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Farmer field school extension approach: A knowledge booster in Calabar Agricultural Zone, Cross River State, Nigeria

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The aim of this research was to evaluate Farmer Field School's (FFS) capacity to boost the knowledge of farmers in Calabar Agricultural Zone, Cross River State, Nigeria. Specifically, the research aimed to describe the socio-economic characteristics of respondents; assess the effectiveness of FFS on training farmers, improving their knowledge and utilization of new technologies; and ascertain constraints faced by farmers in FFS training. The study adopted multi-stage and purposive sampling techniques to select 318 respondents. Descriptive statistics such as means and percentages were employed to analyze the data. The results revealed that most (64.5%) of the respondents were men; 39.3 and 86.5% were married with a mean household size of 6 persons. On participation, the results indicated that FFS was perceived to be effective in allowing farmers to participate highly in activities such as location of experimental site ($\bar{x}$=2.94), experimenting with new methods and techniques ($\bar{x}$=2.90) among others. From the findings, it was revealed that FFS was effective in training participants, such as in helping them to learn new ways of doing things in their farm ($\bar{x}$=2.84) among others. Analysis of the results further revealed that Farmer Field School was effective in increasing the knowledge of participants on many factors in the farm environment. FFS was also perceived to be effective in influencing most of the participants to utilize about 71% of the technologies captured in this study. The most salient constraints uncovered by the study were non-availability of inputs, followed by inadequate trial and training materials. After thorough investigation and analysis, it was concluded that FFS is an effective agricultural knowledge booster. Based on the findings, it was recommended that FFS should be utilized to design and implement trainings, especially when introducing any innovation to farmers.

Key words: Farmer field school, extension, training, knowledge, participation.

INTRODUCTION

FFS is a widely used extension and education method all over the world. Its aim includes building farmers' capacity to analyze their production systems, identify problems, test possible solutions and eventually adopt the practices most suitable to their farming system. According to Roy et al. (2013), farmers can change their existing

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technology to increase productivity, profitability, sensitivity to changing circumstances and implementation of new technologies, using the knowledge gained during the learning process. In Asia, Africa, Latin America, and, more lately, the Middle East, North Africa, and Eastern/Central Europe, FFS has emerged as a paradigm for farmer education that is innovative, participative, and interactive. The technique has since been expanded to encompass livestock, community forestry, HIV/AIDS, water conservation, soil fertility management, food security and nutrition (Braun et al., 2006).

"Farmer Field School (FFS) is considered as an extension approach where the farmers are being trained on different aspects of crop and livestock production, especially management of soil and crops in a low cost and environment-friendly means through a season-long training program" (Roy et al., 2013). According to Huluka and Negatu (2016), FFS intends to provide specialized training to a chosen group of "model farmers," who were then expected to pass on their knowledge to others through administratively managed farmer networks rather than through existing social relationships. FFS attempts to improve farmers' capacity as well as testing new technology, evaluating the results and their applicability to their own conditions, as well as interacting with scientists and extensionists on a more demand-driven basis when they cannot fix a problem amongst themselves. FFSs are platforms and "schools without walls" for increasing agricultural communities' decision-making capability and promoting local innovation for long-term agriculture sustainability (Braun and Graham, 2000; NAERLS/ABU, 2008; Gallagher, 2005).

FFS uses self-discovery and participatory learning methods to provide community-based, non-formal education to groups of 25-30 farmers. Some authors recommend groups of 25 to 50 people (Matata and Okech, 1998). Agro-ecological concepts underpin the learning process, which lasts the entire season of cropping. Farmers from the same village/catchment are brought together at the school and as a result, share the same ecological, socioeconomic and political environments (Endalew, 2009). Observations are debated by farmers and trainers; they use existing knowledge and provide new knowledge from outside the locality at FFS. The meetings' outcomes are management decisions on what to do next. As a result, Farmer Field School is a dynamic process as an extension methodology that farmers use to translate their observations into a better scientific knowledge of the crop/livestock agro-ecosystem. Thus, a FFS is more of a journey than a destination. FFS is about people's development rather than technology. It brings together farmers in order for them to examine their challenges and find solutions. Farmers are empowered with information and skills to become experts in their professions, and their capacity to take well-informed and crucial judgments to enable agricultural farming profitable and long-term. FFS and cooperative learning methodologies are examples of Participatory Research and Extension (PR&E), according to Percy (2005). The PR&E strategy focuses on encouraging voluntary behavior change through exploration and sharing of information (Rolling and Wagemakers, 1998), assisting participants in "increasing their understanding of what works and what does not" (Rolling and Wagemakers, 1998; Pretty, 2002). FFS is a method of learning that takes place in a group setting, in which hands-on activities are used to help participants better understand the ecology of their crop fields. These activities include simple experiments, regular field observations and group analysis. Participants can make their own crop management decisions based on their local conditions, using the knowledge learned from these exercises (Kenmore, 2002). One of the most formidable extension methods ever devised is the FFS (Dinpanah et al., 2010).

Objectives of the FFSs according to David et al. (2006) are to: "provide an environment in which farmers acquire the knowledge and skills to be able to make sound management decision"; "sharpen farmer's ability to make critical and informed decision that could make their farming activities more profitable and sustainable"; "improve farmer's problem solving abilities"; "show farmers the benefits of working in groups and encourage group activities"; "empower farmers to become "experts" on their own farms and to become more confident in solving their own problems"

Adisa and Adeloye's (2012) study revealed that in Osun State, farmers that participated in a study tagged "Analysis of Farmer Field School as an extension approach to cocoa production", the age was between 30 and 72 years. They reported that the minimal level of youth participation may have been due to youth involvement in rural-urban migration in search for 'greener pastures'. According to findings made by David (2009), the FFS individuals were ten years younger than the non-FFS participants, with an average age of 44.75 years. The FFS drew in younger farmers who were more aware of the long-term implications of vegetable production. Reddy (2013), in their study reported that a large number of farmers from adopted villages (63.89%), as well as non-adopted villages (66.67%) were under the middle age group and were followed by the elderly (19.44%) in case of adopted villages and (18.33%) in non-adopted villages and young age (16.67%) in case of adopted villages and (15.00%) in non-adopted villages. Furthermore, Anaeto et al. (2017) revealed in their study that "farmers' perceived effectiveness of farmer field school in Anambra State, Nigeria", with many (55.0%) farmers having ages of 41 - 60 years, while the average age was 41.

Ebewore (2013b) researched on "the Role of Farmer Field School Training in Improving Farmers' Knowledge of Selected Cocoa Cultivation Practices in Edo State, Nigeria". This study sought to achieve three objectives viz

to: Determine how far FFS has improved farmers' knowledge of cocoa cultivation procedures; determine the level of contribution of FFS training to respondents' knowledge of cocoa cultivation procedures; and to figure out how many farmers have benefited from FFS training. The study proved that Farmer Field School has increased the knowledge of participants in some areas like cocoa cultivation. For example, 50% of the FFS farmers for the first time were exposed to pruning of chupons, 92.6% to phytosanitary harvest, 77.9% to identification of mirids, 25.0% to causes of black pod diseases, 77.9% to identification of beneficial insect, 100% to issues on hazardous child labour, 54.4% to correct tree spacing/ density, 73.5% to identification of canker and 42.6% to identification of stem borers. Besides, there was a substantial increase in the respondents' knowledge in the following areas: 25.0% of the respondents improved their knowledge on pruning of mistletoe, 7.4% of respondents on phytosanitary harvest, 51.5% on shade management, 82.4% on nursery production practices, 19.1% on identification of mirids, 32.4% on proper tree spacing/ density, 22.1% on identification of canker and 11.7% on weeding. Thus, the author concluded, based on the study results that FFS has contributed immensely to helping farmers to improve their knowledge in several areas of cocoa cultivation. The knowledge and skills acquired by farmers from the FFS training can help them make their farm operations more profitable.

Traditional extension methods have only had a limited success in terms of reaching multitudes of farmers with innovations. The Training and Visit (T&V) paradigm, for example has been proven to be ineffectual, inefficient, and unsustainable despite World Bank funding and promotion (Asiabaka and Mwangi, 2001; Anandajayasekeram et al*.,* 2001). Farmer Field School has been described as a novel technique for assisting farmers in learning about and improving their farm management skills, increase their farm yield, increase farm income and enhance their standard of living. For example, results of a research by Berg (2014) showed that FFS spurred a variety of local activities, relationships and policies connected to improved agro-ecosystem management because it fosters continual learning and strengthens social and political abilities.

It is true that in FFS, farmers learn from their mistakes by conducting experiments on their own fields, making observations and evaluating the outcomes throughout the season. A facilitator, who may be a researcher, an extension worker or an experienced farmer in the group leads and assists them. This was the implementation principle of National Programme for Food Security (Asiabaka and Mwangi, 2001), which applied FFS to teach farmers on improving integrated and sustainable agricultural and rural development to improve household food security, increase incomes, decrease poverty and improve socio-economic conditions of beneficiaries.

Thus, in Calabar agro-ecological zone, this study focused on assessing whether FFS is truly a knowledge booster, by considering the following objectives:

i) describe the socio-economic characteristics of respondents;
ii) assess the effectiveness of FFS on training farmers, improving their knowledge and utilization of new technologies; and
iii) ascertain constraints faced by farmers in FFS training.

MATERIALS AND METHODS

Study area

This research was carried out in Calabar Agricultural Zone of Cross River State, Nigeria. The area is bordered in the North by Abi, Yakurr, Obubra, Ikom and Etung States, East by the Republic of Cameroon, West by Abia and Akwa Ibom States, and in the South by the Atlantic Ocean. It is located between 40° 28' and 60° 55' north latitude and 70° 50' and 90° 28' east longitude of the Greenwich meridian. The Calabar Agricultural Zone is mainly comprised of the Efik-speaking people. In Calabar, there is also the Ejagham-speaking Qua community. The Greater portions of Calabar Municipality, Odukpani, Biase, and Akamkpa sections of the zone are largely occupied by the primary Ejagham community. The bulk of the administrative agencies are located in Calabar, which is the heart of the zone and the State at large. The vegetation in the area is mainly mangrove swamps and rainforest. The Calabar agro-ecological zone has the following predominant crops: cassava, oil palm, banana, plantain, rice, yam, maize, melon, pumpkin, pepper, waterleaf, etc. In the zone, the livestock kept include poultry, sheep, goat, pig etc. The zone houses many tourist sites and part of the renowned Cross River National Park. Those in the city work mainly in small and big firms as service providers and civil servants.

Sampling procedure

The study employed multi-stage and purposive sampling technique to select farmers that participated in farmer field school. In the first stage, three local government areas (LGAs) were purposively selected, viz Akpabuyo, Odukpani and Biase. At the second stage, farmer field school participants were selected for the study. The sample size for the study was 318 (Akpabuyo = 99; Odukpani = 106; Biase = 113). This selection was guided by the Cross River Agricultural Development Program (CRADP, date) report on farmer field school participation in the area.

Analytical technique

The data, gathered by use of structured questionnaire was analyzed and used to achieve the stated objectives. Descriptive statistics such as mean, frequency and percentages were employed to achieve Objective I whereas Likert-type scale analysis was employed to achieve Objectives II and III.

Objective II was rated using a 3-point Likert-type scale as Highly Effective (HE) =3, Effective (E) =2 and Not Effective (NE) = 1. Thus, 3+2+1/3=2. Variables having means equal to or greater than 2 implied that FFS was effective in such activity, while variables with lower means implied otherwise.

On the other hand, Objective III was rated using a 4-point, Likert-type scale as High (H) =4; Medium (M) =3; Low (L) =2; and Not at All (NA) =1. From this, Mean score = 4+3+2+1/4=2.5. Therefore, variables having a mean equal to or greater than 2.5 was adjudged

as being a constraint, while variables with lower mean was adjudged as not being a constraint.

RESULTS AND DISCUSSION

Socio-economic characteristics

The results of socio-economic characteristics of FFS participants (Table 1) showed that 39.3% of the cassava farmers were in the age range of 31-40 years, with average age of 43.86 years indicating that many of the participants were of working age. Also, most (64.5%) of the participants were male. The result implies that farming is largely a male-dominated occupation in the study area and could be due to gender roles and responsibilities that limits the activities of women to mostly agro-processing. This finding is in tandem with the findings of Aliyu (2016). Also, the majority (86.5%) of the respondents were married, and about 47.2% of them had a household size of between 1 to 5 persons, with an overall mean of approximately 6. This could be because of family labour needed for farm activities.

Table 1 showed that 43.7% of participants had only basic (First School Living Certificate - FSLC) education. However, 39.6 and 9.1% had Senior Secondary Certificate Examination (SSCE) and Nigerian Certificate in Education (NCE) respectively. This result tallies with the findings of Ebewore (2013a), that 88.2% of FFS farmers had some form of education. Most (85.2%) of the respondents were primarily farmers, with 35.8% of them having farming experience of 11-20 years. This result aligns with that of Ebewore (2013b), whose research on cocoa FFS farmers in Nigeria observed that many FFS farmers had lots of experience in farming, with only 6.2% Farmer Field School farmers having farming experience of less than 11 years.

Perceived extent of participation in FFS activities

This part of the study evaluated the level of participation and depth of sub-activities, that is, their participation. As described in the methodology, the decision benchmark is 2.0. Howbeit, all the items captured in Table 2 have means greater than 2.0. This means that the majority of the farmers participated highly in the activities as stated in the Table 2. More specifically, farmers acknowledged that they participated in location of experimental site ($\overline{x}$=2.94). This is buttressed by their responses that they participated in planning sub-activities such as result demonstration in the school ($\overline{x}$=2.81); they participated highly in farm record keeping while in the school ($\overline{x}$=2.89); and they also participated highly in experimentation of new methods and techniques that were taught in the school ($\overline{x}$=2.90). The results in Table 2 further revealed that farmers participated highly in evaluation of the results of new methods and techniques ($\overline{x}$=2.85).

Results in Table 2 has confirmed that Farmer Field School is a participatory extension approach, which is aimed at exposing farmers using “hands-on-deck” method. This result is synonymous with the findings of Anaeto et al. (2017), who found that farmers participated in all the FFS activities. Howbeit, it was revealed that their participation was more in the identification of needs (61.7%), livestock production (60.0%), development of planting practices (58.3%), identification of improved crop varieties (58.3%) and development of weeding practices (58.3%).

Perceived effectiveness of FFS in training of participants

Table 3 presents the results of perceived effectiveness of FFS in training participants. The benchmark for decision here was 2.0 (3-point Likert-type scale). The results revealed that FFS was effective in training participants, especially in terms of the items that were captured in the Table 3. As seen, the respondents indicated that FFS was effective in helping them i) learn new ways of doing things in their farm ($\overline{x}$=2.84); ii) understand the importance of new technologies ($\overline{x}$=2.81); adopt new methods and techniques ($\overline{x}$=2.78). Also, evidence from the Table 3 indicates that FFS was perceived to be effective in helping farmers form cooperatives ($\overline{x}$=2.70). The perceived effectiveness of FFS was also attested by the respondents to increase their yield, compared to the yield before participation ($\overline{x}$=2.59).

Furthermore, information from the results in Table 3 revealed that FFS was effective in helping farmers incorporate traditional knowledge in their farm operation ($\overline{x}$=2.23). Also, majority of the participants attested that FFS was effective in helping them know how to source credit to improve their production ($\overline{x}$=2.17), link farmers with input suppliers ($\overline{x}$=2.16), reduce their level of poverty ($\overline{x}$=2.12), handle their farm problems on their own ($\overline{x}$=2.15) and in bringing about attitudinal change in their lives towards farming ($\overline{x}$=2.07).

Summarily, these findings prove that FFS is effective in training participants. This finding aligns positively with the findings of Khatam and Ashraf (2014) whose research titled “Perceived Effect of Farmers Field School Approach on Capacity Building in Controlling Pre and Post-Harvest Losses”, revealed that FFS (according to farmers’ perception) highly improved participants’ capacity to enhance production and control.

Perceived effectiveness of FFS in improving farmers’ knowledge

Table 4 presents the results of perceived effectiveness of FFS in improving farmers’ knowledge. In this part of the

Table 1. Distribution of respondents based on their socio-economic characteristics.

Characteristics	Frequency	Percentage
Age		
20-30	35	11.0
31-40	125	39.3
41-50	77	24.2
51-60	47	14.8
61 and above	34	10.6
Total	318	100.0
Mean	43.86	
Sex		
Male	205	64.5
Female	113	35.5
Total	318	100.0
Marital status		
Married	275	86.5
Single	30	9.4
Widow	8	2.6
Widower	3	0.9
Divorced	2	0.6
Total	318	100.0
Household size		
1-5	150	47.2
6-10	141	44.3
11 and above	27	8.5
Total	318	100.0
Mean	5.87	
Educational qualification		
FSLC	139	43.7
SSCE	126	39.6
NCE	29	9.1
B.Sc.	21	6.6
M.Sc.	3	0.9
Total	318	100.0
Primary occupation		
Farming	271	85.2
Trading	31	9.7
Business	12	3.8
Others	4	1.3
Total	318	100.0
Years of farming experience		
1-10	113	35.5
11-20	114	35.9
21-30	54	17.0
31-40	23	7.2
41 and above	14	4.4
Total	318	100.0
Mean	17.48	

Source: Field survey (2021).

Table 2. Mean distribution of farmers on perceived extent of participation in FFS.

Variable	$\overline{x}$	SD	Inference
Location of experimental site	2.94	0.34	High participation
Experimenting with new methods and techniques	2.90	0.38	High participation
Farm record keeping	2.89	0.38	High participation
Planning of sub-activities (such as result demonstration) in the school	2.81	0.45	High participation
Identification of insects, pests/diseases	2.80	0.46	High participation
Monitoring of experimental farms	2.47	0.56	High participation
Evaluation of the results of new methods and techniques	2.85	0.42	High participation

Source: Field survey (2021). $\overline{x}$ =Mean, SD = Standard Deviation.

Table 3. Mean distribution of farmers based on perceived effectiveness of FFS in training of participants.

Variable	$\overline{x}$	SD	Inference
Helping farmers to learn new ways of doing things in their farm	2.84	0.37	Effective
Effectiveness of the facilitator	2.82	0.39	Effective
Linking farmers to input suppliers	2.16	0.41	Effective
Helping farmers to know how to source for credit in order to improve their farm production	2.17	0.41	Effective
Helping farmers to form cooperatives	2.70	0.48	Effective
Incorporating traditional knowledge in farmers' farm operation	2.23	0.46	Effective
Changing participants' attitude towards farming	2.07	0.33	Effective
Helping farmers to increase their yield, compared to previous harvest before the school	2.59	0.51	Effective
Helping participants to understand the importance of new technologies	2.81	0.41	Effective
Effectiveness of FFS in helping farmers to adopt new methods and techniques	2.78	0.43	Effective
Helping farmers to reduce their level of poverty	2.16	0.39	Effective
Helping farmers to earn more money than they did before participating in FFS	2.12	0.35	Effective
Effectiveness of FFS in helping farmers to handle farm problems by themselves	2.15	0.36	Effective

Source: Field survey (2021). $\overline{x}$ = Mean, SD = Standard deviation.

work, information was elicited to assess farmers' knowledge based on twelve knowledge items which were situation analysis, mulching practices, land preparation, planting practices, monitoring and evaluation, boundary conflict resolution, identification of improved varieties of cassava, intercropping practices, weeding practices, identification of pests and diseases, adequate methods of preservation and control of pests and diseases.

The results revealed that before participation, majority (86.8%) of the respondents were not knowledgeable about situation analysis in the farm. But after participation, almost all (96.2%) the respondents had adequate knowledge on the subject of farm situation analysis. On mulching and intercropping practices, only few persons (8.5 and 4.7% respectively) were knowledgeable about the subject. Howbeit, after participation the majority (89.6 and 86.2%) became knowledgeable about mulching and intercropping practices respectively. Also, only about 8.2, 5.3 and 9.4%, respectively, of farmers had adequate knowledge about land preparation, planting practices and weeding practices, respectively. However, after participation, the majority (95.9, 99.6 and 96.9%) of the participants acquired adequate knowledge on the subjects of land preparation, planting practices and weeding practices, respectively.

Furthermore, Table 4 revealed that majority (95.6 and 95.9%) of the respondents lacked knowledge about identification of insects, pests and diseases and control of same, respectively. Adequate light was shed on this during FFS training, as 95.6 and 96.2% of the respondents attested that they gathered adequate knowledge on the subjects of identification of pests and diseases and control of same, respectively. FFS was also effective in conferring adequate knowledge about evaluation and monitoring to about 95.9% of the farmers after participation, out of which only 7.2% possessed before participation. On identification of improved varieties of crops, majority (94.7%) of the respondents lacked knowledge of it before participation. However, the situation was different after participation, as a large majority (95.3%) of the participants had acquired adequate knowledge on the subject. Finally, in the Table 4, the result revealed that only about 7.9% of farmers had knowledge about adequate methods of preservation

Table 4. Distribution of respondents based on perceived effectiveness of FFS in improving farmers' knowledge.

Variable	Before FFS				After FFS			
	Yes		No		Yes		No	
	F	%	F	%	F	%	F	%
Situation analysis in the farm	42	13.2	277	86.8	306	96.2	12	3.8
Mulching practices	27	8.5	291	91.5	285	89.6	33	10.4
Land preparation	26	8.2	292	91.8	305	95.9	13	4.1
Planting practices (accurate planting distance)	17	5.3	301	94.7	304	95.6	14	4.4
Monitoring and Evaluation	23	7.2	295	92.8	305	95.9	13	4.1
Boundary conflict resolution	144	45.3	174	54.7	298	93.7	20	6.3
Identification of improved varieties of cassava	17	5.3	301	94.7	303	95.3	15	4.7
Intercropping practices	15	4.7	303	95.3	274	86.2	44	13.8
Weeding practices	30	9.4	288	90.6	308	96.9	10	3.1
Identification of insects, pests/diseases	14	4.4	304	95.6	304	95.6	14	4.4
Adequate methods of preservation	25	7.9	293	92.1	306	96.2	12	3.8
Control of pests and diseases	13	4.1	305	95.9	306	96.2	12	3.8

Source: Field survey (2021).

Table 5. Distribution of respondents based on effectiveness of FFS in influencing adoption of agricultural technologies.

Technology	Aware		Tried		Utilized		$\bar{x}$
	F	%	F	%	F	%	
Eco-friendly weeding technique	73	23.0	2	0.6	243	76.4	2.53
Eco-friendly pest control method (e.g. use of neem seed)	109	34.3	12	3.8	197	61.9	2.28
Better preservation method	107	33.6	11	3.5	200	62.9	2.29
Use of organic manure	62	19.5	59	18.6	197	61.9	2.42
Selection of quality local variety	63	19.8	50	15.7	205	64.5	2.45
Stem cutting treatment	201	63.2	57	17.9	60	18.9	1.56
Fermentation technique	205	64.5	28	8.8	85	26.7	1.62

Source: Field survey (2021). $\bar{x}$=Mean.

before FFS. But after the school, 96.2% of the farmers gained adequate knowledge on the subject.

The implication of the results in this part of the study is that FFS was perceived to be effective in improving farmers' knowledge. This is an indication that FFS is an effective extension approach, since extension is particularly targeted towards bringing about change among other outcomes, in farmers' knowledge. This finding was supported by Ebewore (2013b), who recognized that FFS made a significant contribution to farmers' understanding in various areas of cocoa growing. The researcher discovered that 50% of the FFS farmers for the first time were exposed to pruning of chupons, 92.6% to phytosanitary harvest, 77.9% to identification of mirids, 25.0% to causes of black pod diseases, 77.9% to identification of beneficial insect, 100% to issues on hazardous child labour, 54.4% to correct tree spacing/density, 73.5% to identification of canker and 42.6% to identification of stem borers. This result also aligns with that of Anaeto et al. (2017) who observed that farmers were knowledgeable on all the activities of FFS listed. Furthermore, this finding is consistent with those of Manoj and Vijayaragavan (2014).

Perceived effectiveness of FFS in influencing utilization of agricultural technologies

Table 5 presents the result on perceived effectiveness of FFS in influencing utilization of agricultural technologies. Seven technologies were outlined to assess whether respondents were aware, had tried or utilized them. The results revealed that the majority (76.4%, $\bar{x}$=2.53) utilized "Eco-friendly weeding technique"; most (62.9%, $\bar{x}$=2.29) of them utilized "better preservation method"; and majority (61.9%, $\bar{x}$=2.42) of the participants utilized organic manure in their farms. However, FFS was effective in helping only few farmers (18.9%, $\bar{x}$=1.56 and

Table 6. Mean distribution of respondents based on constraints faced during FFS training.

Constraints	$\bar{x}$	SD	Rank
Non-availability of inputs	3.07	0.98	1st
Difficulty in understanding technical terms	2.36	0.69	5th
Lack of cooperation by other participants	1.98	0.51	10th
Difficult and stressful procedures	2.64	0.68	4th
Inadequate trial and training materials	2.97	0.98	2rd
Inconsistent farmers' participation	2.31	0.67	8th
Long hours of training	2.34	0.67	6th
Lack of training allowance	2.71	1.1	3rd
Irregular presence of facilitators	1.79	0.62	12th
Biasness of trainee selection	1.85	0.6	11th
Strict and hectic schedule	2.34	0.7	7th
Gender insensitivity	2.29	0.7	9h

Source: Field survey (2021). $\bar{x}$ = Mean, SD = Standard Deviation.

26.7%, $\bar{x}$=1.62) to utilize "Stem cutting treatment" and "Fermentation technique", respectively. Majority (63.2% and 64.5%) of respondents in these two categories were only aware of the technologies, without utilizing them.

Evidence from Table 5 shows that some participants tried these technologies but did not utilize them. This could be due to lack of proper understanding of the methods, techniques and (or) principles of these technologies.

FFS was seen to be effective in presenting innovations to farmers and persuading the majority of them to use the majority of these technologies, according to the findings. This result is buttressed by the weighted mean score, which further reveal that FFS as an extension tool for influencing farmers has proven to be effective in making farmers utilize about 71% of the technologies listed in the Table 5. This result was supported by the findings of Lwala et al. (2016) whose research brought to fore that FFS was instrumental to the adoption and utilization of technologies. The result was also supported by Ongachi (2017).

Constraints faced by participants of FFS

Table 6 presents the result on constraints faced by farmers in FFS training. It was realized that non-availability of inputs ($\bar{x}$=3.07) ranked first among the listed constraints. Inadequate trial and training materials ($\bar{x}$=2.97) ranked second; lack of training allowance ($\bar{x}$=2.71) ranked third; difficult and stressful ($\bar{x}$=2.64) ranked fourth and difficulty in understanding technical terms ($\bar{x}$=2.36) ranked fifth. The least on the list was irregular presence of facilitators. This reveals that the most salient constraints encountered by participants were non-availability of inputs, followed by inadequate trial and training materials.

Conclusion

It was also discovered that FFS was effective in training participants; helping them to learn new ways of doing things in their farm; helping them to understand the importance of new technologies; and helping them to adopt new methods and techniques. The findings indicated that FFS was thought to be beneficial in a favourable light. In terms of technology, the results showed that FFS was effective in presenting innovations to farmers and persuading the majority of them to use the majority of these technologies. This result is buttressed by the weighted mean score, which further prove that FFS as an extension tool for influencing farmers has proven to be effective in making farmers utilize 71% of the technologies.

Howbeit, Farmer Field School in the study area has not portrayed any significant achievement such as mechanized farm (cassava). This could be due to a scarcity of financial means or a lack of knowledge and inappropriate monitoring among others, which deserve to be adequately addressed so as to expand its effect and reach to more farmers.

The results from this study have confirmed that Farmer Field School is a participatory extension approach. Thus, government and agricultural policy makers should adopt farmer field school as the primary approach of extension in Nigeria. FFS proved to be effective in training farmers on new ideas, as well as technology utilization. Therefore, it should be utilized when introducing any innovation to farmers. Non-availability of inputs and training materials were observed to be key constraints faced by participants. Thus, subsequent funders and

facilitators of FFS should endeavor to provide adequate inputs and training materials to make information delivery more effective.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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