of the fact that farmers at Onne and Sakpoba claimed that they do not have erosion problems but the 36.2 percent farmers who practise it, do so regularly.

Moreover, 92.0 percent farmers engage in live fencing and only 87.1 percent farmers use it regularly. This may be as a result of the fact that people from the Eastern part of the country believe in planting living trees around their houses and farms to ward off both intruders and animals. Of the 82.8 percent farmers who use borderline planting, about 81. 0 percent farmers use the technology regularly. This may not be unconnected with the fact that people in the study area do not believe so much in wall fences and so both at home and on the farm they use trees to demarcate their lands to prevent encroachment.

In contrast, roadside planting is not common in the study area. The 23.3 percent farmers who responded positively to it are civil servants working in Forestry establishments and only 17.8 percent of them use it regularly while the remaining 5.5 percent farmers engage in it occasionally during street beautification exercises. Of the 61.3 percent farmers who engage in taungya, 60.1 percent use it regularly while the remaining 1.3 percent farmers only use it occasionally. This may be as a result of the fact that farmers in the study area are given portions of land in the government reserves to plant their food crops alongside government tree seedlings till those trees become fully grown when farmers will be expected to leave the land. Also this is a confirmation of the earlier work of Technology Centre for Agricultural and Rural Cooperation (CTA) (1990) that agro-forestry technology is needed in

the country if sustaining food production is to be ensured and if indigenous agricultural system is to be enhanced and promoted.

Table 3: Respondents' Technology Use and their Frequency of Use

	Technology use		Frequency of use		
	Yes	No	Regularly	Occasionally	Not At All
TECHNOLOGY	F (P)	F (P)	F (P)	F (P)	F (P)
Woody Perennials	80(49.1)	83(50.9)	75(46.0)	5(3.1)	83(50.9)
. Windbreaks	108(66.5)	55(33.8)	104(63.8)	4(2.5)	55(33.8)
Fruit trees Raising	141(86.5)	22(13.5)	79(48.5)	62(38.0)	22(13.5)
. Fuel wood Production	158(96.9)	5(3.1)	157(96.3)	1(0.6)	5(3.1)
. Live Fencing	150(92.0)	13(8.0)	142(87.1)	8(4.9)	13(8.0)
. Roadside Planting	38(23.3)	125(76.7)	29(17.8)	9(5.5)	126(76.7)
. Taungya	100(61.3)	63(38.7)	98(60.1)	2(1.2)	63(39.0)

SOURCE: Field Survey, 2000.

As indicated in Table 3, 13.5 percent farmers gave feedback on alley farming to both researchers and extension agents and only 11.0 percent of these give feedback regularly while the remaining 2.5 percent of these give feedback occasion ally. This may be as a result of the fact that only very few farmers adopt alley farming technology. About 15.6 percent give feedback on woody perennials to both extension agents and researchers. Out of these, 1.2 percent give feedback regularly while the remaining 14.1 percent only give feedback occasionally. This may be due partly to the fact that farmers in the

area do not adopt the technology or for the fact that extension agents and researchers are not readily available.

Among the 11.0 percent farmers who give feedback on windbreaks, 10.4 percent farmers give feedback to extension agents and the remaining 0.6 percent farmers only give feedback to researchers. However, all of them give feedback on a regular basis.

Only 5.0 percent farmers give feedback to both researchers and extension agents on fruit trees raising. Of these, 2.5 percent farmers each give feedback on a regular and occasional basis. This may be as a result of the introduction of improved varieties. The 8.0 percent farmers who gave feedback on erosion control did so to both researchers and extension agents occasionally because farmers in the study area claimed they do not have erosion problem and as such do not use the innovation.

From table 4, though about 44.2 percent farmers indicated that illiteracy affect feedback, 33.1 percent farmers are of the opinion that illiteracy do not affect feedback. In fact, some were of the opinion that if feedback must be given by correspondence, illiterate farmers can get people to write for them or if it is direct contact, they can get interpreters to help pass their views to the extension agent or researcher who is around.

Majority of the farmers (54.3 percent) responded that unstable government policy can greatly affect feedback as different governments have their own systems - where some do not mind hearing people's opinions, others do not want people to talk at all. So, farmers either as a result of fear or frustration, decide to keep to themselves. This is in line with Frank et al. (1992) who claimed that though farmers may accept an innovation, their power to respond effectively (feedback) and use such technologies could be affected by political instability in many countries.

Also, majority of the farmers (61.3 percent) agreed that busy schedule and low ratio of extension agent greatly hinder feedback provision. This is in line with the report of Idachaba (1981), which

indicated very low ratio of extension agents to farmers and that of Undiandeye (1988) who reported a ratio of 1:1,100 in Oyo State Agricultural Development Project. Also, 51.5 percent farmers responded that busy schedule of researchers will greatly affect feedback while farmers held contrary opinions about poor infrastructure and subsistence level of farming. About 49.1 percent and 68.1 percent farmers respectively were of the opinion that these two variables should not affect feedback at all in that where there are no infrastructure, farmers can wait till they see the extension agent in person and also, 'what is good for the geese is good for the gander' – a farmer must put in as much effort into his subsistence farm as he puts into commercial farm. This negates the assertion of Cook (1992) that subsistence farmers typically are faced with multiple problems and difficulties such as health, poverty, and transportation, among other obstacles which affect their giving feedback after an innovation has been passed to them.

Table 4: Farmers' constraints to feedback provision

	Greatly	Very Little	Not At All
Constraints to feedback	***f (%)***	***f (%)***	***f (%)***
Illiteracy	72(44.2)	37(22.7)	54(33.1)
Unstable Government Policy	87(53.4)	6(3.7)	70(42.9)
Busy Schedule of Extension Agents	100(61.3)	2(1.2)	61(37.4)
Busy Schedule of researchers	84(51.5)	8(4.9)	71(43.6)
Low Ratio of Extension Agents to farmers	98(60.1)	2(1.2)	63(38.7)
Poor Infrastructure	77(47.2)	6(3.7)	80(49.1)
Subsistence level of farming	45(27.6)	7(4.3)	111(68.1)

SOURCE: Field Survey, 2000

HYPOTHESES TESTING

Ho. There is no significant relationship between farmers' demographic characteristics and constraint to feedback provision.

Table 5 shows the relationship between farmers' demographic characteristics and constraint to feedback provision.. Of all the eight characteristics, only three (number of wives, location of farm land secondary occupation) were not significantly related to constraint to feedback provision. (X^2=2.13, P>0.05, X^2 = 9.01, P>0.05 and X^2 = 9.81, P>0.05 respectively). This means that other reasons than the above three characteristics will act as barriers to feedback provision. The non-significance of number of wives may be explained by the fact that wives do not have anything to do with feedback provision as decisions are taken by the husbands. Likewise a farmers' secondary occupation may not hinder feedback provision as it may not be related to farming.

The significant relationship between age and constraint to feedback provision may be for the fact that in the study area, only elders are allowed, by tradition, to talk to strangers- this is evident during the field survey when a man of about 40 years said that he was forbidden to talk to the researcher because his father was in attendance. It also agrees with the submission of Polson and Spencer (1991) that elderly farmers are more likely to be popular within their areas and thus can talk back to extension agents than the younger and less popular ones.

Gender and marital status are also significantly related to constraint to feedback provision which suggests the fact that women are not allowed to talk (especially to stranger) when men are around and also the fact that since men are the head of the home, they are the only ones free to talk about anything happening either at home or on the farm even when women have something to say in terms of feedback, they relay it to their husbands who then decide whether to pass the message or not. This is in support of Olawoye (2000) that,

whether at home or away, men carry the sole authority in the home- this is a socio-cultural belief.

Frequency of contact with extension is significant in its relationship. This may be explained by the fact that if farmers do not have contact with extension agents, they may not have anything to give as feedback.

Table 5 Chi –square analysis of constraints to feedback provision and demographic characteristics

Variables	X^2	df	P	Phi
Gender	12.42	5	0.03*	0.28
Age	6.22	2	0.04*	0.19
Marital Status	113.94	14	0.000*	0.84
Number of Wives	2.13	2	0.348**	0.11
Education	33.94	3	0.00*	0.46

*** Significant at 0.05; ** Not Significant at 0.05**

Table 6 shows the result of regression analysis based on the constraint to feedback provision and some independent variables. Four functional forms were used and equations are shown below:

i. Linear equation: $Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + b_{10}X_{10} + b_{11}X_{11} + U$

ii. Semi-log: $LnY = b_0 + b1lnX1 + b2lnX2 + b_3lnX_3 + b_4lnX_4 + b_5lnX_5 + b_6lnX_6 + b_7lnX_7 + b_8lnX_8 + b_9lnX_9 + b_{10}lnX_{10} + b_{11}lnx_{11} + U$

iii. Exponential: $lnY = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + b_{10}X_{10} + b_{11}x_{11} + U$

iv. Double log: $lnY = b_0 + b_1lnX_1 + b_2lnX_2 + b_3lnX_3 + b_4lnX_4 + b_5lnX_5 + b_6lnX_6 + b_7lnX_7 + b_8lnX_8 + b_9lnX_9 + b_{10}lnX_{10} + b_{11}lnx_{11} + U$

Y = Constraint to feedback provision

X_1 = Benefit of feedback to farmers

X_2 = Type of feedback

X_3 = Number of locations
X_4 = Farm size
X_5 = Forestry Technology use
X_6 = Method of feedback
X_7 = Age of farmers
X_8 = Education level
X_9 = Farming experience
X_{10} = Length of stay in the study area
X_{11} = Contact with extension
U = Unexplainable variables.

The following criteria were used to select the lead equation: Relative magnitude of R^2, Satisfaction of the apriori expectation, Statistical significance of regression coefficients (Olayemi, 1988).

Based on these criteria, the Double-log function was taken as the lead equation. The R^2 value of 0.67 is an indication that 67 percent of constraints to feedback provision were explained by the independent variables and the multiple R of 0.82 shows a very strong correlation between the independent and dependent variables. Only farm size (t-value = -3.31, $p<0.05$) education (t – value = -2.71, $p<0.05$) and contract with extension agent (t- value =3.84, $p<0.05$) has significant relationship with constraint to feedback provision. The inverse relationship of education and size with constraint to feedback provision indicate that as farmers get more enlightened about the importance of feedback provision and also, can increase their farms – may be when they have access to farm inputs or are exposed to modern farming methods, constraint to feedback provision will go down. At the same time, when farmers have contact with extension agents, the constraint to feedback provision will be removed.

Table 6: Regression analysis of some independent variables on constraints to feedback provision

Functional forms	Intercept	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}
Linear	4.54 (1.99*)	0.55 (5.44)	-0.61 (-4.21)	-0.09 (-1.66)	-0.03 (-1.28)	-0.01 (-0.72)	-0.04 (-0.22)	0.02 (1.01)	-0.98 (-4.17)	-0.02 (-1.19)	0.01 (0.88)	0.85 (1.77
Semilog	1.16 (5.83)	0.07 (7.50)	-0.06 (-5.07)	-0.01 -1.28)	-0.002 (-1.21)	-0.951 (-0.05)	1.03 (0.001)	0.003 (1.46)	-0.007 (-3.64*)	-0.001 (-0.66)	0.0003 (0.20)	0.12 (2.88
Exponential	0.30 (0.11)	5.54 (5.39)	-2.08 (-5.54)	-0.65 (-1.97*)	-0.87 (-3.44*)	-1.10 (-1.76)	-0.09 (-0.09)	0.91 (1.55)	-1.61 (-2.86*)	-0.14 (-0.39)	0.30 (1.04)	2.47 (3.08
Double Log	0.33 (1.55)	0.77 (9.40)	-0.21 (-5.64)	-0.05 (-1.74)	-0.07 (-3.31*)	-0.05 (-0.98)	0.002 (0.05)	0.08 (1.76)	-0.12 (-2.71*)	0.003 (0.10)	0.01 (0.31)	0.25 (3.84

*Significant at 0.05
*t-values in parentheses
SOURCE: Field Survey, 2000.

CONCLUSIONS

The study shows that farmers' educational attainment did not affect their use of forestry – related technologies. Also, limited forestry – related technologies are known in the area even through they are in a forestry zone and lastly, constraint to feedback provision could be reduced if extension agents visits to the area are more regular.

The study recommends that

- Greater attention should be given to collecting, synthesizing and packaging feedback from farmers, so that it can be useful for supporting research planning and decision-making process.
- Feedback from farmers should not be intermittent and uncoordinated so that it can be suitable for sound decision making on research priorities.

- The gap between extension agents and farmers must be bridged through the introduction of feedback into the communication cycle between research, extension and farmers.
- There should be an organised effort to obtain feedback from farmers as the dissemination of innovations are organised.

REFERENCES

Adu, M.O. (1992): The Role of Agroforestry in Agricultural Development. Unpublished M.Sc. Project in the Department of Forestry Protection and Environmental Management, University of Ibadan, Ibadan.

Ashby, J. (1990): Small-farmer participation in the Design Technologies. In: Altieri, M and Hecht, S (eds), Agroecology and Small Farm Development. Boca Raton: CRC Press.

Bebbington, A.J. (1991): Farmers Organisations in Ecuador: Conditions to farmers first Research and Development. Gatekeeper Series, No. 26, London: International Institute of Environment and Development.

Biggs, S. and J. Farrington, J. (1990): 'Farming system Research and the rural poor: The Historical, Institutional and Political Context'. Paper Prepared for the 10th Annual Association for FSR-Extension Symposium, Michigan State University Oct. 14-17.

Borlaug, N. (1990): 'Conquest of Hunger in Africa'. Special Lecture, IITA, 7th June.

CBN (1990): Statistical Bulletin. Vol. No. 1 and 2 pp. 16-17.

CIAT (1992): Annual Report of Cassava Improvement programme: Califonia, Colombia.

Collion, M.H. (1992): "Research Institute and Farmers Organisations: A Partnership and Alternative Funding Mechanism for the Future". A Project Proposal. The Hague, ISNAR, Mimeo.

Coughenour, E. (1995): Recent Changes in Villages and Rainfed Agriculture in Northern Central Cordofan: Communication Process and Constraints. Report No. 4, University of Kentucky.

Ekong E.E. (1998): Rural Sociology. Jumak Publishers

Erinle, E. (1993): "The need for effective Agricultural Research Programme Development". In: Towards Strengthening the Nigerian Agricultural Research. Shuaib, B. Adedipe, N.O. Odegbaro, O.A. and Aliyu, A (eds) NARP Publication, University of Ibadan Press, pp 129-152.

FAO (1993): Seminar on 'Shifting Cultivation and Soil Conservation'. Ibadan, July 1993.

Farrington, J. and A. Bebbington (1993): Reluctant Partners? NGO's and State in Sustainable Agricultural Development, London: Routledge.

FMNAR (1997): Nigeria National Agricultural Research Strategy Plan: 1996-2010. Shuaib, B. Aliyu, A. and Bakshi, J.S (eds) Intec Printers, Ibadan.

Hann N.D. (1993): Victims of the Green Revolution. Ceres 140 Vol. 25.

Haugerud, A and Collinson, M. (1990): Plants, Genes and People: Improving the Relevance of Plant Breeding in Africa, Experimental Agriculture, No. 26, pp. 341-362.

Heinemann, E. and Biggs, S: 'Farming Systems Research; An Evolutionary Approach to Implementation'. Journal of Agricultural Economics, Vol. 366.

Jordan, C.F. (1992). Taungya: Forest Plantations with Agriculture in Southeast Asia. CAB International, Walling Ford.

Ipaye, G.A: (1995): Analysis of Role Performance of Contact Farmers in Training and Visit Extension System of Lagos State Agricultural Development Programme (ADP). An Unpublished Ph.D Thesis in the Department of Agricultural Extension Service, University of Ibadan, Ibadan.

Leonard, D. (1990): "The Political Economy of development and Transfer of Agricultural Technologies". In: Making the Link: Agriculture Research Technology Transfer in Developing Counties, Kaimowitz (ed.), Boulder Company, Westview Press. 40pp 63-64.

McCay, B. and M.A. James (ed) (1990): The question of the commons, Tuescon Arizona: The University of Arizona Press.

Merill-Sands, D, Biggs, S., Bingen R.J., Ewell, P., Mc Allister., I. And Pouts S. (1991). Institutional consideration in Strengthening On-Farm Client. Oriental Research in National Agricultural Research System: Lessons from a Nine-Country Study, Experimental Agriculture, Vol. 27: 343-373.

Michael, B. (1994): Production and Consumption by Gender and Role Among Transhumans in Western Sudan. The Baggara of Kordofan. Preliminary Report, WSARP.

Napier, T.L (ed) (1990): Implementing the conservation Title of Food Security Act of 1985. Ankeny, Iowa: Soil and Water Conservation Society Press.

Napier, T.L. (1991a): 'Factors Affecting Technology Transfer in Developing Countries'. In: Extension Strategy for Rainfed Agriculture. C Prasad and P Das (eds).' New Delhi, India: Indian Society of Extension Education pp. 64-75.

Ndaghu, A.A. (2000): Poverty Alleviating Strategies of Farm Farmilies: A case study of Michika Local Government Area of Adamawa State. An M.Sc Seminar Paper Presented to the Department of Agricultural Extension and Rural Development, University of Ibadan pp. 2-4.

NPC (1992): 'National Population Census Report.

Nuru, S. (1993): Current Agriculture Research Activities and Research Caps in Nigeria. Proceedings of National Agriculture Research System (NARS) Project on National Agriculture Strategy Plan for Nigeria, Oct. 11-16.

Oppong, S., K. Twum-Ampofo and S. Quashie-Sam

(1998): Fuelwood Production in Rural Ghana. Paper Presented at the Workshop on Renewable Energy System Development and Application by GRATIS/UNIFEM, 17-20th November, Kumasi, Ghana.

Pearce, D., E. Barbier and A. Markandya (1990): Sustainable Development: Economics and Environment in the Third World. Hants, England, Edward Elgiar Publishing Limited.

Popoola, L. (1998): An Evaluation of the Ogun State Afforestation Programme. Report Submitted to FORMECU. July, (1998).

Quashie-Sam, S.J. and S.K. Oppong (1999): Wood Production in Agroforestry. Paper Presented at Hulwa Training of Trainers Course.

Rattan, L. (1990): Soil Erosion in the Tropics: Principles and Management. New York: McGraw-hill Inc.

Rogers, E.M. (1983): Communication Strategies for Family Planning. The Free Press, New York.

Rogers, E.M. and D.L. Kincaid (19991)Communication Networks towards a New Paradigm in Community Research. The Free Press, New York.

Rogers, E.M. (1993): Diffusion of Innovation. New York: The Free Press.

Roling, N. (1990): 'The Agricultural Research technology Transfer Interface: A knowledge system Perspective'. In: Making the Link: Agricultural Research and technology transfer in Developing Countries. D. Kaimovuitz (ed) Boulder, Co: Westview Press.

Roling, N. and Fernandez, M. (1990): Farmers Technology. Criteria and Institutional Assumptions: Exploring Mis-Anticipation for Points of Leverage. Paper Presented at the 10th Annual Association for Farming System Research and Extension Symposium, Michigan State University, East Lansing, M1, Oct. 14-17.

Roling, N. (1991): Why Farmers Matter: The Role of

User Participation in Technology Development and Delivery. Paper Presented at the International Workshop "Making the Link Between Agricultural Research and Technology Users". International Service for National Agricultural Research. The Hague, Netherlands, Nov. 20-25.

Sabah, A. (1995): "The Sedentary Production System". Interview with Western Sudan Agricultural Research Project Rural Sociologist. In: Western Sudan Agricultural Research Project Publication. No. 38 pp. 161 – 175. Pullman, Washington 25th June.

Sims, H. and D. Leonard (1990): 'The Political Economy of the development and Transfer of Agricultural Technologies'. In: Making the Link: Agricultural Research Technology Transfer in Developing Countries. D. Kaimowitz (ed), Browlder, Co: Westview Press, pp. 63-64.

Spencer, D.S.C. (1991): Agricultural Research: Lesson of the past strategies for the future. In: Strategies for African Development, eds R.J. Berg and J.S. Whitaker, Los Angeles: University of California Press.

Swanson, L., S. Gamboni and T. Napier (1996): 'Barriers to the Adoption of Soil Conservation Practices on Farm'. In: Conserving Soil: Insights from Socio-Economic Research. Stephen B Lovejoy and Ted L. Napier (eds). Ankeny, Iowa: Soil and Water Conservation Society Press. Pp. 108-120.

Tripp, R. (1991): The Limitation of On-Farm Research. In: Planted Change in Farming System: Progress in On-Farm Research, Chichester, U.K; John Wiley and Sons. A Co-publication with Sayce Publishing, Exeter, U.K.

World Bank (1992): Aid Experience in Agricultural Research. A Review of Project Evaluation. Evaluation Discussion Paper, No. 13.

Venkatesan V., and L. Schwartz (1992): 'Agricultural Sciences Initiative'. Agricultural and Rural Development Series. No. 4, The World Bank 11 op.

Wellard, K., J. Farrington, P., Davies (1990): 'The State Voluntary Agencies, and Agricultural Technologies in Marginal Area'. Agricultural Administration Network Paper, No. 15, London Overseas Development Institute.

York, E. (1991): 'Guidelines for International Extension' International Task Force of the Cooperative Extension Service. USDA, Washington D.C.