Assessment of Farmers' Perception on Small Plot Adoption Technique as a Means Of Sustainable Technology Transfer in Ikpoba-Okha Local Government Area, Edo State, Nigeria

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Abstract: The study accessed the farmers' perception of small plot adoption technique (SPAT) as a means of sustainable technology transfer in Ikopba-okha Local Government area of Edo-State. With the use of structured questionnaire, a simple random sampling technique was used to select 90 respondents interviewed for the study. Majority of the respondents were males (58.9%), 40 years old and above (62.20%) while 74.4% of the respondents were married, and majority (69.0%) had primary and secondary education.

Most of the respondents (84.4%) have between 1-4-hectares of land and were engaged in planting of arable crops (68.9%) as the major agricultural activity. Finding from the study showed that majority of respondents received information on SPAT through the extension agents ($\bar{X}$ = 2.24). SPAT was perceived to be very effective in impacting new farming technique to the farmers ($\bar{X}$ = 4.29). Findings also revealed that farmers' benefits from SPAT were increased yields ($\bar{X}$ = 4.34) and increased awareness of improved varieties ($\bar{X}$ = 4.24). The major respondents' constraints of SPAT were inadequate land ($\bar{X}$ =3.64) inadequate information ($\bar{X}$ = 2.76) and inadequate supervision ($\bar{X}$ = 2.69). Respondents' marital status (x^2= 10.075; P <0.05) and farming practice (x^2 = 7.53: P<0.05) had significant association with their perception of SPAT. The need for adequate information and supervision of SPAT by extension agents to farmers was recommended.

Keywords: Farmers' perception, Small plot adoption, Sustainable Technology Transfer

INTRODUCTION

The identification, development, adaptation, verification and farmers adoption of new agricultural technologies has become an important part of economic development strategies in many countries. The major aim of applied research as regards to agriculture is to increase food production and improve the standard of living of farmers. To achieve this, the generated technologies must be available to and adopted by the end-users [10].

Achieving an acceptable level of available technology adoption at the farm level is a function of science, economics and human behavior [7]. This is

because the adoption process involves an interrelated series of personal, cultural, social and situational factors. It also involves the characteristics of the technology such as simplicity, visibility of results, usefulness towards meeting the needs and low capital investment [7].

Non-adoption of technology may be due to poor research and extension linkage [14]. The weakness in the links between institutional responsible for agricultural research and those concerned with transferring technology to farmers as a major obstacle to the development and application of beneficial new technologies in developing countries. According to [4], technology transfer is the impacting of knowledge, skills and methodologies involved in the whole production cycle.

Several extension strategies have been tried as linkage between research and farmers in Nigeria [12]. Agricultural technology transfer is a process with multiple functions that include information, teaching technology supply and technology service [5].

One of the extension strategies used to improve technology transfer and food production in Nigeria was the introduction of the Small Plot Adoption Technique (SPAT). Small plot adoption technique was introduced by the Agricultural Developing Project (ADP) to demonstrate tested improved technology packages to farmers for their adoption. According to [13], SPAT is a bottom-up extension technique strategy. SPAT according to them is a small plot located at a section of the farmer's field and used to demonstrate the workability or applicability of improved technology under the supervision of extension worker. However, [3] ascertained that SPAT involves the practice of extension messages in a small plot of 5mx5m or 10mx10m on the farmers' farm. It is established on farmers' farm to convey a technical message of improved practices to him so as to improve his productivity. According to [8], SPAT is a training ground for farmers and is the last stage of testing any new technology for mass adoption. It is also a stage where farmers would either accept or reject a message depending on how easily the practice is fit into peasant framers practice, However, [11] ascertained that SPAT can carry more than one message at a time, it is small and risk bearing is minimal, it enables a large number of farmers to be reached with different messages.

To promote sustainable food production in developing countries, improved technologies are necessary [16]. SPAT is one of the ways to get these technologies to get to farmers. Therefore, after involving farmers for a period of time in SPAT, it is essential to find out the feelings of the farmers on the usefulness and its limitations. This will help the extension service to make adjustment where necessary and assist policy makers to make critical decisions on sustainability of the strategy and how to improve on it. It is on this basis that the study aimed to assess the perception of farmers on SPAT as a means of sustainable technology transfer.

OBJECTIVE OF THE STUDY

The general objective of the study is to access farmers' perception on small plot adoption technique as a means of sustainable technology transfer. Specifically, the study intended to: (a) examine the socio-economic characteristic of respondents (b) determine the respondents' sources of information on SPAT (c) determine respondents' general perception of SPAT. (d) ascertain respondents' benefits from SPAT (e) identify constraints encountered by respondents in SPAT management

HYPOTHESIS

Ho1: There is no significant relationship between the socio-economic characteristics of respondents and their perception of SPAT as a means of technology transfer.

METHODOLOGY

This study was carried out in Ikpoba-Okha Local Government Area of Edo-State. Edo State lies in the Southern part of Nigeria bounded by Kogi State in the North, Delta State in the South East and Ondo State in the South West. Edo State is in the rainforest zone with annual rainfall of 1,300mm – 2,300mm per annum and an average temperature ranges from a minimum of 24^0C to a maximum of 33^0C. The local Government Area is endowed with rich agricultural soil which made it strategic for agricultural activities. The food crops grown in this area including yam, maize, plantain, cassava and different kinds of vegetables, livestock production is also practices in the area. Agricultural general is the main occupation of the people in the area.

A simple random sampling was used to select 3 cells out of the 8 cells in the local government area. From each of the selected 3 cells, 30 farmers were randomly selected from the list of registered farmers with the Agricultural Development Programme (ADP). A total of 90 arable farmers were the respondents of the study.

Table 1: Socio-economic Characteristics of Respondents

Socio-Economic Characteristics	Frequency	Percentage
Gender		
Male	53	58.9
Female	37	41.1
Total	90	100.0
Age		
Below 20years	2	2.2
20-22 years	5	5.6
30-39 years	27	30.0
40 and above	56	62.2
Marital status		
Single	10	11.1
Married	67	74.4
Divorce	3	3.3
Widow	10	11.1
Farm size		
1-4 hectare	76	84.4
4-8 hectare	13	14.4
8 – 12 hectare	1	1.1
Farming practice		
Planting cash crops	17	18.9
Plating arable crops	62	68.9
Processing and marketing	6	6.7
No response	4	4.4
Other	1	1.1
Education qualification		
Primary	29	32.2
SSCE	34	37.8
OND	12	13.3
HND	6	6.7
BSC	4	4.4
Non – formal Education	1	1.1

Source: Field Survey 2008

Data for the study were collected using structured questionnaire. The questionnaire was made up 2 sections. Section A was structured to collect socio-economic related data while section B was structured to collect information on management of small plot adoption technique. The respondents were asked questions on their sources of information about SPAT, their perception about the strategy, the benefits they derived from it and constraints they encountered from SPAT. The data collected were analyzed using simple descriptive statistic such as frequency counts, percentages, mean and standard deviation while inferential statistics such as chi-square was used to test the hypothesis of the study.

RESULTS AND DISCUSSION

Socio-Economics Characteristics Of Respondents

Table 1 shows the socio-economic characteristic of the respondents. The table shows that 58.9% were males. The shows that more male farmers were involved in small plot adopted techniques (SPAT) in the study area. The finding is similar to the study of [15] who discovered that males were more involved in SPAT than females in Sudan. Table 1 also shows that majority of the respondents (62.2%) were above 40years old which agrees with that of [9] that discovered that majority of active farmers are in their 40s in Ethiopia. Table 1 also shows that the majority of respondents (74.4%) were married. Majority of the respondents (84.4%) had between 1 - 4 hectares .this implies that the area of study is made of small scale farmers. As shown in Table 1, majority of the respondents (69.0%) had primary and secondary education which implies that the extension agents will have to work closely with the farmers in the management of SPAT to be easily understood by the farmers.

Table 2: Respondents' Sources of Information on SPAT

Variables	Mean	Standard deviation
Extension Agents	2.54	0.584
Fellow farmers	2.32	0.537
Training ground	1.93	0.445
Radio	1.84	0.422
Television	1.64	0.506
Seminars	1.51	0.546
Newspaper	1.38	0.510
Internet	1.14	0.412

Table 3: Respondent's Perception on Small Plot Adoption Technique

Respondent's perception	Mean	Standard deviation
It is very effective in impacting new farming techniques to farmers	4. 29	0.768
It can improve access to extension agent and services	4.17	0.658
It can help farmers adopt improved varieties	4,16	0.539
It can help altar farming practice for better one	4.13	0.660
It is too expensive to carry out	2 .06	0.928
It is a wrong approach of technology transfer	1.71	0.797
It is a waste of time	1.70	0.785
It should be stopped	1.53	0.722

Likert scale: 5= Strongly Agree, 4 = Agree, 3 = Undecided, 2 = Disagree, and 1 = Strongly Disagree

Table 4: Respondents' perceived Benefits from SPAT as a Means of sustainable Technology Transfer.

Benefits	Means	Standard deviation
It has improved increased and increase my farm yield	4.34	0.737
It has increased my awareness of improved varieties	4.24	0.692
It makes farm work easy for me	4.24	0.659
It has increased my farmland	4.19	0.993
It has increased my interest to invest in farming	4.12	0.668
It now know the planting requirement of different crops	4.11	0.771
It improved my seed germination and substance	4.04	0.702

Likert scale: 5 = Strongly Agree, 4 = Agree, 3= Undecided, 2= Disagree and 1= Strongly disagree

Table 5: Respondents' Constraints with SPAT

Constraints	Mean	Standard deviation
Inadequate Land	3.64	1.135
Lack of Capital	2.88	1.207
Lack of adequate information	2.76	1.306
Inadequate supervision	2.69	1.286
Unfavorable weather	2.56	1.181
Inadequate improved Planting materials	2.36	1.074
Insufficient Water supply	2.20	1.051
Lack of direct contact with extension agent	2.02	1.180
Difficult to manage SPAT Plot	1.87	1.008

Likert Scale: 5 = Very Serious, 4=Serious, 3= Undecided, 2 = Not serious, 1= No Very Serious

Table 6: Relationship between Farmers' Socio-economic Characteristics and their Perception of SPAT

Variables	Chi-square value	DF	P-Level	Decision
Gender	0.004	1	0.950	Not significant
Age	4.119	3	0.249	Not significant
Marital status	10.075	3	0.018*	Significant
Farm size	1.218	2	0.544	Not significant
Farming practice	7.530	3	0.047*	Significant
Education qualification	7.790	5	0.168	Not significant

* = Significant at P <0.05

Respondents' Sources of Information on SPAT

Table 2 shows respondents' sources of information on SPAT. The result shows that majority of the respondents received information on SPAT through the extension agents ($\bar{X}$ = 2.54) while internet was the least source of information ($\bar{X}$ = 1.14). This finding is not unexpected as SPAT is a major activity of extension service to disseminate information to farmers. According to [6], the roles of extension agents include communication specialists, advocating, coordinating also serves as sources of information.

Respondents' Perception on Small Plot Adoption Technique as a Means of Sustainable Technology Transfer

Table 3 indicates the perception of the respondents on small plot adoption technique. The result shows that respondents perceived SPAT as very effective in impacting new farming techniques to the respondents ($\bar{X}$ = 4.29) and also improves access to extension service ($\bar{X}$ =4.17).This results are not unexpected because the farmers must have seen the effect of improved technology on their own farms in comparison with their own local technologies.

Respondents' Perceived Benefits from SPAT as a Means of Sustainable Technology Transfer

Table 4 shows respondents' perceived benefits from SPAT. The result reveals that the major perceived respondents' benefits of SPAT were that SPAT improved and increased their yields ($\bar{X}$ = 4.34), increased their awareness of improved varieties ($\bar{X}$ = 4.24) and made farm work easy ($\bar{X}$ = 4.24). This finding is similar to that of [1] who noted that increase in awareness of improved varieties lead to satisfactory performance and higher farmers' yields.

Respondents' Constraints with SPAT

Table 5 shows the constraints that respondents encountered with SPAT. The result reveals that the major respondents' constraints with SPAT were inadequate land ($\bar{X}$ = 3.64), lack of capital ($\bar{X}$ =2.88) and inadequate information ($\bar{X}$ =2.76), inadequate supervision ($\bar{X}$ = 2.69) and unfavourable weather ($\bar{X}$ =2.56). The findings on inadequate information and inadequate supervision agree with the findings of [2] who found that non- adoption of technology by farmers was as a result of lack of awareness and lack of follow-up by extension agents.

Relationship between Farmers Socio-economic Characteristics and their Perception of SPAT

Table 6 shows the result of the tested hypothesis that there is no significant relationship between the socio-

economic characteristics of respondents and their perception of SPAT. The result shows that respondents' marital status($X^2 = 10.075$: P <0.05) and farming practice ($X^2 = 7.530$: P<0.05) had significant association with their perception of SPAT. It is not surprising that farming practice had significant association with their perception of SPAT because the outcome of SPAT might have convinced the farmers to change their farming practices. It is however surprising that respondents' educational qualification ($X^2 = 7.790$, P<0.05) had no significant relationship with their perception of SPAT because it is expected that farmers with good education would have a positive perception of SPAT.

CONCLUSION

The study established that SPAT has been found to be useful way of sustainable technology transfer to farmers as they had witnessed the advantage of SPAT for adoption of improved technologies and for increased yields., The study also established the shortcomings of SPAT which were lack of provision of adequate information and supervision by extension agents to farmers when carrying out SPAT.

RECOMMENDATION

Based on the findings of the study the following recommendations are made: (a) SPAT should be more encouraged and made more popular by all extension services to stimulate adoption of improved technologies by farmers. (b) There is a need for adequate provision of information and supervision by extension agents during SPAT to enable farmers to witness the benefits of SPAT.

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