Effect of Farmers' Field School (FFS) on Maize Production among Women Farmers in Ondo State

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Abstract

Farmer Field School (FFS) is a popular education and extension approach worldwide that uses experiential and group approaches to facilitate farmers in making decisions, solving problems, and learning new techniques. The study investigated the effect of FFS on women farmers' production in Ondo State. Purposive sampling technique was used to select two local government areas based on the presence of women among the groups or women dominated groups. One hundred and sixty (160) respondents, comprising 80 participants and 80 non-participants were randomly selected. Data were collected with the use of interview schedule and analysed using frequencies, percentages, chi-square, Pearson product moment correlation and t-test at 0.05 level of significance. The results indicated that more than half (51.9%) had farm size of 0.5-1.5 hectares, 49.4% affirmed high effect of FFS, 50.0% gained high knowledge, and 38% experienced between half and double increment on their level of production. There was significant relationship between marital status (χ^2=7.73), level of education (χ^2=14.09), motivating factors (r =0.673), knowledge gained (r=0.551) and the level of production of women farmers. There was significant difference in the level of production (t=13.450) between the participants of farmer field school and non-participants; and that participation in FFS impacted positively on the level of maize production of participants. Thus, it was recommended that government and non-government organizations should support FFS through adequate funding.

Keywords: Women farmers, farmer field school, agricultural production

Introduction

Societies have defined themselves by the way and degree in which they have succeeded in increasing agricultural production (FAO, 2004). In Nigeria, the most common and effective extensive adjustment in agricultural production has been to increase the area of cultivated land. Agricultural policies and programmes in the country have undergone changes, especially in the post-colonial era. Such changes have been a mere reflection of changes in government administration (Amalu, 1998), as the policies and programmes vary only in nomenclature and organizational network.

Over the years, different agricultural extension systems have been introduced in Nigeria, including the training and visit (T&V) system, which has remained ineffective since the World Bank withdrew its funding assistance. Others are Operation Feed the Nation and Agricultural Development Project (ADP). These systems contributed to increasing agricultural production but not without some challenges. The extension approach they operated were criticised for providing a 'one size fits all' approach (Birner et al., 2006). They failed because of diverse socioeconomic factors and institutional environments faced by farmers, and due to non-involvement of farmers in the development of technologies and practices relevant to their contexts (Anaeto et al., 2014)

In view of the need to have a sustainable and efficient extension system, the concept of Farmers' Field School (FFS) was introduced as a participatory approach towards solving the dearth of knowledge and skill gap by the

Nigerian farmers. FFS is a problem-solving approach that leans on the fact that farmers are actively involved in the activities of the school. FFS is a field-oriented discovery based on learning process. It is an empowerment process that has deviated from the training and visit extension system which is top down approach. It is a participatory and interactive approach to social learning.

FFS is a capacity building method based on adult education principles using groups of farmers. It is best described as a 'school without walls', where farmers learn through observation and experimentation in their own fields. This allows them to improve their management skills and become knowledgeable experts on their own farms. FFS gives farmers the opportunity to know why each step or action is taken in crop/animal production. Similarly, in Ondo state in the field school, emphasis is laid on growing crops like cocoa, cassava, maize and the likes with less disruption on the environment. The training methodology is based on learning by doing, through discovery, comparison using a bottom-top approach.

Women farmers participate in FFS with a group size of between 25 - 30 persons. However, group cohesion as observed by Ayodele, Fasina and Awoyemi (2016) has not been strong among women and men farmers due to marginalization of the former on issues such as agricultural loans, agricultural inputs and access to extension services which may pose a challenge to the production capacity of participating women farmers in FFS. These notwithstanding, the activities and performances of women farmers in FFS cannot be overlooked. Explorative survey by the researcher prior to data collection revealed more women's participation than men which is a great transformation in the history of development programme in Nigeria as a whole. The effects of farmers' field school on women participants in crop production needs to be established in order to encourage women in other states and localities throughout Nigeria. This study therefore investigated the effect of farmers' field school on maize production among women farmers in Ondo state. The specific objectives were to: describe the personal characteristics of women farmers in the study area; ascertain the motivating factors for participating in farmers' field school (FFS) by women farmers; examine the knowledge gained by participants in FFS; ascertain the level of involvement of participants in FFS activities; and determine the differences in maize production of participants and non-participants.

Methodology

The research was carried out in Ondo state area of Nigeria. Ondo state lies between latitude 5^0 $4^0$5' and $8^0$15' north of the equator and longitude $4^0$45' and $6^0$0' east of Greenwich Meridian. Agriculture is the main occupation of the people and it provides income and employment for over 75 percent of the population in the state (National Bureau of Statistics, 2010). The population of the study comprises all women maize farmers participating in FFS activities and non-participants in the study area. A multi-stage sampling method was used to select respondents for this study. Ondo state has 18 local government areas out of which 9 local governments have Farmers' Field School. Two LGAs (Akoko Northwest and Idanre) were purposively selected because of the presence of women dominated groups in Farmers' Field School in these local governments. Using simple random sampling technique, forty (40) participants and forty (40) non-participants were selected from each of the two LGAs, giving a total sample size of 160 respondents. Motivating factors for participating in FFS: this was measured using a Likert-scale of strongly agreed (5), Agreed (4), Undecided (3), Disagree (2), Strongly Disagree (1) for positive statements and the scores reversed for negative statements. The mean scores were generated and used to rank each of the motivating factors in order of their significance. Knowledge gained: this was measured by assigning correct answer (1) and wrong answer (0). The mean score was generated and used for categorization of respondents into high and low knowledge. Involvement in FFS activities: this was measured by assigning actively involved 2, passively involved 1 and not involved 0. The mean scores for each FFS activities were obtained and ranked to determine the activities mostly involved in by the

participants. Production was measured in kg on crop harvested for both participants and non- participants in FFS.

Results and Discussion

The result in Table 1 shows that the modal age category of the respondents was 38- 45 years (mean = 49 years). It implies that most of the women farmers in the study areas were in their middle age and should possess the needed strength for farming. This is in agreement with the findings of Ekong (2003) that most farmers in Nigeria have been found to be within the middle age bracket. The age bracket also indicates that the women are young. Agbamu (2006) pointed out that younger farmers readily adopt agricultural innovations. More than half (51.3%) were married, indicating they would be bothered with the responsibility of caring for their families hence, their involvement in farming. Since most (67.5%) of the respondents had family sizes of 4 – 6 persons, family members can help to provide farm labour. This result is consistent with Alade and Eniola (2012) who reported a modal family size of 4- 6 persons among farming households in South West Nigeria. Findings also indicated that 80.7% had one form of formal education. This enhances their chances of adopting new agricultural technologies, because education is an eye opener to learning.

Motivating factors for participation in FFS

As shown in Table 2, credibility of extension workers was ranked first among the factors informing the respondents' participation in FFS. This shows that the respondents display a high level of trust in the farming practices recommended to them by the trainers. Braun and Duveskog, (2008) however, indicated that incorrect recommendations will result in a lack of trust between farmers and the extension workers. Nearness to FFS site ranked second as a motivation. This is in agreement with Bello- Bravo (2011), who found that women farmers in countries of West Africa perform different tasks related to farm work and non- farming activities, both inside and outside the home. Therefore, the nearness of FFS site to the respondents would afford them time to take care of their household responsibilities and also take part in the activities of the school. Provision of soft loan ranked fourth, to which Okpara et al. (2013) asserted that loans are essential tools for the adoption of modern or improved farming practices. Ebowore (2013) reported that participation in FFS contributed largely to farmers' knowledge which, according to Anaeto et al. (2014), could lead to an increase in yield of farmers as they are more likely to apply such knowledge in their farm activities. Hence, expected yield increase and knowledge acquisition were ranked fifth and sixth, respectively.

Knowledge gained from FFS

Table 3 shows that knowledge gained by the respondents as a result of their participation in FFS was equally split between high and low at 50.0%, while the mean was 21.9. Among the knowledge gained were; proper spacing during planting is good for maximum yield; identification of some insects that are beneficial to farmers and that group dynamics activities keep them at alert. It implies that the participants had actually benefitted knowledge- wise from the facilitators of FFS, but motivational factors should be improved upon so that their knowledge level can be enhanced. Overtime, part of the knowledge gained in FFS is that participants have been schooled to perceive problems as challenges, not constraints. Similarly, participants learn different analytical methods to help them gain the ability to identify and solve any problem they may encounter on the field as observed by Sones et al. (2003) that farmers who participated in farmer field school activities tend to identify and solve any problem they come across. It is expected that knowledge gained would result in increase in productivity, as farmers often apply knowledge acquired in their farming activities (Anaeto et al. 2014).

Level of participation in FFS

FFS engages participants on group basis when carrying out its activities, where farmers are empowered collectively rather than individually. Sones and Duveskog (2003)

opined that empowerment through collective action is essential. Farmers united in a group are more effective than single individuals, because the combination of two or more minds yield better results than one mind on its own. However, Table 4 shows a low level of farmer field school activities as most (58.0%) of the respondent were below the bench mark. This low level of participation could be traced to household chores performed by women as well as their limited access to resources. This is further corroborated by Bello- Bravo et al. (2011) that social constraints, cultural traditions, customs and religion, internal family status, and the tenure as well as use of the land often limit women participation in agricultural activities.

Level of maize production among FFS participants

The data in Table 5 reveal that average yield of participants and non- participants in FFS was 1,793.03± 1,847.53kg and 1,213.58±1.374.62kg, respectively. This indicates that maize farmers who participated in FFS had higher yield than non- participants. It also suggests that FFS has benefitted the participants by increasing their crop production. This corroborates Minjauw (2001), who observed that FFS helps to position farmers and the local communities in the capacity to analyse their production system. Davis (2006) similarly observed FFS remarkable contribution towards increase in productivity of farmers.

Relationship between selected variables and level of production

Chi- square results in Table 6 indicates a significant relationship between educational qualification and level of production of the participants (χ^2 = 14.09, p=0.003). This means that educational qualification influences the level of production. Farmers' acquisition of formal education could enhance their innovativeness and facilitate their participation in group activities (Anaeto et al., 2014). This would thus translate to an increase in their farm output.

Table 7 indicates that there were significant correlations between respondents' motivating factors, knowledge gained and level of production. Production of the respondents was affected by the motivating factors in that the more the farmers are motivated, the higher their level of production would be everything been equal. Similarly, the higher the level of knowledge gained by respondents through FFS, the higher their production would be. FFS is known to enable farmers acquire more knowledge, retain such knowledge, share such knowledge and improve their productivity (Rola et al., 2002; Godtland et al., 2003; Bunyatta et al., 2005). The t- test result in table 10 indicates that there was a significant difference between the production of participants and non- participants of FFS. This shows that activities of FFS had a positive effect on participants' production which could be adduced to the knowledge gained coupled with certain benefits derived by the participants from FFS.

Conclusion and Recommendations

The study established a significant difference in the level of maize production between participants and non- participants in farmer field school as participants recorded a higher yield than non- participants indicating that farmer field school approach played an important role in enhancing crop yields through knowledge gained by participants. Conversely, the study found a positive effect between knowledge gained from FFS and level of maize production. This further reiterate the fact that knowledge gained from FFS impacted positively on the level of maize production among women maize farmers who participated in FFS. Hence, government and nongovernment organizations should support FFS by setting aside funds for smooth running of its activities so as to improve participation in FFS activities among women farmers as well as enhance the knowledge gained from FFS. In addition, since women play an important role in agriculture, organizers of agricultural programs should extenuate the factors that could hinder women farmers' participation in planning and execution of agricultural programs.

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Table 1: Distribution of respondents based on personal characteristics

Variables	*Frequency*	*Percentage*	*Mean*
Age			
30- 37	18	11.2	49
38- 45	72	45.2	
46- 53	44	27.6	
54- 61	19	11.9	
62 and above	7	4.4	
Marital status			
Single	12	7.5	
Married	82	51.3	
Divorced	23	14.3	
Widowed	43	26.9	
Level of education			

No education	31	19.4	
Primary education	38	23.8	
Secondary education	57	35.6	
Tertiary education	34	21.3	
Religion			
Christianity	52	32.7	
Islam	77	48.4	
Traditional	31	18.9	
Primary occupation			
Farming only	95	59.3	
Farming and trading	49	30.6	
Farming and civil service	14	8.8	
Farming and teaching	2	1.3	
Family size			
1- 3	31	19.4	4
4- 6	108	67.5	
7- 9	21	13.1	
Farm size (hectare)			
0.5- 1.5	83	51.9	2
2.0- 2.5	68	42.6	
3.0 and above	9	5.5	

Table 2: Ranking of respondents based on motivating factors for participating in FFS

Motivating factors	*Mean*	*Rank*
Credibility of the extension agents	3.73	1st
Nearness and access of the FFS	3.72	2nd
Provision of soft loan	3.67	3rd
Personal conviction that FFS will benefit participant	3.55	4th
Expected increase in yield due to FFS training classes	3.36	5th
Perceived knowledge to be gained in FFS	3.35	6th
Encouragement by friends	2.81	7th
Reward given to farmers in the form of gift items during field day activities	2.65	8th
Encouragement of good social life and healthy living by FFS	2.56	9th
Recognition of participants by government officials of FFS	2.27	10th

Table 3: Distribution of respondents based on knowledge gained from FFS

Knowledge level	*Frequency*	*Percentage*	*Mean*
Low (15- 29)	40	50	21.9
High (30- 39)	40	50	

Table 4: Distribution of respondents based on their level of involvement in FFS

Level of involvement	*Freq.*	*%*	*Maximum value*	*Minimum value*	*Mean*	*Standard deviation*
Low (1- 5.2)	46	57.5	12	1	5.4	2.3
High (5.3- 12)	34	42.5				

Table 5: Distribution of respondents based on the level of production

	Participants in FFS			*Nonparticipant in FFS*		
Yield	*Freq.*	*%*	*Average yield*	*Freq.*	*%*	*Average yield (kg)*
≤ 1,000kg	26	32.5	1,793.03±1,847.53	31	38.8	1, 213.58±1.374.62
1,001 – 2,500kg	42	53.1		39	48.7	
2,501- 4,000kg	12	14.4		10	12.5	

Table 6: Chi- square tests on respondents' personal characteristics and their production

Variables	*df*	*χ^2 value*	*p- value*	*Decision*
Marital status	3	7.73	0.052	Not significant
Level of education	3	14.09	0.003	Significant

Primary occupation	3	3.209	0.360	Not significant
Religion	2	0.683	0.711	Not significant

Significant at $p < 0.05$

Table 7: Correlation tests on FFS motivating factors, knowledge gained and their production

Variables	*r - value*	*p - value*	*Decision*
Motivating factors	0.673	0.000	Significant
Knowledge gained	0.551	0.000	Significant

Significant at $p \leq 0.05$

Table 8: T- test showing difference in production of participants and non- participants of FFS

Variable	*t – value*	*p - value*	*Df*	*Decision*
Participation	13.450	0.000	158	Significant

Significant at $p \leq 0.05$