



Participation of cocoa farmers in farmers field school in Idanre Local Government area of Ondo State, Nigeria

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Abstract

This study investigated the participation of cocoa farmers in farmers' field school (FFS) in Idanre local government area of Ondo state. A multistage sampling procedure was employed for the survey of the farmers. The data collected was analysed using descriptive statistics such as frequencies, percentages and means. The analysis of the socio-economic characteristics of the farmers revealed that about one-third (36.7 percent) of the cocoa farmers were aged 51 years and over, indicating an aging workforce, while 48.3 percent of them were married. About 29.2 percent of the respondents had secondary school education, 44.2% had household sizes of between 3 and 5, and 30.8% had farm sizes of between 2 and 2.9 hectares. Major factors determining participation in FFS were age, level of education, credit sources and extension contacts. Farmers participated highly in land preparation while level of participation is low in control of pests and diseases. Severe constraints faced were lack of skilled trainers and time-consuming sessions. There was a significant relationship between socio economic characteristics and participation in FFS. There is the need to strengthen farmer-based groups to serve as platforms for disseminating extension services information to farmers which could engender the participation of members in farmers' field school. Moreover, the relevant authorities should provide farmers with credit facilities to enable them to purchase productive resources such as land.

Key words: Agricultural extension; constraints; information; land preparation

Introduction

Agricultural extension is widely considered a crucial kernel of agricultural service delivery in many developing countries. Clearly, information access and sharing are important vehicles for diffusion of knowledge on best farm practices to drive agricultural productivity. The knowledge imperative of the agricultural sector is heightened by growing challenges of climate change, land degradation, water shortages and dwindling markets (Ateka, Onono, Okelo and Etyang, 2017). These challenges warranted the revisit of traditional extension models culminating in the introduction of the concept and practice of "Farmers Field School" (FFS) in Indonesia

around the 1980s by the Food and Agriculture Organization (FAO) anchored on the expression *Sekolah Lapangan*, meaning just a field school, in response to adverse fallouts of the Green Revolution in Southeast-Asian rice production (Van den Berga et al. 2020). The original concept was the promotion of Integrated Pest Management (IPM) to extend effective knowledge to farmers (Pontius, 2003) variable field conditions (FAO, 2016a). The FFS proved highly successful by facilitating prompt and apposite decisions on crop management drawing on extensive field experiences (Roy, et al., 2015).

The Farmer Field School is typically characterized as a school without walls

designed to develop imaginative and critical thinking, enhance analytical capabilities, and improve farmers' diagnostic and decision-making aptitudes, group collaboration, team building and farmer empowerment, to stimulate local innovations for sustainable agriculture (Abdullah *et al.*, 2014). The participatory nature of the interactions avails farmers the opportunity to choose production methods and farm management techniques through discovery-based learning tools (Bello, 2020). Core elements of FFS is experiential learning undergirded by the bottom-up, learner-centred participatory approach (Pontius, 2003). Thus, group learning is based on discovery, experimentation, observation, and analysis (Khisia, 2004); the priorities set by farmers drive the choice of curriculum, while the overarching aim of the schools is to build problem-solving capabilities to empower farmers to tackle problems by themselves (Liebman, 2016).

The inspirational successes of the FFS in several countries triggered the adoption of the approach in Nigeria as the Cocoa Rehabilitation Programme (CRP) which is domiciled at the Federal Ministry of Agriculture and Natural Resources adopted the extension method in 14 cocoa producing states, including Ondo - the largest producer of cocoa in Nigeria (Adisa and Adeloye, 2012). This has spurred collaboration between the CRP Committee and the International Institute of Tropical Agriculture (IITA)/Sustainable Tree Crop Program (STCP) in Ondo State. Furthermore, the success of this initiative in Ondo State informed the replication of FFS in the remaining 13 states of Nigeria that produce cocoa. An impacts assessment of FFS conducted by STCP showed that the program engendered considerable improvements in outputs, agricultural practices, and knowledge of Integrated Crop and Pest Management (ICPM) by cocoa farmers in Cross River and Ondo States. In the light of the foregoing, this

study investigates factors influencing the participation of cocoa farmers in farmers field school in Idanre Local Government Area of Ondo State.

Nigeria has regressed in the global order of cocoa exportation to the fifth largest producer behind Cote d'Ivoire, Ghana, Indonesia, and Brazil. This is due to shrinking volume and diminishing quality of the cocoa produced in the country. Specifically, the national average yield of cocoa plummeted to 300-350 kg per hectare which is significantly short of the desired output of 500-1000 kg per hectare. The interplay of elderly cocoa farmers, aged cocoa trees, unsatisfactory management systems, and defective extension schemes were responsible for the decline (Adisa and Adeloye, 2012). Consequently, plethora of interventions has been implemented in Nigeria to ramp up cocoa production and upgrade productivity in the cocoa sector. One of such interventions is the Farmers' Field School (FFS) approach (Oguntade, Fatumbi and Okafor, 2013). Unfortunately, despite concerted efforts to arrest the slump and change the cocoa narrative in Nigeria, the envisaged improvements have yet to materialize, with production volume still abysmally low. Significantly, one study found that technical efficiency (TE) among smallholder cocoa farmers in Nigeria ranged between 0.11 and 0.91, indicating the presence of technical inefficiency effects in the country's cocoa sector (Agom, *et al.*, 2012).

A systematic body of knowledge has developed around the FSS as an extension approach to cocoa production in Nigeria, including the factors driving the performance of FSS, the participatory nature of the FFS relative to other approaches, the effects of FFS on the technical efficiency of cocoa farmers, and farmers' perceived benefits from participating in the FFS (Adisa and Adeloye, 2012; Okeogbene, 2013; Oguntade, Fatunmbi,

and Okafor, 2019). Curiously, despite the acclaimed benefits of the program, many farmers are reluctant to participate in the extension model. Hence, this study examines factors influencing the participation of cocoa farmers in farmers' field schools in the Idanre Local Government area of Ondo State.

The main objective of the study is to examine the participation of cocoa farmer in Farmers' Field School (FFS) in Idanre Local Government Area of Ondo State. Specifically, the study describes the socioeconomic characteristics of respondents, analyses level of participation, ascertained the determinants of participation in FFS and identified constraints to participation in FFS in the study area.

Materials and Methods

The study was conducted in Idanre local government area, Ondo State, Nigeria. The study population comprised all cocoa farmers in the study area. Multistage sampling procedure was used to select respondents for this study. Stage one involved purposive sampling of two (2) districts in Idanre LGA namely: Odode Idanre and Alade district. These two districts were selected because they are the highest producers of cocoa in Idanre LGA of Ondo state. Stage two involved the random selection of three (3) communities from each of the two (2) districts, making a total of six (6) communities. Finally, twenty (20) respondents were randomly selected from the six (6) communities making a total of one hundred and twenty (120) respondents.

The data collected was analysed using descriptive statistics such as frequencies, percentages and means to describe the socioeconomic characteristics of the respondents (Age, Sex, Religion, Marital Status, Family Size, Farm Size, Educational

Level, etc), and level of participation of the farmers in Farmers' Field School. The analytical technique includes a probit model as follows:

$$P(y = 1) = F(XB) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{XB} e^{-\frac{(XB)^2}{2}} dx$$

$$X = (1, X_{1i}, X_{2i}, \dots, X_{ki})$$

$$\beta' = \beta_0, \beta_1, \dots, \beta_k$$

$$\begin{aligned} \text{Prob(FFS partic 1 \& otherwise 0)} \\ = \delta_0 + \delta_1 \text{sex} + \delta_2 \text{age} \\ + \delta_3 \text{educ} + \delta_4 \text{credsource} \\ + \delta_5 \text{farm size} \\ + \delta_6 \text{extensioncontact} \end{aligned}$$

Results and Discussion

Socio-economic characteristics of the respondents

Table 1 reveals that 9.2% of the respondents were between the age of 21 and 30 years, 32.5% were aged 31 to 40 years, 21.7% were aged 41 to 50 years and 36.7% were age 51 years and over. This indicates that majority of the respondents were within the economically active age group. The sex distribution of the respondents showed that 55.0% were male and 45.0% were female, indicating a fairly gender balanced sample. The distribution of the respondents by marital status showed that 28.3% were single, 48.3% were married, 5.0% were divorced, 10.8% were widowed and 7.5% were widower. The educational profile of the respondents indicates mostly literate producers of the commodity as 22.5% of the respondents had no formal education, 20.0% had only primary school education, 29.2% had only secondary school education and 28.3% had tertiary education. These results corroborate the findings of Adisa and Adeloye (2012) regarding respondents' age, years of formal education, marital status, and gender.

Table 1: Socio-economic characteristics of the respondents

ITEMS	FREQUENCY	PERCENTAGE (%)
AGE		
21-30	11	9.2
31-40	39	32.5
41-50	26	21.7
51 and above	44	36.7
SEX		
Male	66	55.0
Female	54	45.0
MARITAL STATUS		
Single	34	28.3
Married	58	48.3
Divorced	6	5.0
Widowed	13	10.8
Widower	9	7.5
EDUCATIONAL ATTAINMENT		
No formal Education	27	22.5
Primary school education	24	20.0
Secondary school education	35	29.2
Tertiary education	34	28.3
HOUSEHOLD SIZE		
0-2	40	33.3
3-5	53	44.2
6-9	27	22.5
FARM SIZE IN HECTARES		
Less than 1.0	26	21.7
1.0-1.9	12	10.0
2.0-2.9	37	30.8
3.0-3.9	28	23.3
4.0 and above	17	14.2
SOURCE OF CREDIT		
Savings	40	33.3
Bank	42	35.0
Cooperative	38	31.7
SOURCE OF LABOUR		
Family members	33	27.5
Hired labour	62	51.7
Others	25	20.8
ANNUAL INCOME		
Less than 40,000	14	11.7
41,000-60,000	37	30.8
61,000-80,000	27	22.5
81,000-100,000	23	19.2
101,000 and above	19	15.8
EXTENSION CONTACT		
Yes	94	78.3
No	26	21.7

Source: Field Survey, 2021

The household size distribution of the respondents showed that 33.3% have household size between 0 and 2, 44.2% have household size between 3 and 5; 22.5% have household size between 6 and 9. The farm size distribution of the respondents showed that 21.7% had farm sizes less than 1.0 hectare, 10.0% had farm size between 1.0 and 1.9 hectares, 30.8% had farm size between 2.0 and 2.9 hectare, 23.3% had farm size between 3.0 and 3.9 hectares and 14.2% of the respondents had farm size of 4.0 and above hectares. In terms of sources of credit, 33.3% got their credit from personal savings, 35.0% accessed credit from bank and 31.7% sourced credit from cooperatives. Respondents' labour source distribution revealed that 27.5% used family members as source of labour, 51.7% hired labour, while 20.8% engaged labour from other sources. The distribution of annual income of the respondents shows that 11.7% earned annual income less than ₦40,000, 30.8% earned ₦41,000 to ₦60,000 as annual income, 22.5% earned ₦61,000 to ₦80,000 as annual income, 19.2% earned annual income ranging from ₦81,000 and ₦100,000, while 15.8% earned annual income of ₦101,000 and over. Finally, 78.3% of the respondents had contact with extension officers.

Level of participation of cocoa farmers in farmers' field school

Table 3 showed that the preponderance (85.0%) of the respondents indicated high participation in land preparation as a component of FFS, 7.5% indicated low participation and same number (7.5%) indicated no participation. On the control of pests and diseases module of the FFS, less than half (43.3%) indicated high participation, 51.7% indicated low participation and 5.0% signified no participation. Furthermore, 39.2%

indicated high participation in environmental awareness component of the FFS, 40.0% signified low participation, while 20.8% indicated no participation in environmental awareness. Furthermore, 36.7% of the respondents signified high participation in the planting practices module, 46.7% indicated low participation and 16.6% indicated no participation. Similarly, 29.2% of the respondents indicated high participation in sowing method component, 45.0% indicated low participation and 25.8% declared no participation.

On the component of processing of farm products, 42.5% of the respondents indicated high participation, 31.7% indicated low participation, and 25.8% indicated no participation. Finally, 40.8% of the respondents indicated high participation in "other practices" module of farmers field school, 33.3% indicated low participation and 25.8% indicated no participation.

Correlation analysis showing relationship between Socio economic characteristics of the respondents and Participation in Farmers' field school

Table 3 shows significant relationship between socioeconomic characteristics of the respondents and participation in farmers' field school ($r=0.940$, $p<0.05$). This finding is consistent with that of Bello (2020) that the level of participation in FFS was significantly associated with education, farm ownership, farm size, and the period of residency. Similarly, Adisa and Adeloye (2012) found a positive and significant relationship between improvement in cocoa management practices and the respondents' age, years of formal education, and years of experience in cocoa production.

Table 2: Level of participation of cocoa farmers in farmers field school

S/N	Activities in FFS	High participation	Low participation	No participation
1	Land preparation	102 (85.0%)	9 (7.5%)	9 (7.5%)
2	Control of pest and diseases	52 (43.3%)	62 (51.7%)	6 (5.0%)
3	Environmental awareness	47 (39.2%)	48 (40.0%)	25 (20.8%)
4	Planting practices	44 (36.7%)	56 (46.7%)	20 (16.6%)
5	Sowing methods	35 (29.2%)	54 (45.0%)	31 (25.8%)
6	Processing of farm products	51 (42.5%)	38 (31.7%)	31 (25.8%)
7	Others	49 (40.8%)	40 (33.3%)	31 (25.8%)

Source: Field Survey, 2021

Table 3: Relationship between Socioeconomic characteristics of the respondents and participation in FFS

Variable	N	R	p-value
Socioeconomic characteristics	120	0.940*	0.045

Source: Field Survey, 2021

* = significant, p,0.05

Regression results of factors influencing cocoa producers' participation in FFS

The factors influencing participation in FFS in Idanre Local Govt Area of Ondo State, Nigeria was analysed with a maximum likelihood probit model. The result shown in Table 4 reveals that the significant determinants of participation in FFS were age, education, credit source and extension contact.

Table 4: Regression results of determinants of participation in FFS

Dependent variable: FFS	
Sex	-0.376 (0.45)
Age	0.056* (0.024)
Educ	0.204* (0.052)
Credit source	0.356* (0.042)
Farmsize	0.062 (0.456)
Extension contact	0.367* (0.026)
Constant	10.356 (3.672)
No of obs	120
Log Likelihood	-35.784

Indicates significant, p<0.05

Constraints to cocoa farmers in participating in the Farmers' Field School

Majority of the respondents (73.3%) considered lack of skilled trainers a severe constraint to participation in farmers' field schools, while 62.5% of respondents regarded irregular presence of trainers as a mild constraint. One-half (50%) of the respondents considered time consuming sessions a severe constraint to participation in farmers' field

schools. Almost half (49.2%) of the respondents deemed biasness in trainer selection a mild constraint, while (37.5%) considered it a severe constraint to participation in farmers' field schools. Finally, 37.5% regarded scarcity of land for practical for participating farmers as a severe constraint to participation in farmers' field school, 44.2% believed that it was a mild constraint and 17.5% characterized it as not a constraint.

Table 5: Constraints to participation in FFS

S/N	Constraints	Severe	Mild	None
1	Lack of skilled trainers	88 (73.3%)	22 (18.3%)	10 (8.3%)
2	Irregular presence of trainers	24 (20.0%)	75 (62.5%)	21 (17.5%)
3	Time consuming sessions	60 (50.0%)	37 (30.8%)	23 (19.2%)
4	Biasness in trainer selection	45 (37.5%)	59 (49.2%)	16 (13.3%)
5	Scarcity of land for practical for participating farmers	45 (37.5%)	53 (44.2%)	21 (17.5%)

Source: Field Survey, 2021

Conclusion and Recommendations

The results concluded that the major factors determining participation in FFS were age, level of education, credit sources and extension contacts. Farmers highly participated in land preparation; level of participation is low in control of pests and diseases. Severs constraints were lack of skilled trainers and time-consuming sessions. There was a significant relationship between socio economic characteristics and participation in FFS. There is the need to strengthen farmer-based groups to serve as channels for the dissemination of extension services to farmers. The farmers should be provided with credit facilities to enable them purchase productive resources such as land.

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