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Influence of Farmers' Cooperatives Membership on Inputs Access and Land Management in Osun State, Nigeria

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ABSTRACT

The study investigated the influence of farmers' cooperatives on inputs access and land management practices in the study area. Data collected through a multi-stage sampling procedure were subjected to descriptive, Pearson correlation and t-test analyses. The study revealed among others that: respondents were in their active ages (40.4years, members and 48 years, non-members) and mostly married (88.7% members and 73% non-members). Cooperative members had higher level of education (10 years) with higher farm and off-farm income (₦342, 388 and ₦ 281,941 respectively). Larger proportions (78%, 72%, 59%, 62%, 81% and 61%) of members received fertilizer application, agroforestry practice, pests' management, storage techniques, climate change adaption and agro-chemical utilization trainings. The result of the Correlation analysis showed positive and significant relationship between farmers' membership of cooperatives and access to improved seeds/planting materials (r=0.661), fertilizer (r=0.832), agro-chemicals (r=0.701) and credit (r=0.637) at P≤0.05 level of significance. Correlation analysis also showed positive and significant relationships between farmers' membership of cooperatives and inorganic fertilizer application (r=0.755), agroforestry practices (r=0.693) and cover cropping (r=0.820) at P≤0.05 level of significance. Also, the results of the t-test showed significant differences between the socio-economic characteristics of cooperatives and non-cooperative members at P≤0.05. The study concluded that cooperative members had better socio-economic characteristics and access to inputs and adopted land management practices better than their non-cooperatives members. Government and her agencies should put in place fiscal, economical and agricultural policies that would encourage the establishment of cooperatives as well as encourage farmers to participate in cooperatives.

Keywords: Farmers cooperatives, inputs access, land management, Nigeria

INTRODUCTION

Nigerians' agriculture is characterized by smallholder farmers who are poor, cultivate small land area and have little or no access to inputs and credit (Babatunde *et al*., 2008; Akinola and Owombo, 2012). The smallholder farmers have little or no access to productive resources (Adeyemo, 2004). This has strong implications on agricultural productivity as well as food security in the country. One way of overcoming these challenges is through the formation of farmers' cooperatives. Cooperative societies are very popular in Nigeria. The modern cooperative societies started in the country as a result of the Nigerian cooperative society law enacted in 1935 following the report submitted by Strickland in 1934 to the then British colonial administration on the possibility of introducing cooperatives into Nigeria (Onuoha, 2002). Cooperatives societies in Nigeria like their counterparts all over the world are formed to meet people's mutual needs.

Cooperatives are considered useful mechanism to manage risks for member in agriculture. Through cooperatives, farmers could pool their limited resources together to improve agricultural output and this will enhance socio-economic activities in the rural areas (Ebonyi and Jimoh, 2002; Ibitoye, 2012).

Cooperatives are forms of economic enterprises and self-help organizations, which play a meaningful role in uplifting the socio-economic conditions of their members and their local communities (Birchall, 2003). As the world today faces unstable financial systems, increased insecurity of food supply, growing inequality worldwide, rapid climate change and increased environmental degradation, it is increasingly compelling to consider the model of economic enterprise that cooperatives offer (Argaw, 2012). Cooperatives represent a unique way of social organization that enhances agricultural development in situations when government fails to provide inputs, agricultural technology, and social goods or services efficiently. It is expected that where the private sector and governments function well, there is less demand for farmers' organizations or cooperatives at the community level (Birchall, 2003). However, in the case of "government/market failure", such as the absence of

government intervention through input-output policies, it becomes imperative for individuals to come together for the purpose of improving their input access for better productivity (Birchall, 2003).

Cooperative societies in Nigeria perform multi-purpose functions: they engage in the production, processing, marketing, distribution and financing of agricultural products (Ibitoye, 2012). The most popular agricultural cooperative societies available in Nigeria include: group farming cooperative, marketing cooperative, agricultural thrift and credit cooperatives, agricultural processing cooperative, consumer cooperatives, fishery cooperative and farmer's multipurpose cooperatives (Onouha, 2002; Ibitoye, 2012). Adeyemo (2004) posited that membership of cooperatives (formal and informal) have positive impact on smallholders' management of the environment. He added that farmers who are members of cooperatives have access to information and resources with which farmers can tackle and address the problem of the environment.

Ibitoye (2012) conducted a survey on the performance of agricultural cooperative societies in Kogi State, Nigeria and found that agricultural cooperative societies perform significant roles in raising the livelihood of members, while Adeyemo (2004) investigated self-help farmer cooperatives' management of natural resources for sustainable development in Southwest, Nigeria and found that self-help farmers' cooperatives' play major roles in the management of natural resources for sustainable development. These studies did not investigate the influence of membership of farmers' cooperatives on inputs access and land management practices. This study therefore seeks to provide answer to the following pertinent research questions: What are the socio-economic characteristics of the members and non-members of cooperative societies? Does cooperative membership influence access to inputs and land management practices? What are the constraints of cooperative development in the area? The need to provide answers to the above questions generated the following specific objectives for the study: to describe the socio-economic characteristics of members and non-members of cooperatives; investigate the effects of farmers' cooperatives on inputs access and land management practices and the constraints of cooperatives development in the study area.

METHODOLOGY

The study was carried out in Osun State, Nigeria. A multi-stage sampling technique was used to select respondents for the study. The three zones in Osun State, based on the State's Agricultural Development Programme (ADP) classification which are: Iwo, Ife/Ijesa and Osogbo were used in the first stage (Figure 1). The second stage involved selection of two Local Government Areas (LGAs) per zone based on the evidence of cooperative societies activities. These were Ife East and Ife-South in Ife/Ijesa zone; Iwo and Ayedire in Iwo zone and Orolu and Olorunda in Osogbo zone. In the third stage, three villages per LGAs were selected and the final stage involved selection of 20 respondents per village using simple random selection at each sampling stage. A total of 360 respondents involving cooperatives and non-cooperatives members were selected for the study using stratification technique. Equal number of members (180 respondents) and non-members (180 respondents) of cooperatives were sampled. Primary data were collected for the study on the socio-economic, institutional, input access level as well as land management practices adopted by respondents. Data collected from the field were analyzed with the aid of descriptive statistics such as mean, percentages and charts and Pearson correlation analysis.

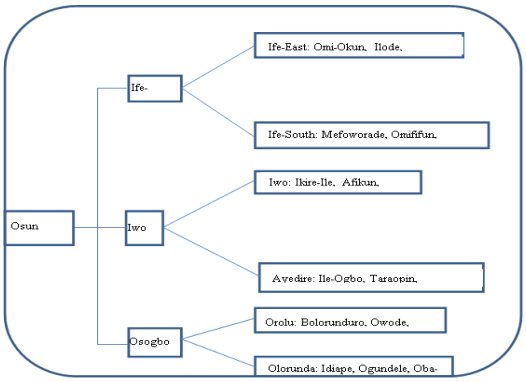

Figure 1: Sampling frame

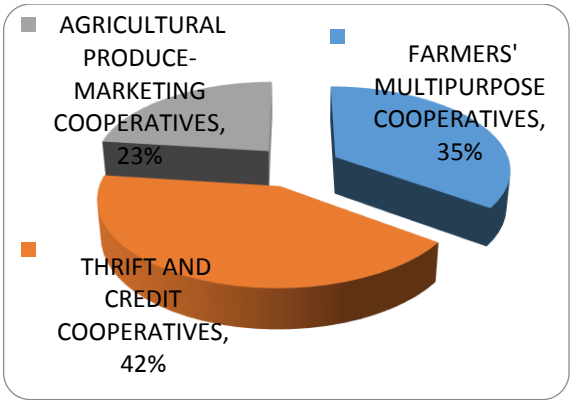

Figure 2: Cooperatives membership typology

RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

Results of farmers' cooperative typology are presented in Figure 2. The results in the figure revealed that while 23% of the members belonged to agricultural produce-marketing cooperatives, 35% and 42% belonged to farmers' multipurpose cooperative and thrift and credit cooperative, respectively. The results showed that the three identified cooperatives were in operation in the study area. This is in agreement with the findings of Ibitoye (2012) that the major cooperative society in the rural areas are agricultural produce marketing cooperatives, farmers multipurpose cooperatives as well as thrift and credit cooperatives.

Table1: Summary statistics of the socio-economic characteristics of respondents

Variable	Members	Non-members
Age of respondents (year)	40.4 (10.5)	48 (12.1)
Household size	5(2.4)	4(0.9)
Farm size (hectare)	2.8(1.5)	1.2(0.7)
Farming experience (year)	13(8)	16(3)
Year of membership	7(4)	-
Farm income (₦)	342,388 (2,391,698)	200,948 (592,989)
Off-farm income (₦)	281,941(27,655)	198,832 (122,204)
Year of education (year)	10 (8)	4 (5)

Source: Data analysis, 2015; Figures in parentheses are standard errors

Table 2: Results of student t-tests

Variable	t-value
Age	8*
Household size	12*
Farming experience	36.6*
Farm income	3*
Off-farm income	22.9*
Year of education	35.4*

Source: Data analysis, 2015; *significance at 5% alpha level.

Table 3: Socio-economic characteristics of respondents

Variable	Members (%)	Non-members (%)	X^2
Sex			
Male	56	61	
Female	44	39	0.34
Total	100	100	
Marital status			
Single	2.3	14	
Married	88.7	73	
Others	9	13	0.22
Total	100	100	
Major Source of information			
Cooperatives	81	0	
Extension agent	12	2.1	
Friends and family	6	78.9	
Others	1	19	4.11*
Total	100	100	
Land ownership			
Owned	63	61	
Otherwise	37	39	
Total	100	100	0.05
Inputs acquisition			
Acquire at market price	2.6	91.9	
Acquire at less than market price	90.4	0	
Acquire in both case	7	8.1	
Total	100	100	

Source: Field survey, 2015; * Significant at 5% alpha level

The results in Table 1 revealed that while the mean age of the members was 40.4 years, that of the non-members was 48 years. The results further revealed that the mean household size among the members and non-members were 5 and 4, respectively. The mean farm sizes were 2.8 hectares and 1.2 hectare among the members and non-members, respectively. The higher mean farm size among the cooperative members could be traced to access to productive inputs from the

cooperative. The mean farming experience among the members and non-members were 13 years and 16 years, respectively. The mean year of membership of cooperative among the members was 7. This implies that an average cooperative member had spent a minimum of 7 production seasons in the cooperative. The mean farm income among the members and non-members were ₦342, 388, and ₦200, 948 while the mean off-farm income among the members and non-members were 281,941 and ₦198, 832, respectively. The members of cooperatives recorded higher farm and off-farm income than their non-members counterparts. This might be due to the inputs they accessed or training received (Ibitoye, 2012; Adeyemo, 2004; Ortmann and King, 2007).The mean year of education among the members and non-members were 10 years and 4 years, respectively. The higher level of education among the members might be the responsible factor for the membership of the members. This agrees with Ortmann and King (2007) that education positively influences farmers' membership of cooperatives and supports the position of the study as conceptualized. The t-test statistics (Table 2) revealed significant differences in the socio-economic characteristics of the respondents (members and non-members of cooperatives) such as age ($p \leq 0.05$), household size ($p \leq .05$), farming experience ($p \leq .05$), farm income ($p \leq 0.05$), off-farm income ($p \leq 0.05$) and year of education (Table 2).

The results of the socio-economic characteristics in Table 3 revealed that while 56% and 44% of the cooperative members were male and female, 61% and 39% of the non-members were male and female. While none of the non-members indicated cooperative as major information source, 81% of the cooperatives members indicated cooperatives as the major information source. Majority (78.9%) of the non-members indicated friends as the major information source. However, while 12% and 2.1% of the members and non-members indicated extension as the major information source, 1% and 19% of the members and non-members indicated others as major sources of information. Other information sources indicated were Non-Governmental Organization (NGO) and radio. Majority of both groups (63% of members) and (61% of non-members) owned the land on which they operate. Majority (90.4%) of the cooperative members bought inputs at less than the market price while majority (91.9%) of non-members bought at the current market price. This implies that farmers who are cooperative members acquired inputs at less than the current market price. This might be due to the bulk purchase of inputs by the cooperatives organization. This is in agreement with the expectation of the study. The Chi-square test of proportion reveals a significant difference between the respondents' sources of information between members and non-members ($p \leq 0.05$).

Respondents across group in the area have received training in several areas of agricultural production. Results in Table 4 revealed that majority of the cooperative members have received training in fertilizer application (78%), agroforestry (72%), pest management (59%), storage (62%), and climate change adaptation (81%) and agro-chemicals application (61%), respectively. However, negligible proportion of the non-members had received training in fertilizer application (12%), agroforestry (11%), pest management (9%), climate change adaptation (21%) and agro-chemicals application (1.3%), respectively. It can be inferred from the above that cooperatives facilitate farmers' training in agricultural practices. This conforms to the findings of several studies (Ibitoye, 2012; Ortmann and King, 2007). It is also in agreement with the conceptualized interlinks between cooperatives and input access.

Table 4: Types of training received

Trainings	*Members (N=180)	Non-members (N=180)
	%	
Fertilizer application	78	12
Agroforestry practices	72	11
Pest management practices	59	9
Storage techniques	62	-
Climate change adaptation	81	21
Agro-chemicals application rate	61	1.3

Source: Data analysis, 2015; *Multiple responses

Table 5: Results of Pearson Correlation analysis showing the relationship between farmers' cooperatives' membership and inputs access.

Inputs	r	r^2
Improved seeds/planting materials	0.661*	0.437
Fertilizers	0.832*	0.692
Agro-chemicals	0.701*	0.491
Implements	0.007	0.000
Chicks	0.066	0.004
Feeds	0.046	0.002
Credit	0.637*	0.406

Source: Data analysis, 2015; *significant at 5% alpha level

Relationship between farmers' cooperatives' membership and inputs access

Results of correlation analysis showed that there were positive and significant relationship between farmers' cooperatives membership and inputs access such as improved seeds/planting materials (r=0.661), fertilizer (r=0.832), agro-chemicals (r=0.701), credit (r=0.637) at $P \leq 0.05$ level of significance (Table 5). This implies that farmers' cooperative membership roles significantly influenced inputs access at 5% level of probability. The coefficients of determination of the significant variables were improved seeds/planting materials (r^2=0.437), fertilizer (r^2=0.692), agro-chemicals

(r^2=0.491), credit (r^2=0.406). This implies that 43.7%, 69.2%, 49.1% and 40.6% variations in improved seeds/planting materials access, fertilizer access, agro-chemicals' access and credit access were explained by cooperative membership roles. The findings showed that farmers' cooperative membership roles enhance farmers' inputs access in the study areas. It can be concluded that farmers who belong to cooperative society and played leadership roles have betters access to inputs and hence better income, productivity and livelihood. This is in agreement with several previous studies such as (Ortman and King, 2007; Ibitoye, 2012; Abdulquadri and Mohammed, 2012; Ololade and Olagunju, 2013), that farmers' cooperatives facilitate inputs access. The results are also in agreement with the conceptual framework of the study.

Table 6: Results of Pearson Correlation analysis showing the relationship between farmers' cooperatives and farmers' land management practices.

Land management practices	r	r^2
Organic manure application	0.063	0.004
Inorganic fertilizer application	0.755*	0.570
Agroforestry practices	0.693*	0.136
Crop rotation	0.037	0.001
Bush fallowing	0.033	0.001
Cover cropping	0.820*	0.672

Source: Data analysis, 2015; *Significant at 5% alpha level

Table 7: Constraints of cooperative societies in Osun State

Constraints	Mean	Rank
Inadequate/poor capital formation	4.1	1st
Low literacy level	3.3	2nd
Unavailability of loan	3.1	3rd
Mismanagement of leaders	2.4	4th
Deficit of skilled personnel	1.6	5th
Government interference	1.2	6th

Source: Data analysis, 2015

Relationship between farmers' cooperatives membership and land management practices

Results of correlation analysis showed that there were positive and significant relationship between farmers' cooperatives membership and land management practices such as inorganic fertilizer application (r=0.755), agroforestry practices (r=0.693) and cover cropping (r=0.820) at P≤0.05 level of significance (Table 6). The coefficients of determination of the significant variables were inorganic fertilizer application (r^2=0.570), agroforestry practices (r^2=0.480) and cover cropping (r^2=0.672) This implies that 57%, 48% and 67.2% variations in inorganic fertilizer, agroforestry practices and cover cropping adoption are explained by cooperatives membership. The findings showed that farmers' cooperatives membership enhances farmers' adoption of land management practices. The reasons for the above might be traced to factors such as farmers' access to inputs and information as well as trainings received by farmers on the practices. This implies that farmers who are members of cooperatives societies engage in land and natural resource management practices. This is in agreement with Adeyemo (2004) that cooperatives membership enhances natural resources management.

Constraints of cooperative societies in Osun State

The constraints of cooperatives development were ranked using the computed means of constraints as ranked by the respondents. The results in Table 7 showed that the number one constraint in the area was inadequate/poor capital accumulation with mean 4.1. Other constraints were low literacy level (mean=3.3), loan unavailability (mean=3.1), mismanagement of leaders (mean=2.4), deficit of skilled personnel (mean=1.6) and government interference (mean=1.2), respectively. This is in agreement with Asaolu (2004) and Akinwumi (2006) that capital accumulation, leadership management problem and low literacy level are constraints of cooperatives development in Nigeria.

CONCLUSION AND RECOMMENDATIONS

The study was conducted to investigate the influence of membership of farmers' cooperatives on farmers' input access and land management practices. Findings revealed that farmers in the area were in their active ages. Cooperative members have higher and significantly different farm and off-farm incomes than the non-members. The non-members have lower level of education than the members. Larger proportions of the members received trainings in various agricultural practices (training in fertilizer application (78%), agroforestry (72%), pest management (59%), storage (62%), and climate change adaptation (81%) and agro-chemicals application (61%), respectively) than the non-members (training in fertilizer application (12%), agroforestry (11%), pest management (9%), climate change adaptation (21%) and agro-chemicals application (1.3%), respectively). Findings further revealed that farmers' cooperatives membership significantly and positively influenced improved seeds/planting materials, fertilizer, agro-chemicals and credit access in the area. Similarly, farmers' cooperatives significantly and positively influenced inorganic fertilizer application, agroforestry practices and cover cropping, respectively.

Based on the findings and conclusion of this research work, the following policy needs become necessary in time and place:

1. Fiscal, economical and agricultural policies that would ensure sustained and increased supply of credit to members, provision of training facilities, allow use of government owned facilities, access to agricultural implements and farm inputs should be formulated and implemented where they were not initially available;
2. Government should intensify effort on cooperative education, training and public enlightenment in order to bring about increased participation and

involvement of small scale farmers in the cooperative movement;

3. Ministry that cater for cooperative matters should be established in both Federal and States of the federation;
4. Cooperatives administrators and leaders should be monitored and supervised by government and her agencies.

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