Journal of Biology, Agriculture and Healthcare
ISSN 2224-3208 (Paper) ISSN 2225-093X (Online)
Vol.3, No.1, 2013

Participatory Nature of Farmer Field School Extension Approach as Compared with other Approaches in Edo and Ondo States, Nigeria

Ebewore Solomon Okeoghene
Delta State University, Asaba Campus
Delta State, Nigeria
Phone no: +2347067389635
e-mail of corresponding author: ebeworesolomon@yahoo.com

Abstract
The study compares FFS extension approach with other major participatory approaches practiced in Edo and Ondo States, Nigeria. By means of a well structured and validated questionnaire, data were collected from 145 FFS farmers who had also been exposed to other participatory approaches. Data collected were analysed using various statistical tools like means, standard deviation and analysis of variance. The result shows that respondents perceived FFS as a better extension approach than any other extension approach. Respondents rated FFS higher than other approaches as they strongly agreed with all the statements that FFS has all the features of participatory extension (X = 4.51 to X = 4.95). On the other hand, Farming System Research was perceived by the respondents to slightly satisfy the features of participatory extension but FSR does not involve adult learning principles. Respondents did not perceive T & V and UAES to contain participatory extension approach as they disagreed with almost all the statements for the two extension approaches. The result of the analysis of variance indicates that there were significant differences among the four extension approaches (F = 3851 .513; P <0.05). A further analysis of the comparisons between the various extension approaches using Duncan Multiple Range Test shows that there was a significant difference between FFS and other extension approaches. It was concluded that FFS is more participatory and recommended among others that it be extended to all farmers.
Keywords: Farmer field school, Participatory, Extension approach, comparison

1. Introduction

In Nigeria and other developing countries, attempt has been made to change to participatory extension approaches/systems (Ajayi and Okafor, 2006) which is mainly due to the criticism of previous agricultural extension approaches. Participatory approaches that have been tried in Nigeria include Farming System Research (FSR), Small Plot Adoption Technique (SPAT), and more recently, Farmer Field School (FFS).

Farmer Field School has long been implemented in Asia and some parts of Africa but it is relatively new in Nigeria and was introduced into Ondo State in 2003 through the Sustainable Tree Crops Programme working on cocoa, a project financed by the United State Agency for International Development (USAID). The specific objectives of FFS are to:

- Provide an environment in which farmers acquire the knowledge and skills to be able to make sound management decision.
- Sharpen farmers' ability to make critical and information decisions that render their farming profitable and sustainable.
- Sensitize farmers to new ways of thinking and problem-solving

- Show farmers the benefits of working in groups and encourage group activities.
- Empower farmers to become "experts" on their own farms and to be more confident in solving own problems.

Since Farmer Field School as a relatively new agricultural extension approach has recorded successes in several Countries in the world (Gallagher, 2005; World Cocoa Foundation, 2007; STCP Nigeria, 2007), it is necessary to assess how effective (participatory nature) this new approach is in Nigeria. R**o**ling (1995) asserted that Farmer Field School has proven to lead to farmers' enthusiasm, self confidence and a considerable reduction in insecticide use. The FFS extension approach has been used in many developing countries and the results in most cases have been encouraging. However, the assessment of effectiveness of this agricultural extension approach has not been comprehensibly carried out for tree crops like cocoa to determine whether it is a better approach or not. The research questions that now arise are: Is the FFS agricultural extension approach more participatory than the other participatory approaches which farmers in the study area had practiced? What are the socio-economic characteristics of beneficiaries of Farmer Field School Training Programme?

The objectives of the study are to: Describe the socio-economic characteristics of the respondents; and determine farmers' perception of FFS as compared with other agricultural extension systems practiced in the study area. The study tested the following null hypothesis:

$H0_1$**:** There is no statistically significant difference between FFS and other extension approaches in terms of possession of features of participatory extension.

2. Literature review

2.1 Agricultural Extension Systems/Approaches in Nigeria

Extension system/approach refers to the total fabrics of extension organization action as a conduit through which educative and problem solving innovations are disseminated (i.e. delivered) to the appropriate target by a specialized agent (Ogunfiditimi and Ewuola, 1995).

Nigeria has tried virtually all extension systems in the world. Some major extension systems / approaches that have been adopted by Nigeria (Ogunfiditimi and Ewuola, 1995; Jibowo, 2005) are as follows:

2.2 The convectional agricultural extension system

Essentially the system is designed to promote national agricultural production through increased food crops, export crops and animal production. It is, among other things expected to step-up farm incomes, develop cottage industry type activities and improve the general quality of life of the rural dwellers

2.3 Community Type Extension Approach

The community focused development system of extension is a participatory "Self help" system. It was initially developed in India (Ogunfiditimi and Ewuola, 1995). It is a broad spectrum approach whereby the scope of the extension agent is broadened to encompass responsibilities other than those that focuses on agriculture alone.

2.4 Integrated agricultural development approach

In Nigeria the Integrated Agricultural Development Programme which could also be described as Agricultural Development Project (i.e. ADP) started in 1975 as an enclave project (i.e. covering a small geographical area of one or more local government areas in a state) (Ogunfiditimi and Ewuola, 1995; Jibowo, 2005).

2.5 Integrated Rural Development Extension Approach

The integrated rural development programme is a participatory approach in which there is a high level of client involvement in planning, implementing and evaluating programmes.

2.6 Training and visit agricultural extension system

This approach was first implemented in Turkey in 1967 and later widely adopted by governments (Benor, 1987; Roberts, 1989). T and V was designed to be a management system for energizing extension staff, turning desk-bound, poorly motivated field staff into effective extension agents.

2.7 Farming system research and extension (FSR/E)

The farming system research and extension (FSR/E) combines the efforts of research, development, extension and production agencies to investigate the whole farm as a system. It focuses on the interdependencies of the components under the control of the farm household and how the components interact with the physical, biological and socio-economic factors outside the control of the household.

2.8 The Unified Agricultural Extension System

The National Council for Agriculture at its 1989 meeting in Maiduguri adopted a memorandum which gave rise to the policy of the unification of extension services. Again at its Port Harcourt meeting in February, 1990, further clarifications on the implementation of the policy on UAES were made and states were advised to adopted the System as a matter of urgency (Mijindadi, 1991). The essence of this is to encourage the farmers to adopt integrated farming whereby there is interrelationship among the various field of agriculture.

2.9 The Farmer Field School

Farmer Field Schools (FFSs) were first developed in South East Asia for training rice farmers in Integrated Pest Management (IPM). It was developed by an FAO project as a way for small-scale farmers to investigate and learn for themselves the skills required for, and the benefits to be obtained by adopting certain practices in their paddy fields (NAERLS/ABU, 2008). FFS is based on discovery leaning.

3. Research methodology

3.1 The study area

The study was conducted in Edo and Ondo States of Nigeria. The population of Edo state is approximately four million (National Population Commission, 2006). Edo State has a land mass of 19,749 square kilometers, lying on 05° 44' N and 07° 34' N latitudes and 05° 4' E and 06° longitudes. Edo State is low lying except towards the North axis where the Northern and Esan plateaus range from 183 meters of the Kukuruku hills to 672 meters of the Somorika hills. It is bordered by Kogi state to the North and Delta State to the East and South, Ekiti and Ondo states to the west. Ondo state covers the land area of 14,606 square kilometers and lies between latitudes 5^0 45′ and 7^0 52′ N and longitudes 4^0 20′ and 6^0 05′ E with a population of 4,011,407 (NPC, 2006). Ondo State is bounded on the East by Edo and Delta States, on the West by Ogun and Osun States, on the North by Ekiti and Kogi States and to the South by the Bight of Benin and the Atlantic Ocean.

Both Edo and Ondo States lie within the equatorial hot wet climatic belt except for the Northern part of these states where the derived savanna climate is experience. The climate is typically with two distinct seasons - the wet (rainy) and the dry

seasons. The wet season lasts from April to November and the dry season December to March. The rainfall is high; the mean annual rainfall varies from 2600mm in the coastal area of these two states to nearly 1200mm in their northern extreme. During the raining season, the mean monthly temperature range is 18^0C to 35^0C and 30^0C to 35^0C during the dry season. The climate experienced in these two states is favourable to agriculture which is the dominant occupation of people of Edo and Ondo States. The high rainfall is favourable for the cultivation of tree crops like cocoa, oil palm, kola nut and rubber. Other crops grown include cocoyam, yam, cassava, plantain/banana and pineapple. Fishing activities are also prevalent in the coastal areas of these two states.

3.2 Sampling Procedure and Sample Size

The population of the study comprises of all cocoa farmers that have been involved in farmers' field school (FFS graduates) in Ondo and Edo States of Nigeria. Ondo and Edo States were purposively selected because they have long been involved in FFS training. The lists of these farmers were obtained from the STCP offices and the ADP offices of the two states. A multi-stage sampling procedure was used in selecting the respondents for the study.

Stage 1: Out of the three agro-ecological zones in each of Ondo and Edo States, one agricultural zone was purposely selected based on where cocoa farmers were involved in FFS coupled with the fact that these farmers have been exposed to other agricultural extension approaches. The agricultural zones in Edo State are Edo North, Edo Central and Edo South while those of Ondo State are Ondo North, Ondo Central and Ondo South. Edo North and Ondo Central zones from Edo State and Ondo States respectively were purposively selected based on the information that these zones are almost exclusively the zones that have implemented farmer field school on cocoa visa-avis other agricultural extension approaches.

Stage 2: Three local government areas from each of these zones were purposively selected based on the concentration of cocoa FFS in the area. The following local government areas were selected: Owan East, Owan West and Akoko Edo in Edo State and Idanre, Ondo East and Ondo West in Ondo State. The number of registered FFS farmers as obtained from the STCP office and Ministries of Agriculture are shown in Table1

Stage 3: The farmers whose names were in the list obtained from STCP and Ministry of Agriculture offices were randomly selected. Ten percent of the farmers were selected. Thus a total of one hundred and fifty four farmers (154 FFS farmers) were supposed to be selected for the study. The actual numbers of farmers obtained were 145 farmers due to the fact that some copies of questionnaire were improperly filled and others were not returned. Therefore, a total of 145 respondents were used for the study from the two states. Table1 shows the procedure of the sample size selection.

3.3 **Data Collection Instrument**

The objectives of the study guided the development of a questionnaire which was the main instrument used for data collection. The use of questionnaire has been demonstrated to be effective for evaluation of respondents' perceptions. A structured questionnaire was therefore developed and used for data collection. For the effectiveness of the primary data collection, 4 well-trained enumerators (able to communicate in English Language and the local dialects) were engaged in data collection. Secondary data were collected from published and unpublished research works, books and academic journals. Also relevant documents were obtained from Ministries of Agriculture and Natural Resources at the various levels of government and government agencies, and the Sustainable Tree Crops Programme (STCP) offices in both states.

3.4 Validation of Instrument

The instrument of data collection was subjected to both face and content validity. Face validity was carried out with the assistance of experts in the field of agricultural extension, agronomy and rural sociology. This was achieved by seeking the opinions of these experts on the representativeness and adequateness of items designed to measure the various variables of the study. This procedure assists in developing items that covered all objectives and that capture the content that was assessed in the study.

3.5 Measurement of variables

Socio- economic characteristics (Objective 1)

Age: respondents were asked to state their chronological age measured in years.

Gender: respondents were asked to indicate whether they were male or female.

Marital Status: This was determined by asking respondents to indicate whether they were Never Married, Married, Divorced, Separated, or Widowed.

Educational Level: Respondents were asked to indicate their level of educational attainment from a list of six options that was provided.

Farming Experience: This was measured as the number of years the respondent has spent in farming.

Farm size: This was measured in hectares.

Household size: measured as number of persons living in a home.

Farmers perception of FFS as Compared with other Agricultural Extension Systems

According to Ajayi and Okafor (2006), an extension system/approach that is effective should incorporate the following features: Adult learning principles; equal partnership among farmers Extension and research; bottom- up approach; learning in the field rather than learning in the classroom; implement community mobilization for planning and action with research extension and farmers; strengthen farmer problem solving and management ability; encourage farmer to learn through experimentation and become expert; promote farmers capacity to adapt and develop new appropriate technologies; research and/or extension agent are just facilitators in the process; farmers are involved in discussion and decision making; and develop interaction among farmers through farmers teaching other farmers. All the eleven statements were measured on a five point Likert-scale with values: 1 = strongly disagree; 2 = disagree; 3 = I don't know; 4 = agree; and 5 = strongly agree for farmers' perception of FFS and other Agricultural extension systems.

3.6 Methods of Data Analyses

Both descriptive and inferential statistics were used for the analysis of the data that were generated. Descriptive statistics included frequency counts, means and percentages which were used to describe the distribution of socio-economic characteristics of respondents and to measure other variables of interest in the study. Inferential statistical tool that was used in testing stated hypothesis was:

Ho_1: There is no significant difference between FFS and other extension approaches in terms of possession of feature of participatory extension – Analysis of variance

4. Results and discussion

4.1 Socio economic characteristic of respondents

Table 2 shows the socio economics characteristics of respondents in the study area.

Age: Age of farmers ranges from 31 – 70 years. No farmer in the study area was below 31 years. This indicates that youth in the area are not actively involved in cocoa farming. Therefore cocoa production is an activity carried out mainly by adults. Ogungbile et al (2002) and Oloruntoba, (2000) asserted that farmers in this range of age are always active and this can lead to positive effect on cocoa production. Majority of the farmers (53.8%) were above the age of 50 years. The mean age for farmers was 52 years. This finding was corroborated by Aniedu et al (2007) who asserted that most small scale farmers are mainly 50 years and above. The mean age indicated that majority of the cocoa farmers will be able to imbibe the adult learning principles.

Gender: Majority of the respondents were males. About 78.6% of the FFS farmers were males. The result shows that more males are involved in cocoa farming. This may not be unconnected with the perennial nature of tree crops such as cocoa and oil palm which often leads to permanent holding on land which traditionally are owned by men. Solomon (2008) also reported this type of result for oil palm.

Marital Status: The result of marital status of cocoa farmers in the study area shows that majority of the respondents were married (74.4%). This may be an indication that marital status is an important factor in cocoa farming. According to Dikito – Watchtmeister (2001), marital status is a crucial factor in shaping social rural participation and acceptance. Farmers need a large family to reduce the cost of farm labour and maintain a relatively stable life style in the rural area especially for tree crop like cocoa.

Educational Level: The result shows that 88.2% of FFS farmers had one form of formal education or the other. 36.6% of the FFS farmers had primary education, while 35.2% had secondary education. Only about 6.9% of FFS farmers had higher education. This shows that majority of the respondents were not highly literate. This coupled with the fact that most of them are adults implies that the adult learning process of FFS will be useful. However, Njoku (1991) observed that formal education has a positive influence on adoption of innovation. Omoregbee, (1996) and van de Ban and Hawkins (1996) had similar observation.

Farming Experience: Majority of the FFS farmers had a lot of experience in farming. Only about 6.2% FFS farmers had farming experiences less than 11 years. Ogungbile, Rahman and Tabo (2002) indicated that length of time of farming business can be linked to the age of farmers, access to capital and experience in farming may explain the tendency to adopt innovations and new technology. Thus, majority of the respondents will be willing to participate in FFS training on cocoa.

Farm Size: Farm size refers to the total land area (in Hectares) that the farmers cultivated. According to Alamu et al (2002) farmers with more resources including land are more likely to take advantage of a new technology. Farm size in the study area was rather small, majority of the farmers having farm sizes of between 0 – 5 hectares as shown in Table 2. Fragmentation due to land tenure systems, nearness to farms and resource endowment of farmers may be responsible. The finding agrees with that of Onemolease (2005) who observed that the average farm size was 1.2 hectares in Edo State, Also, Okunlola and Adekunle (2000) asserted that 53% of Nigerian farmers have less than 4 hectares of land while Koyenikan (2002) observed that the mean farm size for arable and tree crops such as cocoa, kolanuts and oil palm was 1.45 hectares in Ondo State. The implication of this finding is that majority of the cocoa farmers operate small holdings.

Household Size: The household sizes were large. Majority of the farmers have between 1 – 10 household members. According to Solomon (2008), Banmeke (2003), Olaniyan and Jibowo (1997) farmers have between 4 – 6 children who assist on farm and other household activities. Ogungbile et al (2002) reported that the adoption index may be other positively or negatively related to the household size depending on the nature of the age structure and the amount of labour contributed among members. Banmeke (2003) further asserted that household size is an important index in any rural development intervention which can affect the outcome of such intervention.

4.2 Respondents' perception of FFS as compared with other agricultural extension approaches

Table 3 shows the respondents' perception of FFS in comparison with other extension approaches. The result shows that respondents perceived FFS as a better extension approach than any other extension approach. Respondents rated FFS higher than other approaches as they strongly agreed with all the statements that FFS has all the features of participatory extension (X = 4.51 to X = 4.95). On the other hand, Farming System Research was perceived by the respondents to slightly satisfy the features of participatory extension but FSR does not involve adult learning principles. Respondents did not perceive T & V and UAES to contain participatory extension approach as they disagreed with almost all the statements for the two extension approaches. The result of this study also agrees with the finding of Ajayi and Okafor (2006) that respondents perceived FFS to be a better participatory extension approach than all the conventional extension approaches. As can be seen in Table 3, the respondents strongly agreed that FFS satisfies all 11 statements indicated as features of an effective agricultural extension approach. As for Farming System Research (FSR), respondents slightly agreed that FSR satisfy features of an effective agricultural extension approaches except Adult Learning Principles (X =4.01) where they agreed. As for other extension approaches such as T & V and UAES, respondents disagreed with all the statement as they felt these extension approaches did not satisfy the requirement in the statements. This implies that the respondents rated FFS as satisfying all the features of participatory extension approaches, and FSR as slightly satisfying the features while they did not find T & V and UAES as satisfying the features of extension approaches.

This result agrees with the finding of Ajayi and Okafor (2006) who observed that FFS takes the lead among all participatory extension approaches in that it incorporates all the features of participatory extension approach.

4.3 Test of hypothesis

H_{01}: There is no significant difference between FFS and other extension approaches in terms of possession of features of participatory extension. The hypothesis was tested using analysis of variance (ANOVA). The result of the analysis of variance in Table 4 indicates that there were significant differences among the four extension approaches ($F = 3851.513$; $P < 0.05$). A further analysis of the comparisons between the various extension approaches using Duncan Multiple Range Test (Table 5) shows that there was a significant difference between FFS and other extension approaches. There was a significant difference between T & V and FSR and also a significant difference between T & V and UAES. There was also a significant difference between FSR and UAES. The implication of these results is that the farmers perceived the effectiveness of these extension approaches differently as they have been involved in all of them. FFS has been perceived to be more effective than other extension approaches. This result agrees with that of Ajayi and Okafor (2006) in Ondo State that FFS was found to be more effective than other agricultural extension approaches.

5. Conclusion and recommendation

Available empirical evidence from the study confirms the fact that FFS extension approach was perceived as more effective than the other extension approaches because it possesses all the features of participatory extension approaches. It was therefore recommended that FFS agricultural extension approach should be promoted in the study area.

References

Ajayi, M.T. and Okafor, C. (2006). "Extension Agents' perception of participatory Agricultural Extension Approaches Adopted by Agricultural DevelopmentProgram (ADP) in Ondo State, Nigeria." International Journal of Agricultural and Biological Sciences, 4(1): 20-25.

Alamu, J.F., and Rahman, S.A. (2002): Agricultural Supply Response Evidence from four cereal crops in Nigeria. The Nasarawa Journal of Humanities, 1(1): 198 203.

Akwiwu, C.D, Nwayiba, C.U. and Nnadi, F.N. (2000). Effects of commercial banks' distresses on small scale rural livestock's enterprise in Imo State, Nigeria. Journal of Technology and Education in Nigeria. 5(1): 12 – 15.

Aniedu, C., Nwachukwu, I., Uwakah, C.T and Unamma, R.I.A. (2007): Gender Factors Influencing Adoption of Yam minisett Technique by Farmers in Southern Eastern Nigeria. Implications for Sustainable Yam production. Journal of Agriculture and Social Research. 7(2): 56 - 62 www.ajol/journas/jasr.

Axinn, G.H. (1988). T & V (Tragic and Vain) Extension. Urbana: College of Agriculture, University of Illinois at Urbana – Champaign. Interpaks, Interchange, International Agriculture, 5 (3): 28-33.

Balaguru, T. (2001).Farming System Research. Online: www.naarm.ernet.in /index.php?option=com_content...id. National Academy of Agricultural Research Management Rajendronagar, Hyderabad, Andhra Pradesh, India pp 26.

Banmeke, T.O.A. (2003): Accessibility and Utilization of Agricultural Information in the Economic empowerment of women farmers in South Western Nigeria. Unpublished Ph.D Thesis submitted to the Department of Agricultural Extension and Rural Development, university of Ibadan, Ibadan pp142.

Benor, D. (1987). Training and Visit Extension: Back to Basics. In Rivera and Schram, Agricultural Extension Worldwide New York pp. 137-149.

David, S. (2005): Learning about Sustainable Cocoa Production: a Guide to Participatory Farmer Training. Sustainable Tree Crops Program, International Institute of Tropical Agriculture, Yaounde, Cameroon. Pp 186.

David, S., Agordorku, S., Bassanaga, S., Couloud, J .Y. Kumi, M.A., Okuku, I., Wandi, D. (2006). A guide for Conducing Farmer Field Schools on Cocoa Integrated Crop and Pest Management. Sustainable Tree Crop Pest program, International Institute of Tropical Agriculture. Pp 102.

Dikito-Watchtmeister, M.S. (2001): Empowering women in achieved food Security, Social Capital. International Food Policy research institute. Washington DC. Focus 6, Policy Brief 9 of 12 August 2001. Pp 8-12.

Gallagher, K. (2005). Ecological Basis for low toxicity Integrated Pest Management (IPM). In Jules Pretty, The Pesticide Detox. 2005. Earthscan (2). Pp 18-21

Jibowo, A.A. (2005): History of Agricultural Extension in Nigeria, In Adedoyin, S.F. (ed) Agricultural Extension in Nigeria, Ilorin Agricultural society of Nigeria. Pp. 1 – 12

Koyenikan, J.M. (2002): An Assessment Farmer's participation in Agricultural Development Programmes: The case of Ondo State Agricultural Development Programme. Ph.D Thesis Department of Agricultural Economics and Extension, University of Benin, Benin City, Nigeria. pp 131.

Mijindadi, N.B. (1991). "Unification of Agricultural Extension Services in Nigeria – The Concept and Operation Challenges". Paper Presented at National Workshop on Unified Extension Services and Women-In-Agriculture, held at Ijebu-Ode, Ogun State 1 – 14 February. Pp 1 – 18.

National agricultural extension, research and liaison services of Ahmadu Bello University, Zaria (NAERLS/ABU) (2008). Training of Nigeria Farmer Field School (FFS) Master Trainers. A Training Manual sponsored by NPFS/FAO, Abuja

National Population Commission (NPC) (2006). National Population and Housing Census, 2006, N.P.C Abuja.

Njoku, J.E. (1991): Factors influencing the adoption of improved oil palm technologies by small holders in Imo State of Nigeria. Appropriate Agricultural Technologies for Resource poor farmers. In Olukosi, J.O., Ogungbile, A.O. and Kalu B.A. (eds) National Farming System network. Pp 51-55.

Ogunfiditimi, T.O. and Ewuola, S.O. (1995). The Synthesis of Corporative Agricultural Extension Systems. Emmi Press Ltd. Ibadan, Nigeria. pp 205

Ogungbile, A.O. Tabo, R. and Rahman, S.A. (2002). Factors affecting adoption of ICSV111 and ICSV 400 Sorghum variaties in Guinea and Sudan Savanna of Nigeria. The plant Scientists 3:21-2.

Olaniyan, O.F. and Jibowo, A.A. (1997): Pre-Harvesting Crop Production Activities of Women farmers in Iseyin L.G.A. of Oyo State in Olowu, T.A. (ed), Towards the survival of Agricultural Extension System in Nigeria, Proceeding of 3rd Annual Conference of AESON. March 1997. ARMTI, Ilorin. Pp. 52 -55.

Oloruntoba, A. (2000), "Evaluation of management training programme on job behaviour of senior agricultural research management on Nigeria". Unpublished Ph.D Thesis, Department of Agricultural Extension and Rural Development, University of Ibadan, Nigeria. pp 198.

Omoregbee, F.E. (1996): Communication of Improved farm practice to Rural Women Contact farmers in Benue State, Nigeria, M.Sc. Thesis, Department of Agricultural Extension and Communication, University of Agriculture, Makurdi, Nigeria. pp 105.

Onemolease E.A. (2005); Impact of the Agricultural Development Programme (ADP) Activities of Alleviation of Rural poverty in Edo State, Nigeria. A. Ph.D Thesis, Department of Agricultural Economics and Extension Services, University of Benin, Benin City, Nigeria. Pp 94 – 100.

Okulola, J.O. and Adekunle, O.A. (2000). Indigenous Knowledge Approach for Rice Pests and Disease Control by Rice Farmers in Nigeria for Sustainable Environmental Management. Journal of Environmental Extension(JEXT), 1(1): 28-30.

Röling, N. (1995): What to Think of Extension: A Comparison of three Models of Extension Practice article for Francophone issue of AERDD bulletin edited by Salama, N. ICPA, Montpellier. Pp 77.

Solomon, O. (2008) Identification of Training Needs of Oil Palm (Elaeis guinensis jocq) Farmers in Rainforest Zone of South Western Nigeria. Unpublished PhD Thesis, University of Agriculture, Abeokuta. Pp 124.

Sustainable Tree Crops Program, Nigeria (STCP) (2007): Cocoa Farming Communities lead Extension Delivery in Cross-River State. Online. Htt://www.worldcocoafoundation.Org/difference/STCP Nigeria success-story. asp. Pp 6.

van de Fliert, E. and Braun, A.R. (2005): Farmer Field School for Integrated Crop Management of Sweet Potato. Field Guide and Technical Manual. International Potato Centre, Indonesia, 265pp.

Wikipedia (2008):Farmer Field School. Online http://enwikipedia.org/wiki/farmerfield school. pp 1-2.

World cocoa Foundation (2007), "West African Farmer Field School" Online. http://www.worldcocoafoundation.org/difference/Africa.ffs.asp.pp 3.

Table1: Procedure of sample size selection

State	Agricultural Zone	Selected Zone	Selected L.G.A	Reg. FFS Farmers	Expected sample Size FFSF	Actual Sample Size FFSF
Edo	Edo North	Edo North	Owan East	321	32	30
	Edo Central		Owan East	226	23	21
	Edo South		Akoko Edo	168	17	17
Ondo	Ondo North	Ondo Central	Idanre	383	38	36
	Ondo Central		Ondo East	221	22	20
	Ondo South		Ondo West	222	22	21
			Total	1,541	154	145

Expected Sample Size = 154

Actual Sample Size = 145

FFSF = FFS Farmers (farmers involved in FFS as well as in other extension approaches)

Table 2: Socio-economic characteristics of respondents

VARIABLES	FFS FARMERS (N = 145)	
	Frequency	**Percentage**
Age (Years)		
21 – 30	Nil	0.0
31 – 40	18	12.4
41 - 50	49	33.8
51 – 60	50	34.5
Above 60	28	19.3
Mean	51.9	
Actual range	31 -70	
Gender		
Male	114	78.6
Female	31	21.4
Marital Status		
Never Married	13	9.0
Married	108	74.4
Divorce	2	1.4

Separated	4	2.8
Widow/Widower	18	12.4
Educational Level		
No Formal Education	17	11.8
Primary Education	53	36.6
Secondary Education	51	35.2
OND/NCE	14	9.7
HND/First Degree	9	6.2
Post Graduate	1	0.7
Farming Experience (Years)		
Less than 11	9	6.2
11 – 20	35	24 .1
21 – 30	40	27.6
31 – 40	32	22.1
More than 40	29	20.0
Farm Size (Hectare)		
5 and Below	114	78.6
6 – 10	30	20.7
More than 10	1	0.7
Household Size		
1 – 5	67	46.2
6 – 10	72	49.7
More than 10	6	4.1
Mean	5.8	
Actual Range	1 – 12	

Source: Survey Data 2010

Table 3: Mean distribution of respondents' perception of FFS as compared with other agricultural extension approaches

	Extension Approaches							
	T and V		FSR		FFS		UAES	
Extension Features	Mean	S	Mean	S	Mean	S	Mean	S
Adult learning principles	1.67	0.76	3.92	0.45	4.62	0.81	2.06	0.43
Equal partner among extension, farmer and research	1.89	0.78	3.58	0.87	4.37	0.82	1.89	0.67
Bottom/top approach	1.66	0.62	3.67	0.91	4.59	0.67	1.87	0.58
Learning in field rather than classroom	1.64	0.63	4.43	0.67	4.91	0.71	1.88	0.64
Community mobilization for planning and action	1.59	0.75	3.43	0.90	4.40	0.79	1.96	0.67
Strengthen farmers problem solving and management ability	1.72	0.67	3.67	0.74	4.92	0.85	3.92	0.70
Farmers learn through experimentation to become experts	1.58	0.78	4.01	0.83	4.64	0.67	1.92	0.64
Farmers adopt and develop appropriate technology	1.75	0.79	4.64	0.72	4.84	0.74	1.97	0.53
Researchers and extension agent facilitators	1.60	0.73	3.59	0.80	4.58	0.71	1.83	0.62
Farmers involved in decision making	1.45	0.67	3.75	0.71	4.53	0.74	1.94	0.49
Interaction among farmers	1.46	0.65	4.52	0.39	4.94	0.80	3.03	0.51

Source: Survey Data, 2010

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

Table 4: Analysis of Variance (ANOVA) Comparing the participatory nature of various extension approaches

Sources of variation	Sum of Squares	Df	Mean Square	F	Sig
Between Groups	822.883	3	274.294	3851.513	.000
Within Groups	41.021	576	.071		
Total	863.904	579			

Significant at 5%

Source: Survey Data, 2010

Table 5: Duncan Multiple Range Analysis of Means Difference among Extension Approaches

		Subset for alpha = 0.05			
Extension System	**N**	**1**	**2**	**3**	**4**
T & V Systems	145	1.6337			
UAES System	145		1.9328		
FSR System	145			3.6746	
FFS System	145				4.4940
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subset are displayed.

Source: Survey Data, 2010

This academic article was published by The International Institute for Science, Technology and Education (IISTE). The IISTE is a pioneer in the Open Access Publishing service based in the U.S. and Europe. The aim of the institute is Accelerating Global Knowledge Sharing.

More information about the publisher can be found in the IISTE's homepage: http://www.iiste.org

CALL FOR PAPERS

The IISTE is currently hosting more than 30 peer-reviewed academic journals and collaborating with academic institutions around the world. There's no deadline for submission. **Prospective authors of IISTE journals can find the submission instruction on the following page:** http://www.iiste.org/Journals/

The IISTE editorial team promises to the review and publish all the qualified submissions in a **fast** manner. All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Printed version of the journals is also available upon request of readers and authors.

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digtial Library , NewJour, Google Scholar