
**EXTENSION WORKERS PERCEIVED EFFECTIVENESS OF ENTREPRENEURIAL
EXTENSION STRATEGIES ON CROP PRODUCTION IN ABIA STATE, NIGERIA**

J.C. Iwuchukwu^{1*}, U. M. Nwokorie¹, A.E. Agwu¹ and C.E. Udoeye¹

¹Department of Agricultural Extension, University of Nigeria, Nsukka, Enugu State, Nigeria

ABSTRACT

The study ascertained extension workers perceived effectiveness of extension strategies on crop production in Abia state. One hundred and fourteen extension workers proportionately selected from the three agricultural zones in the state constituted the sample for the study. Questionnaire was used to extract the information needed from the respondents. Frequency, percentage, mean score and standard deviation were used to analyze the data. Results show that all (100%) of the extension workers were literate and mainly extension agents (65.6%). Greater proportion (64%) was females and their mean number of years in extension work was 14 years. Farm and home visits (92.1%), method demonstration (83.3%), general meetings (81.6%) and GSM/phones (78.9%) were some of the strategies used in entrepreneurial extension service delivery in the State. Farm and home visits were perceived to be effective in all pre-planting and post planting operations of crop production. It was recommended that government should provide facilities that will enhance the use of suitable entrepreneurial strategies for educating farmers and other clients while extension workers should educate farmers with entrepreneurial extension strategies on specific crop operations that they are effective so as to ensure success of extension activities/programmes and agricultural development.

Keywords: Extension Strategies, Effectiveness, crop production

1. INTRODUCTION

Agriculture possesses the potential for playing a leading role in helping to make Nigeria a self-reliant nation. Agriculture, for some time to come, will remain the main pillar of Nigeria's economy (Lawal, 2011). According to Atte (2012), Nigerian agriculture, to a large extent, still possesses the characteristics of the traditional system of agricultural production. Thus agricultural productivity increased by only 5.4% within the last three decades (Atte, 2012). As a result of this slow growth in output, Nigeria moved from a food sufficient country to a major importer of food (Orefi, 2012).

Federal government in an effort to resuscitate agriculture embarked on several agricultural development programmes such as National Accelerated Food Production Programme (NAFPP, 1972), Agricultural Development Programme (ADP, 1975), Operation Feed the Nation (OFN, 1976), Green Revolution (GR, 1980), National Fadama Development Project (NFDP, 1992), Agriculture Transformation Agenda (ATA, 2011) among others.

Specifically, Agricultural Development Programme (ADP) is the extension arm of Ministry of Agriculture and Natural Resources (Jibowo and Ajayi, 2005). According to Williams (2005),

extension is committed to transmit the result of research institutions to farmers. Effective communication between research organization, the extension agency and the farmer is required for extension to execute/achieve this mandate.

It is widely known and recognized that sustained high level of agricultural production and food self-sufficiency cannot be attained without effective extension services (Adedoyin, 2011). An effective agricultural extension service is seen as one of the major catalysts needed to bring about agricultural modernization (Asiabaka, 2002). Extension is concerned with three basic tasks; the dissemination of useful and practical information, the application of such knowledge to farm and home situations and helping people to use the information in order to help themselves (Arokoyo, 2006). To achieve these roles, extension agents employ the use of extension teaching strategies so that farmers can be developed educationally (Adedoyin, 2011). Extension teaching strategies can be referred to as effective combination of methods, messages, and approaches by which the objectives of agricultural extension can be achieved (Adedoyin, 2011).

Madukwe and Ozor (2004) classified extension teaching methods into individual methods (eg: farm and home visit, office call, telephone call, result demonstration), group methods (eg: method demonstration, field day, small plot adoption technique (SPAT)) and Mass media (eg: radio, television, leaflets etc.) Ritesh (2011) also classified extension teaching methods into written (eg: bulletins, news articles, magazines, leaflets), spoken (eg: general and special meetings, farm and home visits, radio, office calls, television) and visual or objective (eg: result demonstration, exhibits, posters, slides). Of all the teaching methods, the commonly used ones include radio, posters, farm and home visits, general and special meetings, group discussions and demonstrations (Nwankwo, 2012). Thus effective use of one or combination of extension strategies will consequently ensure effective agricultural extension services delivery as well as agricultural growth and development.

Unfortunately, it has been observed that extension agents put in efforts to teach farmers yet the response from the farmers may be said to be poor. Despite the several strategies used by extension workers in the dissemination of innovations, a lot of research results are still unknown to many Nigerian farmers. It is true that agricultural extension can be a veritable tool for mobilizing rural farmers and promoting sustainable agricultural and rural development (Omar, 2012). However, this cannot be achieved without efficient and effective extension strategies. There is therefore the need for well-articulated and comprehensive agricultural extension strategies and their effectiveness on specific agricultural operations so that these strategies can be deployed on those operations that they can stimulate and enhance learning as well as adoption of innovations associated with them. Hence the need to assess the effectiveness of strategies used in extension service delivery on crop production in Abia State Agricultural Development Programme. Specifically the study sought to describe the socio-economic characteristics of the respondents; identify strategies used in agricultural extension service delivery in the area and examine effectiveness of some selected extension strategies on crop production operations in the area.

2. METHODOLOGY

The study was carried out in Abia State which is among the five states in Southeastern Nigeria. Extension workers in Abia State Agricultural Development Programme (Abia ADP) constituted the population for the study. Abia State consists of three (3) agricultural zones, 38 blocks and 228 circles. The extension workforce of Abia State ADP is made up of 1 programme manager, 3 zonal managers, 3 zonal extension officers, 18 subject matter specialists, 36 block extension supervisors, 36 block extension agents and 137 extension agents. Proportionate sampling technique was used to select 50% of the extension workers in the three agricultural zones as follows:

Table 1: Sample Frame

Extension personnel	Zone A pop	Umuahia sample	Zone B pop	Aba sample	Zone C pop	Ohafia sample
SMS	6	3	6	3	6	3
BES	12	6	12	6	12	6
BEA	12	6	12	6	12	6
EA	48	24	57	29	32	16
TOTAL	78	39	87	44	62	31

Thus a total of 39, 44 and 31 respondents were selected from Umuahia, Aba and Ohafia zones respectively giving a total of 114 respondents for the study.

Instrument for data collection

Data for the study were obtained from primary sources. This was achieved through the use of questionnaire that was administered to the respondents. The questionnaire contained relevant questions based on each of the specific objectives of the study. Data were collected on age, sex, marital status, educational level, number of years spent in acquiring formal education, household size, job experience, present rank among others. Respondents were requested to indicate strategies/ methods/aids they use in agricultural extension service. They were further requested to rate the effectiveness of each of the selected extension strategies on specific crop production operations on a three-point Likert type scale of very effective (2), effective (1), not effective (0). The mean was 1 such that strategies/methods/aids with mean scores equal or greater than 1 were regarded as effective in the specific agricultural tasks while those less than 1 were regarded otherwise. Some of the strategies/ methods /aids examined were farmers group approach, farm and home visits, method and result demonstrations, radio etc. Data generated were presented in frequency, percentage, mean score and standard deviation.

3. RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

Age: Data in Table 2 show that greater proportion (64.8%) of the respondents were between 40-50 years while their mean age was 42.8 years. This shows that the respondents are in their middle age and are likely to be productive.

Sex: Table 2 shows that greater percentages (64%) of the respondents were female while the remaining 36% were male. This implies that more females were used in the study. It may also mean that extension workers in Abia State ADP are mainly women contrary to expectation. Thus, pointing at active role of women in extension work and agriculture.

Marital status and Household size: Majority (84.2%) of the respondents were married. Greater proportion (54.4%) of the respondents had household size of 6-10 members, while 43.8% had household size of 1-5 members. The mean household size of the respondents was 6 persons implying that the respondents had fairly large household size that can assist them in domestic and agricultural tasks.

Educational qualification: Data in Table 2 show that greater proportion (65.8%) of the respondents had first degree or its equivalent and on average spent 16.5 years in acquiring formal education. This gives credence to the educational level of the extension workers and their ability to read, write and discharge their extension work well. In line with the finding, Olatunji (2008) opined that in Nigeria, possession of Ordinary National Diploma (OND) and Higher National Diploma (HND) are stipulated as the minimum entry qualifications for Extension agents and Subject Matter Specialists respectively.

Length of service and present rank: Entries in Table 2 show that the majority (78.0%) of the respondents had worked for 12-21 years in Abia State ADP. Their mean length of service in ADP was 14 years indicating that the respondents were experienced in extension work. Table 2 also shows that 60.5% of the respondents were extension agents, 15.8% were Block Extension Supervisors, 15.8% were Block Extension Agents while 7.9% of the population were Subject Matter Specialists (SMSs). Field extension agents are usually more in every ADP outfit because they are mainly involved in disseminating information directly to the farmers which may be said to be the core function of ADP.

Table 2: Distribution of respondents according to their socio-economic characteristics (n=114)

<i>Variable</i>	<i>frequency</i>	<i>Percentage (%)</i>	<i>Mean (M)</i>
Age (years)			
29-39	30	26.3	42.8
40-50	74	64.8	
51-61	10	9	

Sex			
<i>Male</i>	41	36	
<i>Female</i>	73	64	
Marital status			
<i>Single</i>	10	8.8	
<i>Married</i>	96	84.2	
<i>Widowed</i>	8	7.0	
Household size			
1-5	50	43.8	6
6-10	62	54.4	
11-15	2	11.4	
Highest educational level			
OND/NCE	26	22.8	
HND/First degree	75	65.8	
MSc	13	11.4	
Number of years spent in formal education			
11-16	56	49.1	16.5
17-22	58	50.9	
Length of service (years)			

2-11	22	19.3	14
12-21	89	78.0	
22-31	3	2.7	
Present rank			
<i>Subject Matter Specialist</i>	9	7.9	
<i>Block Extension Supervisor</i>	18	15.8	
<i>Block Extension Agent</i>	18	15.8	
<i>Extension Agent</i>	69	60.5	

Source: Field survey, 2014

Strategies used in agricultural extension service delivery

Table 3 indicates that all (100%) of the respondents used training and visit strategy while 76.3% used farmers group approach in extension service delivery. This lends credence to Ogba and Idenyi (2014) who posited that the strategy employed in ADPs is Training and Visit (T&V) which involve monthly technical meetings among researchers, senior extension officers and subject matter specialists. According to Stevens and Terblanche (2004) farmer groups and associations are important for the development of agriculture and are capable of enhancing change at farm level through interactive approach.

Table 3 also reveals that 92.1% used farm and home visits, 88.6% used workshops/seminars/conferences, 83.3% used method demonstration, 81.6% used general meetings, 78.9% used GSM/phones, 71.9% used posters/bulletins, 66.7% used agricultural shows, 65% used result demonstration, 64.9% used exhibits/displays, 64.0% used newspaper and 50% used office calls as teaching methods in extension service delivery. This finding is in agreement with Oladosu (2006) that stated that farm and home visits (92.3%), demonstration (84.6%) posters (77%) and group discussions (69.2%) were effective methods used to reach farmers by extension workers.

Extension teaching aids used

Entries in Table 3 further show that 80.7% of the extension agents used live specimen while 74.6% used chalkboard in delivering extension work. Live specimen may have been mostly used because it facilitates adoption of innovations. Pictures, projectors, video tapes and audio cassettes were on minimal use. This may be due to lack of working tools/materials for extension work. Drama was indicated as not used which may be due to its time-consuming nature.

Table 3: Strategies used in extension service delivery in Abia state ADP (n=114)

Variables	Frequency	Percentage
<i>Training and visit system</i>	114	100
<i>Farmers group approach</i>	87	76.3
<i>Farmers field schools</i>	42	36.8
<i>Farm and home visit</i>	105	92.1
<i>Office calls</i>	57	50
<i>Result demonstration</i>	75	65.0
<i>Method demonstration</i>	95	83.3
<i>General meetings</i>	93	81.6
<i>Exhibits/display</i>	74	64.9
<i>Tours/field trip</i>	54	47.4
<i>Workshops/seminars/conferences</i>	101	88.6
<i>Radio</i>	53	46.5
<i>Newspaper, magazines/journals</i>	73	64.0
<i>Posters, folders, leaflets, pamphlets, bulletins</i>	82	71.9
<i>Films/video</i>	18	15.8
<i>Internet services</i>	37	32.5
<i>GSM/phones</i>	90	78.9
<i>Agricultural shows</i>	76	66.7
<i>Extension teaching aids</i>		
<i>Audio cassettes/CD</i>	14	12.3
<i>Projectors, slides</i>	36	31.6
<i>Pictures, charts, graphs</i>	48	42.1
<i>Drama</i>	0	0
<i>Live specimen</i>	92	80.7
<i>Models/objects</i>	34	29.8
<i>Chalkboards or blackboards or whiteboards</i>	85	74.6

Source: field survey, 2014.

Effectiveness of extension teaching methods on pre planting operations

Site selection

Data on Table 4 show that farm and home visits (M=1.36), farmers group approach (M=1.12), and general meeting (M=1.02) were perceived as effective strategies in educating farmers on how to select sites for crop production.

In line with the finding, Awunor(1995) reported that meeting, farm and home visits, workshop and radio were some of the effective communication methods through which farmers obtain information on agricultural production.

Land clearing

Entries in Table 4 show that farm and home visit (M=1.25),result demonstration (M=1.25), farmers field school (M=1.16), and method demonstration (M=1.14) were perceived as effectivein teaching farmers processes in land clearing. The emphasis on these methods lies on teaching and learning by doing which gives more positive results in terms of adoption of innovation disseminated by extension workers.

Ridge/mound making

Table 4 also indicates that method demonstration (M=1.36), farm and home visits (M=1.34), and result demonstration (M=1.12) were perceived as effective in teaching farmers how to make ridges/mounds. This may be because farmers tend to learn better and use improved agronomic practices faster when teaching is accompanied by practical examples and reinforcement through visits.

Holistically, findings indicate that farm and home visits which are interpersonal (face to face) methods were used in teaching technologies associated with pre-planting operations,

Table 4: Perceived effectiveness of extension teaching strategies on pre planting operations

<i>Extension strategies</i>	<i>Site selection</i>	<i>SD</i>	<i>Land clearing</i>	<i>SD</i>	<i>Ridge/mound making</i>	<i>SD</i>
<i>Farmers group approach</i>	1.12*	0.73	0.39	0.64	0.63	0.70
<i>Farmers field schools</i>	0.70	0.69	1.16*	0.72	0.78	0.72
<i>Farm and home visit</i>	1.36*	0.68	1.25*	0.45	1.34*	0.67
<i>Office calls</i>	0.50	0.70	0.62	0.80	0.26	0.65
<i>Result demonstration</i>	0.51	0.71	1.25*	0.51	1.12*	0.68
<i>Method demonstration</i>	0.80	0.81	1.14*	0.71	1.36*	0.71

<i>General meetings</i>	<i>1.02*</i>	<i>0.73</i>	<i>0.50</i>	<i>0.61</i>	<i>0.42</i>	<i>0.66</i>
<i>Exhibits/displays</i>	<i>0.76</i>	<i>0.77</i>	<i>0.62</i>	<i>0.71</i>	<i>0.78</i>	<i>0.76</i>
<i>Tours/field trips</i>	<i>0.95</i>	<i>0.79</i>	<i>0.63</i>	<i>0.70</i>	<i>0.69</i>	<i>0.82</i>
<i>Workshop/seminars/conferences</i>	<i>0.80</i>	<i>0.67</i>	<i>0.68</i>	<i>0.72</i>	<i>0.70</i>	<i>0.74</i>
<i>Radio</i>	<i>0.77</i>	<i>0.69</i>	<i>0.17</i>	<i>0.46</i>	<i>0.23</i>	<i>0.50</i>
<i>Newspaper, magazines</i>	<i>0.08</i>	<i>0.34</i>	<i>0.10</i>	<i>0.33</i>	<i>0.07</i>	<i>0.28</i>
<i>Posters,folders,pamphlets,bulletins</i>	<i>0.10</i>	<i>0.40</i>	<i>0.35</i>	<i>0.70</i>	<i>0.16</i>	<i>0.49</i>
<i>Films/video</i>	<i>0.04</i>	<i>0.27</i>	<i>0.04</i>	<i>0.27</i>	<i>0.07</i>	<i>0.35</i>
<i>Internet services</i>	<i>0.02</i>	<i>0.16</i>	<i>0.02</i>	<i>0.21</i>	<i>0.07</i>	<i>0.30</i>
<i>GSM/phones</i>	<i>0.23</i>	<i>0.59</i>	<i>0.64</i>	<i>0.78</i>	<i>0.29</i>	<i>0.57</i>

Source: field survey, 2014

**effective strategies*

Effectiveness of extension teaching methods on planting operations

Seed sowing

Entries in Table 5 show that method demonstration (M=1.52), result demonstration (M=1.39) and farm and home visits (M=1.36) were perceived as effective in teaching farmers how to sow seeds in the field. Seed sowing may be said to be an activity that requires interpersonal communication, demonstration and practice, hence the effectiveness of these strategies on transferring technologies or information related to them to farmers. Auta and Dafwang (2010) reported that Management Training Plots (MTPs) (that is, demonstration plots) is a methodology that is widely used for the promotion of crop production. The technologies which are usually a total package of improved agronomic/livestock production practices is taught to the farmer on his field.

Manuring

Table 5 shows that method demonstration (M=1.58), result demonstration (M=1.28), farm and home visit (M=1.26), workshop/seminar (M=1.09) and farmers group approach (M=1.08) were perceived as effective in teaching farmers how and when to apply manure to their crops. The aim of using these methods may be to show farmers how manure can be applied practically by

demonstrating the process of carrying out the activity. In corroboration, Muchai, Muna, Mugwe, Mugendi and Mairura (2014) revealed that group approach, individual contact method (farm & home visits), field days, lecture method (workshop/seminar) and demonstration were used by extension workers as methods of communicating soil management practices such as manure/fertilizer application, crop rotation etc. to farmers.

Weeding

Table 5 also shows that farm and home visits (M=1.47), method demonstration (M=1.29), result demonstration (M=1.15), farmers field school (M=1.07), tours/field trip (M=1.07), workshop/seminar (M=1.05) were perceived as effective in teaching farmers how to weed their farms. A study by Oguwuike(2010) confirmed that farm and home visits, method and result demonstrations, tours/field trips, group discussion, meetings, exhibits/displays were perceived by extension workers as effective strategies used in information dissemination.

Pest/disease control

Entries in Table 5 further show that method demonstration (M=1.58), result demonstration (M=1.41), farm and home visit (M=1.31), farmers field school (M=1.15) and workshop/seminar (M=1.11) were perceived as effective in educating farmers on pest/disease control. Management and control of pests and diseases in the farm is a sensitive and tactful work that needs prudence, skill and technique. Using these strategies that involves seeing, hearing, and doing in teaching farmers will make them understand and handle pest and disease problems in their farms since farmers perform best in crop/livestock production using information obtained through demonstrations, farm and home visits, workshops and group approach (Ifeaneme, 2005).

Staking

Data in Table 5 indicate that method demonstration (M=1.59), farm and home visits (M=1.28), farmers field school (M=1.23), result demonstration (M=1.21), farmers group approach (M=1.06) and agricultural shows (M=1.03) were perceived as effective in teaching farmers how to stake their crops. Demonstration plots are one of the best methods to improve yield (Ayesha, Pervaiz, Khan, Ahmad and Nigar, 2009). Similarly, farmers learn more by watching the extension agent perform the activity probably on demonstration plots and doing it themselves in their farms through the guidance, monitoring and reinforcement by extension agent.

Table 5: Perceived effectiveness of extension teaching methods in planting operations

Extension strategies	Seed sowing	SD	Manuring	SD	Weeding	SD	Pest/disease control	SD	Staking	SD
Farmers group	0.83	0.85	1.08*	0.75	0.86	0.87	0.84	0.83	1.06*	0.90
Farmers field school	0.64	0.78	0.92	0.73	1.07*	0.76	1.15*	0.74	1.23*	0.77
Farm and home visit	1.36*	0.64	1.26*	0.64	1.47*	0.55	1.31*	0.57	1.28*	0.57
Office calls	0.31	0.61	0.30	0.61	0.19	0.45	0.29	0.55	0.19	0.49

Result demonstration	1.39*	0.63	1.28*	0.62	1.15*	0.69	1.41*	0.64	1.21*	0.56
Method demonstration	1.52*	0.58	1.58*	0.59	1.29*	0.72	1.58*	0.57	1.59*	0.56
General meetings	0.41	0.67	0.50	0.68	0.55	0.73	0.91	0.64	0.50	0.62
Exhibits/displays	0.92	0.62	0.66	0.71	0.71	0.74	0.91	0.58	0.67	0.61
Tours/field trips	0.77	0.85	0.92	0.70	1.07*	0.80	0.92	0.61	0.80	0.51
Workshops	0.72	0.76	1.09*	0.69	1.05*	0.70	1.11*	0.59	0.69	0.65
Radio	0.27	0.55	0.65	0.68	0.35	0.53	0.60	0.63	0.22	0.49
Newspaper	0.14	0.44	0.18	0.51	0.07	0.33	0.47	0.69	0.47	0.53
Posters/bulletins	0.32	0.61	0.56	0.75	0.77	0.74	0.81	0.72	0.75	0.60
Films/video	0.09	0.37	0.41	0.71	0.17	0.45	0.23	0.50	0.19	0.57
Internet services	0.08	0.36	0.12	0.42	0.07	0.27	0.28	0.56	0.04	0.27
GSM/phones	0.41	0.70	0.57	0.74	0.48	0.66	0.57	0.66	0.56	0.61
Agric shows	0.64	0.74	0.77	0.72	0.71	0.70	0.90	0.67	1.03*	0.60

Source: field survey, 2014.

*effective strategies

Effectiveness of extension teaching methods on post planting operations

Harvesting

Data in Table 6 show that farm and home visits (M=1.71), method demonstration (M=1.70), agricultural shows (M=1.19), farmers field school (M=1.09), farmer group approach (M=1.08) and workshop/seminar (M=1.08) were effective strategies in teaching farmers practices and technologies associated with harvesting.

Processing

Entries in Table 6 also show that strategies effective in teaching processing techniques to farmers include method demonstration (M=1.66), farm and home visits (M=1.66), farmers group approach (M=1.50), farmers field school (M=1.42), result demonstration (M=1.21), exhibition/displays (M=1.07), workshops/seminar (M=1.03) and agricultural shows (M=1.03). This indicates that farmers learn mostly by watching the extension agent perform the activity and doing it themselves too while extension agents use demonstration as the most prominent means of disseminating agricultural innovation (Ogunsumi, Ewuola and Augustu, 2010).

Preservation/storage

Entries in Table 6 also show that in preservation/storage, method demonstration (M=1.78), farm and home visits (M=1.30), office calls (M=1.27), result demonstration

(M=1.25), exhibits/display (M=1.21), farmers group approach (M=1.15), agricultural shows (M=1.07), workshop/seminar (M=1.04) and farmers field school (M=1.03) were perceived as effective methods in teaching farmers how to store their crops in order to preserve or extend their shelf-life.

In general, farmers group approach, farmers field school, farm and home visits, method demonstration, workshop/seminar and agric show which are mainly group extension approach perceived to be effective in all the post-planting operations. Okorie (2003) noted that group extension method develop more positive influence on the rural farmers as well as enhancing useful information spread and practical knowledge. Also, skill is better acquired through group contact methods because they have the nature of practical demonstration (Okunade, 2007).

Table 6: Perceived effectiveness of extension strategies in post planting operations

<i>Extension strategies</i>	<i>Harvesting</i>	<i>SD</i>	<i>Processing</i>	<i>SD</i>	<i>Preservation/ Storage</i>	<i>SD</i>
<i>Framers group approach</i>	<i>1.08*</i>	<i>0.58</i>	<i>1.50*</i>	<i>0.73</i>	<i>1.15*</i>	<i>0.53</i>
<i>Farmers field schools</i>	<i>1.09*</i>	<i>0.65</i>	<i>1.42*</i>	<i>0.80</i>	<i>1.03*</i>	<i>0.60</i>
<i>Farm and home visits</i>	<i>1.71*</i>	<i>0.43</i>	<i>1.66*</i>	<i>0.57</i>	<i>1.30*</i>	<i>0.50</i>
<i>Office calls</i>	<i>0.34</i>	<i>0.62</i>	<i>0.44</i>	<i>0.65</i>	<i>1.27*</i>	<i>0.50</i>
<i>Result demonstration</i>	<i>0.94</i>	<i>0.92</i>	<i>1.21*</i>	<i>0.60</i>	<i>1.25*</i>	<i>0.49</i>
<i>Method demonstration</i>	<i>1.70*</i>	<i>0.47</i>	<i>1.66*</i>	<i>0.60</i>	<i>1.78*</i>	<i>0.41</i>
<i>General meetings</i>	<i>0.54</i>	<i>0.70</i>	<i>0.43</i>	<i>0.66</i>	<i>0.53</i>	<i>0.68</i>
<i>Exhibits/displays</i>	<i>0.73</i>	<i>0.84</i>	<i>1.07*</i>	<i>0.57</i>	<i>1.21*</i>	<i>0.51</i>
<i>Tours/field trips</i>	<i>0.68</i>	<i>0.87</i>	<i>0.46</i>	<i>0.75</i>	<i>0.64</i>	<i>0.85</i>
<i>Workshop/seminar</i>	<i>1.08*</i>	<i>0.58</i>	<i>1.03*</i>	<i>0.56</i>	<i>1.04*</i>	<i>0.57</i>
<i>Radio</i>	<i>0.89</i>	<i>0.46</i>	<i>0.81</i>	<i>0.50</i>	<i>0.85</i>	<i>0.47</i>

<i>Newspaper</i>	0.33	0.55	0.34	0.56	0.26	0.44
<i>Posters/bulletins/pamphlets</i>	0.82	0.51	0.85	0.50	0.92	0.41
<i>Films/video</i>	0.72	0.56	0.78	0.53	0.80	0.51
<i>Internet</i>	0.32	0.54	0.21	0.48	0.26	0.44
<i>GSM/phones</i>	0.64	0.81	0.39	0.71	0.43	0.70
<i>Agric shows</i>	1.19*	0.62	1.03*	0.62	1.07*	0.65

Source: field survey, 2014 *effective strategies

4.CONCLUSION

Staff of Abia State ADP was mainly female extension agents who were married, literate, middle aged with moderate household size and long years of experience in extension work. Training and visit was extension strategy while live specimen was extension aid mostly used by these staff in teaching farmers. Farm and home visits which are interpersonal (face to face) methods were perceived to be effective in teaching technologies associated with pre-planting operations to farmers. Farm and home visits, method and result demonstrations were perceived to be effective in teaching farmers crop planting operations while farmers group approach, farmers field school, farm and home visits, method demonstration, workshop/seminar and agricultural show were perceived to be effective in post-planting operations.

5.RECOMMENDATIONS

Extension workers should be encouraged to use mass media facilities especially films/video, internet services and audio cassette in reaching and teaching farmers innovations especially in this era of high farmer extension ratio. The multiplier effect of these facilities will ensure wide coverage of farmers and reduce drudgery, time and cost of extension services.

Government should provide facilities that will enhance the use of suitable strategies for educating farmers and other clients while extension workers should educate farmers with extension strategies on specific crop operations that they are effective so as to ensure success of extension programmes that will culminate into agricultural development.

REFERENCES

Atte, O.A. (2012). An analysis of agricultural production in Nigeria. *African Journal of General Agriculture*, 2(1):20-22.

- Adedoyin, S.F. (2011). Communication and advocacy strategies in agricultural extension servicedelivery in Nigeria. *Publication of Agricultural Extension Society of Nigeria*, 15(2):7-90.
- Arokoyo, T. (2006, March). Promoting community-based participatory extension system: The National SpecialProgramme for Food Security (NSPFS) extension strategy. Paper presented at National Extension Review and Planning Meeting, NAERLS, ABU Zaria.
- Asiabaka, C. (2002). Promoting sustainable extension approaches: farmer field schools (FFS) and its role in sustainable agricultural development in Africa. Proceeding of the 18th annual conference of AIAEE, Awolowo University Ile-Ife. pp 13-20.
- Atte, O.A. (2012). An analysis of agricultural production in Nigeria. *African Journal of General Agriculture*, 2(1):20-22.
- Auta, S.J. and Dafwang, I.I. (2010). The agricultural development projects (ADPs) in Nigeria:status and policy implications. *Research Journal of Agriculture and BiologicalScience*, 6(2): 138-143.
- Awunor, L.Z (1995). Clientele perception of the effectiveness of selected communication methods in agricultural production in Aniocha North L.G.A of Delta State. A project submitted to the Department of Agricultural Extension, Faculty of Agriculture, University of Nigeria, Nsukka.
- Ayesha, K., Pervaiz, U, Khan,N., Ahmad, S and Nigar, S. (2009). Effectiveness of demonstration plots as extension method adopted by AKRSP for agricultural technology dissemination in District Chitral. *Sarhad J. Agric.* 25(2): 313-319.
- Ifeaneme R.C. (2005). Education and communication strategies used by extension workers in Idemili North LGA Anambra State. A project submitted to the Department of Agricultural Extension, Faculty of Agriculture, University of Nigeria, Nsukka.
- Jibowo, A.A and Ajayi, A.O. (2005).History of agricultural extension in Nigeria.In:Adedoyin, S.F(ed) *Agricultural Extension Society of Nigeria(AESON)*, 6(4):33-36.
- Lawal, H. (2011, September).Appraising Nigeria's agriculture since independence. *News Agency of Nigeria (NAN) Features*, 5(2) pp 3-5.
- Madukwe, M.C., and Ozor, N.E. (2004).Emerging approaches and strategies in the delivery of agricultural extension services to farmers. *Journal of Agricultural Management and Rural Development*, 1(3):50-63.
- Muchai, S.W.K., Muna, M.W.M., Mugwe, J.N., Mugendi, D.N., and Mairura, S.F (2014).Client-focused extension approach for disseminating soil fertility management in Central Kenya. *International Journal of Agricultural Extension* 02(02):129-136.

- Nwankwo, O.L. (2012). Systems description of adult education administration personnel: The extension agent. Department of Adult Education and Extra Mural Studies, University of Nigeria, Nsukka. Published by Society for Research and Academic Excellence.
- Ogba, E. and Idenyi, O. (2014). Improving rural farmers skills in agricultural production through extension services. *Global Journal of Bio-science and Biotechnology* 3(3): 336-340.
- Ogunsumi, L.O., Ewuola, S.O and Augustu, E.O (2010). Assessment of extension media use among youth farmers in Oyo and Ondo states Nigeria. *American Journal of Social and Management Sciences* 1(2):181-185.
- Oguwuike, W.T (2010). Communication strategies used by extension workers in disseminating agricultural innovations in Imo state. A project submitted to the Department of Agricultural Extension, Faculty of Agriculture, University of Nigeria, Nsukka.
- Okorie, S. (2003). Fitting agricultural education with adult education programme. *Educational Magazine* 4(10) pp 114.
- Okunade, E.O. (2007). Effectiveness of extension teaching methods in acquiring knowledge, skill and attitude by women farmers in Osun State. *Journal of Applied Sciences Research*, 3(4): 282-286.
- Oladosu, I.O (2006). Implications of farmers' attitude towards extension agents on future extension programme planning in Oyo state, Nigeria. *Journal of Social Sciences* 12(2): 115-118.
- Olatunji, S. O. (2008). Analysis of academic qualification of extension field staff and their training needs in Abia State Nigeria. *Journal of Agriculture and Social Research (JASR)* vol. 8, No. 2, 2008
- Omar, J. (2012). Study of the role of agricultural extension in the dissemination of sustainable agricultural development. *International Journal of Science and Nature*, 3(1): 2-9.
- Orefi, A. (2012). Foodsecurity in Nigeria and South Africa: policies and challenges. *Journal of Human Ecology*, 38(1):31-35.
- Ritesh, A. (2011). Classification of extension teaching methods. Agropedia: Extension teaching methods. Retrieved from www.agropedia.iitk September 29, 2011.
- Stevens, J.B and Terblanche, S.E (2004). Sustainable agricultural development through effective farmers groups. *South African Journal of Agricultural Extension* 33: 40-51.
- Williams, S. (2005). *Communication strategies in agricultural extension*. Published by Agricultural extension society of Nigeria, 6(4):24-30.