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Participation of Cocoa Farmers in Farmers Field School and its Effect on Yield in Osun State, Nigeria

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Abstract

This study examined the participation of farmers in Farmers Field School (FFS) and their effect on productivity in Osun state, Nigeria. A multistage sampling procedure was employed to select 98 respondents from the study area, with 50 being participating cocoa farmers in FFS) and 48 non-participating cocoa farmers. Data were collected with the aid of a semi-structured questionnaire and were analysed with percentages, mean and T- test. The result shows that the farmers participated in the management training programme: spacing($\bar{x}$=3.90), shading techniques($\bar{x}$=3.86), making the decision about where to replant cocoa ($\bar{x}$=3.82), sowing seeds in poly bags ($\bar{x}$=3.74) and killing undesirable shade trees in a cocoa farm ($\bar{x}$=3.70) and pruning ($\bar{x}$=3.40). The mean yield before and after FFS were $\bar{x}$=1133kg/ha and $\bar{x}$= 1767kg/ha, respectively. The mean difference was ($\bar{x}$= 634kg/ha) Cocoa yield before FFS and after FFS were significantly different (p=0.00, t=13.95). Farmer's field school should be organized for all the cocoa farmers in all the cocoa-grown zones in Nigeria in order to increase their productivity, reduce poverty and increase their standard of living.

Keywords: Participation in farmers' field school, effects, yield

Introduction

Agriculture in Nigeria has been characterized by a lot of limitations due to a lack of technical know-how, In spite of the great prospect that cocoa production has, Nigeria's production is still far below her capacity because of a lack of proper management training on the better way of boosting our production in the country. Cocoa also plays a major role in terms of income and employment for rural populations, especially for small-scale farmers who are responsible for over 90 percent of the world's cocoa production (Duncan, 2019). The average quantity of cocoa produced in Nigeria between the years 2000 to 2019 was 366,971 tonnes/annum with an increase from about 225,000 tonnes recorded in 1999 (Food and Agriculture Organization, 2021). Nigeria is in the fourth position among cocoa-producing nations after Ivory Coast, Ghana, and Indonesia, and the third-largest exporter, in Africa (FAO, 2021). In Nigeria, the top cocoa-growing states,Osun, Ondo, Ogun, Oyo, and Ekiti account for about 60% of the cocoa production in Nigeria (Afolayan, 2020).

Cocoa export in Nigeria as of 2019 was 299,625 tonnes (FAO, 2021). Nigeria's export earnings from the cocoa industry are worth $740 Million which represents only 2% of the nation's exports. Presently, Nigeria with a production capacity of 328,263 tons (7%) is ranked 4th among cocoa-producing countries in the world. (Etaware, 2022).

Training is the fundamental thing in extension and this training must be carried out by an expert. Farmer Field School (FFS) is an approach based on people-centred learning. It can be referred to as an in formal education system which gives opportunity to farmers to develop themselves.

Farmer Field School (FFS) is a commonly used method in rural development because it empowers farmers to make decisions that will eventually impact on their human, social, natural and financial knowledge. Practical methods of creating a favourable learning environment: the participants can share their knowledge and experience in an atmosphere where risks are minimized. Practical field exercises using direct observation, discussion and decision-making encourage learning-by-doing. FFS employs a non-formal approach to pass new knowledge of improved and good agricultural practices to farmers. According to Adebowale, (2020), It is an approach to teaching farmers in an informal setting within their own surroundings. FFS are "schools without walls" which create a platform for groups of farmers and facilitators to meet weekly and are a method of learning technology development and dissemination that are participatory, based on principles of adult learning like experiential learning (Adebowale, 2020).

According to van den Berg et al (2020,)the impact of farmers participating in farmers' school ranges from human, social, natural and financial benefits which culminate in realization of Sustainable Development Goals. This statement varies from one region to the other and that is why this research intends to verify this statement among the cocoa farmers in Nigeria. This is the gap this research wants to fill as the finding would add its own contribution to the world knowledge bank. Agricultural Extension is the authority which looks for ways to raise expert proficient needed for the operation of a system of services which provide assistances to rural people through educational programmes with aim of improving rural and urban farming techniques and methods, improved production efficiency and financial stability, pattern of living and achievement of a more fulfilling rural and urban life (Ekpere, 2019).

Farmer field school was initially developed by FAO in 1989 as a method to promote practices of integrated pest management across rice farmers in Indonesia. Central to the approach was a shift from pure information delivery as in traditional extension models toward participatory experiential learning with a strong focus on developing analytical skills and solving problem capacities among farmers by using highly trained facilitators,

The method empowers farmers to be versatile on major aspects of localized farming systems, and its method of training is interactive and practical. The characteristics of defining FFS include group action, discovery learning, and farmer experimentation.
Farmer Field School has long been in existence in Asia and some parts of Africa but in Nigeria it is relatively new and was introduced into Nigeria in 2003 through a project financed by the United States Agency for International Development (USAID) the Sustainable Tree Crops Programme that is working on cocoa,. The specific objectives

for FFS method among other things was to create an avenue in which farmers acquire the knowledge and skills that will enable them to make sound management decisions thereby enhancing their level of production.

In several Countries in the world, FFS as a relatively new agricultural extension method has recorded successes, with this new approach in Nigeria, Farmer Field School has proven to lead to farmers' enthusiasm, self-confidence and a considerable reduction in insecticide use. In most cases, the results have been encouraging for the FFS extension approach that has been used in many developing countries. However, for tree crops like cocoa, the assessment of the effectiveness of FFS agricultural extension approach has not been comprehensively carried out to determine whether it is a better approach or not.

For the Tree Crops Initiative (TCI) objective of the government is the swift multiplication and distribution of high yielding, resistant to disease and planting seeds that mature early, seedlings and plantlets to farmers at subsidized rates. Despite the fact that programmes were created toward developing and improving Nigerian agricultural productivity, the impact has not been well felt across the country because it is not certain that all farmers have participated in the programme. Therefore, this study seeks to identify the participation mean of the farmers in the study area and also ascertain whether there is any gain derived by farmers by participating in FFS in the region. The question therefore, are there any differences between the farmers' yield after participation or not? Therefore, this study focused on two categories of farmers and they are as follows: Firstly, farmers that partake in farmers' field school and secondly, those farmers that do not partake in farmers' field school. This study intends therefore to provide answers to the following research questions:

1. What is the level of participation of cocoa farmers in FFS?
2. What is the effects of participation in FFS on yield of cocoa farmers?

The broad objective was to examine the participation of farmers in farmers field school and its effects on the yield of cocoa farmers The specific objectives were to:

1. assess the level of participation of cocoa farmers in FFS; and
2. examine the impact of FFS on the yield of cocoa farmers.

Ho_1: there is no significant difference between the yield of cocoa before and after their participation in FFS.

Methodology

The study was carried out in Osun state, Nigeria. The area of study is between latitude 7° 46' 15.74" N and Longitude 4° 33' 25.13" E. A combination of purposive and random sampling techniques was used to select a total of five local government areas for the study. A purposive sampling technique was employed to select the areas with a high concentration of cocoa while a random technique was used to select 20 farmers from each local government comprising of 10 farmers that participated in FFS and 10 non-participating farmers giving us a sample size of 100 respondents. However, only 98 farmers were retrieved for analysis.

Section one contained the farmers' level of participation in management training introduced to them, which was measured on a 4-point rating scale (1 = Low, 2 = Intermediate, 3 = High and 4= very high). Section two covered the farmers' yield per

hectare of cocoa production of the participation farmers as recorded by the farmers. Data were collected with the aid of a structured questionnaire. The data collected were analysed with mean, percentages and T-test

Result and Discussion

Level of Participation of the Farmers in the Management Training Exercise Organized for Farmers

Table 1 shows that out of 27 training exercises organized for farmers in the Farmers Field School, only 13 recorded high participations while the remaining had low participation. The training exercise that recorded the highest and first position with the mean score of 3.90 was training on appropriate spacing requirements for the effective production of cocoa tree, which was followed by training importance of shade for young cocoa trees with a Mean score of 3.86.and they include Grand mean of 2.99 Any mean greater than 2.99 is considered high while below is considered low. The result indicates that farmers were introduced to different capacity-building programme but their participation was low , which might have affected cocoa production level This is in line with the finding of Shangshon, et al., 2023 who reported low participation of farmers in agricultural extension activities were low According to Kassem et al., 2021, low participation could be attributed to lack of awareness., the ineffectiveness dissemination methods of various services, farmers' inability to attend meetings, wrong timing, poor teaching aids, or poor communication strategies. However, Farmers Field School has been of more value to the farmers because according to Henk van den Berg et al (2020) FFS impacts human capital and the social lives of the farmers therefore, in order to increase participation constraints to their participation must be dealt with.

Table 1: Level of participation of Cocoa farmers in the management training exercise organized for farmers

	Training Exercises	Mean	S D
1	Cocoa tree intensification procedure	2.98	.515
2	Rehabilitation and elimination of cocoa tree	3.12	.328
3	Soil characterization	2.76	.687
4	Choosing where to replant cocoa seedlings	3.82	.560
5	Eliminating undesirable shade trees in a cocoa farm	3.70	.544
6	Preparation of cocoa nursery	2.98	.515
7	Poly bags seedling raising	3.74	.828
8	Poly bag size effect on seedling survival	2.14	.700
9	cocoa nursery development and monitoring	3.02	.428
10	Cassava and plantain provideinitial shade for cocoa	3.10	.416
11	Dynamic of spacing and benefit between cocoa trees	3.90	.303
12	The impact of shade for cocoa seedlings	3.86	.351
13	Digging holes procedure for cocoa establishment	3.00	.202
14	Field establishment of cocoa seedlings	3.56	.760
15	Pruning Skills and tactics	2.36	.749
16	Sanitary pruning	3.26	.487
17	Tree identification diversification process	2.24	.480
18	Non- cocoa trees selection procedure	2.82	.629
19	Farm map development and formation	2.20	.495
20	Collecting, processing and storing local tree seeds	2.80	.571
21	Sowing on nursery beds	3.70	.707
22	Planning a mixture of cocoa treeswith non-cocoa trees	2.90	.416
23	Establishing non-cocoa trees in cocoa fields	2.18	.388
24	Implementation of planting Process ofnon-cocoa	2.18	.523
25	Selection and establishment of trees in cocoa farm	2.86	.405
26	Pruning forest trees	2.34	.658
27	Knowing your rights regarding ownership of trees	3.12	.521
	Grand mean	2.99	

Source: Field Data ,2022

Cocoa Yield Before and After Participation in FFS

Tables 2 and 3 show the distributions of cocoa yield before the FFS and after FFS training. The cocoa yield for cocoa farmers before FFS shows a mean of 1133.20 and a standard deviation of 575.675, the majority of the results show less than 1100-1500 kg (62%) while for the yield after FFS, it reveals that they had a mean of 1767.04 and a standard deviation of 894.324 while the major findings for this result is also from more than 1600 kg with a percentage of 68%. According to this result, FFS had a good impact on their yield because their yield increased as a result of skills learnt at FFS.. This is in line with KAMDEM 2017 that participation in FFSs by cocoa farmers have a positive and significant effect on the cocoa yield per hectare. He slated at 97kg per hectare while this finding shows the same result but a higher yield than that of Cameroun ($\bar{x}$= *634kg/ha*)

Table 2: Cocoa yield before FFS training

Yield (Kg)	**%**
≤500	**30.0**
600-1000	**4.0**
1100-1500	**62.0**
≥1600	**4.0**
Total	**100.0**
$\bar{x}$= **1133.20**	
Standard Deviation **575.675**	

Source: Field Data , 2022

Table 3: Cocoa yield after FFS training

Yield	**%**
≤500	**18.0**
600-1000	**12.0**
1100-1500	**20.0**
≥1600	**68.0**
$\bar{x}$ = **1767.04**	
SD 894.324	

Source: Field Data, 2022

Difference in Yield before and after FFS Participants

The results (Table 4) reveal that there is a significant relationship between the cocoa yield before and after the FFS participants therefore we reject the null hypothesis and accept the alternate hypothesis because there was a significant relationship between their yield before and after FFS. The mean yield before and after FFS were $\bar{x}$=1133kg/ha and $\bar{x}$= 1767kg/ha respectively. The mean difference was ($\bar{x}$= 634kg/ha). Cocoa yield before FFS and after FFS were significantly different (p=0.00, t=13.95)

Table 4: Difference between the yield before and after of FFS participants

PAIRED VARIABLES	MEAN	STANDARD DEVIATION	STANDARD ERROR MEAN	SIGNIFICANCE (2- TAILED)	DEGREE OF FREEDOM
COCOA YIELD BEFORE FFS	1131.200	575.675	81.413	0.000	49
COCOA YIELD AFTER FFS	1765.040	894.324	126.477	0.000	49

Source: Field Data, 2022

Conclusion and Recommendation

Participation in the management training programmes were low and this may have great effects on the objectives of the programme as the impact on the yield was significant as the yield of the farmers increased as they participated in the programme.

Farmers should be encouraged to attend training and workshop where FFS is to be taught through incentive. This Platform which provides opportunities in enhancing farmers' knowledge and awareness of FFS techniques through training programs, workshops, and extension services by extension agents will go a long way in improving farmers' productivity and income. The farmer's field school should be organized for all the cocoa farmers in all the cocoa grown zones in Nigeria to increase their productivity.

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