COMPARATIVE ASSESSMENT OF COCOA FARMERS' KNOWLEDGE AND ATTITUDE TO TRAININGS ON GOOD CULTURAL MANAGEMENT PRACTICES (CMP) IN OGUN AND ONDO STATES, NIGERIA

Omoare A. M[1], Oyediran W.O[2] and Fakoya E.O[2]

[1]Department of Agricultural Education, Federal College of Education, Abeokuta, Ogun State, Nigeria.
[2]Department of Agricultural Extension and Rural Development, Federal University of Agriculture, Abeokuta, Ogun State, Nigeria

ABSTRACT: *Nigeria is one of the leading cocoa producing countries in West Africa. However, since the discovery of crude oil there has been a decline in cocoa production which resulted in Nigeria losing its leading position as the foremost cocoa exporter to Cote d'Ivoire and Ghana. To revitalize the cocoa production in Nigeria series of efforts are put in place including training of farmers on improved Cultural Management Practices (CMP). This study therefore compared cocoa farmers' knowledge and attitude to trainings on good cultural management practices in Ogun and Ondo States, Nigeria. Multi-stage sampling techniques were used to select 320 cocoa farmers in the study areas. Data obtained were analysed with both descriptive and inferential statistics. Result of the study showed that the mean age of the respondents was 52.8 years with 83.4% of the respondents married and 75.9% of the respondents had primary education. Most (82.8%) of the respondents were male while few (17.2%) were female in cocoa production. Most (83.40%) of the respondents harvested about 10kg/ha from their cocoa farms. The average income generated from cocoa was ₦44,237/kg. Cocoa farmers always got information from Cocoa Certification Agencies (59.4%), cocoa farmers association (54.4%) and radio/television (50.9%). Most (92.5%) of the respondents had wealth of knowledge in selecting suitable site for cocoa production and minimum tillage practices (98.4%). The result further revealed that majority (65.3%) of the respondents strongly agreed that they would spend more money to participate in future CMP trainings and that the training is beneficial (84.1%) hence, satisfied with it (86.2%). All the respondents affirmed that CMP training is an eye opener to a better cocoa farming practices (100%). Also, almost all the respondents (99.4%) reported that they select suitable land for cocoa production, construct nursery bed, select improved seeds variety, and slash weeds underneath cocoa trees. Above ninety percent of cocoa farmers apply fertilizer at rate of 375kg/ha, spray prescribed insecticides and fungicides, and harvest ripe cocoa pods with sharp cutlasses. Major constraints to cocoa production and CMP in the study areas are poor feeder roads (100%), irregular supply of agro-inputs (90.0%), and instability in government policy (88.4%). Result of linear regression showed a significant relationship between socio-economic and cultural management practices at p < 0.05 level of significance. However, result of the t-test analysis indicated that significant difference did not exist in the cocoa cultural management practices in Ogun and Ondo States (t = 2.42, p = 0.06). The study concludes that majority of the cocoa farmers carried out Cultural Management Practices to obtain good yield, and has positive attitude towards CMP trainings as it is highly beneficial to their cocoa farming.*

KEYWORDS: Cocoa, Knowledge, Attitude, Trainings, Cultural Management Practices, Farmers

INTRODUCTION

Background of the study

Agricultural production is the mainstay of the Nigerian economy; considering the fact that over 80 percent of the economically active populations are involved in agricultural production directly or indirectly. Over 90 percent of the food consumed in the country is from the local agricultural production. It is the second largest earner of foreign exchange; next to the petroleum sector, and also it provides a ready market for industrial products (Okunneye, 2010). Prior to the oil boom era in Nigeria, cocoa, cotton, groundnut, palm oil products and rubber were the principal export crops. The main agricultural subsector which contributes immensely to Nigeria's GDP is cocoa. Cocoa contributes about 15% to the total Nigerian export in 1970 (Adebile and Amusan, 2011). For instance, Nigeria earned ₦142 billion from cocoa export in 2012 (Aganga, 2013). Following to investments in the oil sector, the 1970s and 1980s saw a constant economic down turn and decline in cocoa production in the country. Subsequent to the launch of the Structural Adjustment Programme (SAP) in 1986 and overall economic liberalization policy, cocoa production is still primarily managed by smallholders with a low use of both inputs and product enhancing agricultural techniques (Idowu, 2007). *Alomnado* cocoa is the main variety grown in Nigeria, which is one of the highest quality cocoa varieties often associated to a premium price in the international market. However, while Nigerian cocoa used to receive a premium in the average of USD 75 per ton when compared to that of Coted'Ivoire (the major international producer), such premium disappeared since the 1990s, following the relaxation in quality control (Oxfam, 2002). Although cocoa is mostly grown in fourteen of the thirty-six Nigerian States, the main producing states (aside from Cross River, in the South East) are located in the South West of the country, with most production areas located in: Edo, Ekiti, Ogun, Ondo, Osun, and Oyo States.

Despite the significant contribution of cocoa to the Nigerian economy, the sector faces a number of challenges which have resulted in Nigeria losing its leading position as the foremost cocoa exporter to Cote d'Ivoire and Ghana. Average cocoa beans production in Nigeria between 2000 and 2010 is 389,272 tonnes per year. There was an overall increase in the production trend between 2000 and 2006, followed by a decline in 2007 and a slightly ascending trend ever since. While the trends in production and area harvested were correlated up to 2006, the negative downturn in production for the year 2007 was associated to an increase in the area harvested during the same period, followed by a relative stable trend in area harvested between 2007 and 2010. As for the yields, while ascending between 2000 and 2006 (average 0.38 tonnes/ha), they saw a decline in the following year, with an average of 0.28 tonnes/ha. When compared to other cocoa producing countries, Nigeria presents yields among the lowest, together with Ghana and Cameroon, while Cote d'Ivoire is the best performing country in West Africa in terms of yields, and Indonesia is the best performer in terms of yield at the global level. Poor farm management practices and little agricultural mechanization have been identified as key factors leading to decreasing cocoa production in Nigeria (Nwachukwu *et al*., 2010). Bateman *et al.* (2004) indicate that farmers need reliable information, adequate training and knowledge of remedies for pest and disease control. Knowledge on improved cultural practices has proven very useful and in some settings are often the first line of defense against diseases and insects.

Yondeowei and Kwarteng (2006) coined training need as the difference between the required level of individual competence and his present level of competence. Allo (2001) explained

that one of the main factors limiting the development of effective training programmes for agricultural professionals in developing countries is the inadequacy of information on their training needs and attitude of the target participants to the training. Training needs is meant to identify performance requirements, knowledge, skills, and abilities needed by an agency's workforce/individuals to achieve their required potentials. Identifying training needs in all aspects of cultural management practices in cocoa farming system will help to enhance farmers' productivity for better yield and increased income. For instance, Opeyemi *et. al.* (2005) stated that knowledge on appropriate and effective use of fertilizer on cocoa would help not only to improve yield but also has the advantages of profitability, product quality and environmental protection. The main objective of this paper, therefore, is to compare some of the various ways in which the knowledge and attitude of cocoa farmers to trainings on cultural farm management practices can influence the effective and efficient cocoa production in Ogun and Ondo States.

Specific objectives are to:

i.   describe socio-economic characteristics of the cocoa farmers in the study areas

ii.   identify sources of information on cultural management practices (CMP) in the study areas

iii. assess the knowledge level of cocoa farmers in cocoa production in the study areas

iv.   assess the attitude of cocoa farmers to the trainings on cultural management practices in the study areas

v.   identify the benefits derived through improved cultural management practices in the study areas

vi.   identify challenges to effective cultural management practices in the study area

Hypotheses of the study

H_{01}: There is no significant relationship between socio-economic characteristics of the cocoa farmers and cultural management practices

H_{02}: There is no significant relationship trainings received and cultural management practices

H_{03}: There is no significant relationship between knowledge level of cocoa farmers in cocoa production and cultural management practices

H_{04}: There is no significant difference between cultural management practices in Ogun and Ondo States

RESEARCH METHODOLOGY

Multistage Sampling technique and sample size

This study was carried out in Ondo and Ogun States Nigeria. It is important to note that Ondo State is the leading cocoa producing state in Nigeria. Also, large proportion of cocoa is produced in Ogun State. The first stage was the purposive selection of four highest cocoa

producing local government areas each from Ondo and Ogun State respectively. This gave rise to 8 Local Government Areas namely; Idanre, Ore, Ondo West, Ile Oluji/Okeigbo Local Government Areas in Ondo State and Odeda, Obafemi-Owode, Ijebu North-East and Yewa North Local Government Areas in Ogun State. The second stage involved the selection of 2 cocoa farming communities each from the eight selected highest cocoa producing local government from the 2 states, this gave rise to 16 communities. Simple random sampling technique was used to select 20% out of 2100 registered cocoa farmers in Ogun and Ondo States for Growth Enhancement Support Scheme (GESS): This gave a total of 320 cocoa famers as the sample size for this study.

Data Collection

Data for this research was collected in phases by seven trained enumerators and the research team between March 2016 and June 2016. Face to face method was adopted to interview the respondents in the selected communities. SPSS software was used to analyse the data.

Validity and reliability of the instrument

The instrument was subjected to face validity involving supervisors' assessment, experts in Agricultural Extension and Rural Development, their criticisms and suggestions were positively utilized for a more valid instrument. The reliability test for the instrument was conducted using test re-test method. Administration of the instrument was done for twenty-five cocoa farmers who were not included in the actual study sample. Scores were assigned to the responses of the selected respondents. Total scores for each period were computed and Pearson Product Moment Correlation (PPMC) was used to determine the relationship between the two set of scores. The instrument was considered reliable with a reliability coefficients (r) range from 0.83 to 0.86.

Measurement of variables

Age, household size, farming experience, farm size, yield and income were measured at interval level while sex, educational level and marital status were measured at nominal level. Sources of information on Cultural Management Practices (CMP) were measured on 3-point indicator as Always (3), Occasionally (2) and Never (1). Cocoa farmers' knowledge level in cocoa production was measured at nominal level as Yes (1) and No (0). Attitude of cocoa farmers to the trainings on cultural management practices was measured on 4 point likert scale type of Strongly Agree (4), Agree (3), Disagree (2), Strongly Disagree (1). Constraints to cocoa production was measured on 3-point indicator as Serious constraint (3), Less serious constraint (2) and Not a constraint (1).

Method of Data analysis

Data collected were subjected to descriptive statistics such as frequency distribution, percentages and mean were used for objectives of this study. Linear regression and t-test were used to test the hypotheses for the study.

RESULTS AND DISCUSSION

Socio-economic characteristics

Results on socio-economic variables presented in Table 1 showed that the mean age of the respondents was 52.8 years since more than half (56.20%) of the respondents were above the age of 50 years. However, only very few (7.80%) were below 30 years of age. This is an indication of the ageing population in cocoa farming. The ageing population could be attributed to the rural-urban drift by the youth which resulted to leaving behind women and old people in the rural areas of Nigeria. This agrees with the findings of the GLSS (2008) and Hainmuelier *et al*. (2011). But, the finding disagrees with that of MMYE (2007) that 98.2% of the workers on cocoa plantation in Ghana fell within the age range 18 to 50 years. This development of ageing farming population calls for urgent intervention to enable the youth to take up cocoa farming as a means of sustainable livelihood. The results showed that most (82.8%) of the respondents were male while few (17.2%) were female in cocoa production. This is possible because of the perennial nature of cocoa farming and it is tedious farming enterprise which makes more men to dominate cocoa production compare to the women who carry out processing and marketing of cocoa bean. Adisa and Okunade, (2005) reported that most farming work or activities are energy demanding, hence men tend to be more involved in the production aspect while marketing and processing of food crops are often the chores of women. It was also revealed that most (83.4%) of the respondents were married. Meanwhile, 6.40% were single while 4.50% were separated and 5.70% were widowed. According to Dikito-Watchtmeister (2001) cited in Ebewore *et al*. (2013), marital status is a crucial factor in shaping social rural participation and acceptance. Majority (75.9%) of the respondents had primary education, 21.10% had secondary education and 3.0% had tertiary education. This shows that all the respondents have one form of formal education or the other. This finding is in line with that of Adeogun, (2008) who reported that many of the cocoa farmers have secondary school education while very few have attained tertiary educational level in his study carried out among cocoa farmers in five cocoa producing states of Nigeria. The literacy level has helped the farmers in skills acquisition to manage their cocoa farms and carry out other cultural management practices. The result showed that the 51.90% of the respondents had household size of 5 - 9 people while 28.80% had 10 – 14 people. The mean household size was 8 people. These findings indicate that the household size of respondents was relatively large. Adegbite *et al*. (2007) cited in Omoare and Oyediran (2015) reported that large households' size is an important factor in any rural communities because it provides the manpower for farm and other household activities. Banmeke (2003) cited in Ebewore *et al*. (2013) also asserted that household size is an important index in any rural development intervention which can affect the outcome of such intervention. Furthermore, the result showed that 33.8% of the respondents had been in cocoa farming for more than 30 years. About twenty percent (19.40%) of the respondents had spent 21 – 30 years in cocoa farming. The mean year of experience in cocoa farming was 25.70 years. This implies that the respondents have been in cocoa farming for quite a long time and they are full of experience. Ogungbile *et al*. (2002) indicated that length of time of farming business can be linked to the age of farmers, access to capital and experience in farming activities may explain the tendency to adopt innovations and new technology. Above sixty percent (60.90%) of the respondents cultivated less than 4 hectares of farm land, 35.90% cultivated 5 – 9ha. This is in contrary to the findings of Adeogun (2008) that majority of farmers in cocoa producing states in Nigeria have between 1- 5 acres of cocoa farm. But, less than two percent (1.90%) of the respondents cultivated more than 15ha and above. This means that cocoa farming is practiced

on medium and large scale in the study areas. It was reported that cocoa yield has decline as most (83.40%) of the respondents harvested about 10kg/ha from their cocoa farms, 8.80% harvested 11 – 20kg/ha, and 7.80% harvested more than 20kg/ha. Similar quantity of cocoa output was reported by Oyediran *et al*. (2014). In addition, Daramola *et al*. (2003) and Oduwole (2004) identified ageing cocoa farms as one of the factors responsible for the decline in cocoa production in south western Nigeria. In a similar vein, the average income generated from cocoa was ₦44,237/kg. The result further showed that 35.60% of the respondents generated ₦31,000 – 40,000/kg while 31.60% realized ₦41,000 – 50,000/kg. However, only very few (6.20%) of the respondents realized less than ₦30,000/kg.

Table 1: Distribution of respondents by their socio-economic characteristics (n = 320)

Variables	Frequency	Percentage	Mean	S.D.
Age (years)				
≤ 30	25	7.80		
31 – 40	48	15.0		
41 – 50	67	20.90		
51 and above	180	56.20	52.8	14.2
Sex				
Male	265	82.80		
Female	55	17.20		
Marital status				
Single	17	6.40		
Married	221	83.40		
Separated	12	4.50		
Widowed	15	5.70		
Educational Status				
Primary education	201	75.90		
Secondary Education	56	21.10		
Tertiary Education	08	3.00		
Household size				
≤ 4	39	12.20		
5 – 9	166	51.90	8	3
10 – 14	92	28.80		
15 and above	23	7.20		
Years of of cocoa experience				
≤ 10	50	15.60		
11 – 20	100	31.20		
21 – 30	62	19.40	25.7	14.2
31 and above	108	33.80		
Farm size				
≤ 4	195	60.90		
5 – 9	115	35.90	5.6	3.1
10 – 14	04	1.20		
15 and above	06	1.90		
Yield (kg/ha)				
≤ 10	267	83.40	8.9	5.5
11 – 20	28	8.80		
21 and above	25	7.80		

Income (₦/tonnes)				
≤ 30000	20	6.20		
31,000 – 40,000	114	35.60		
41,000 – 50,000	101	31.60	44,237	8,874
51,000 and above	85	26.60		

Source: Field survey, 2016

Sources of information on cultural management practices

Information is one of the most valuable resources for the development and progress of any enterprise. The result showed that almost all the respondents, 98.4% and 97.8% always sourced information from fellow farmers, friends and neighbour respectively. More than half of the respondents got information from Cocoa Certification Agencies (59.4%), cocoa farmers association (54.4%) and radio/television (50.9%) in the study areas. The least sources of information were Licensed Buying Agents (48.1%), extension agents (43.1%), and Cocoa Research Institute (35.0%). Abiona, (2010) explained that farmers' sources of information have influence in the decision to accept or reject a technology.

Table 2: Sources of Information on cultural management practices (n = 320)

S/N	Sources of information on cultural management practices	Always	Occasionally	Never
i.	Cocoa Farmers Association of Nigeria (CFAN)	174(54.4)	129(40.3)	17(5.3)
ii.	Extension agents	138(43.1)	104(32.5)	78(24.4)
iii.	CRIN (Cocoa Research Institute of Nigeria)	112(35.0)	108(33.8)	100(31.2)
iv.	Media (Radio, Television and Newspapers)	163(50.9)	109(34.1)	48(15.0)
v.	Licensed Buying Agents (LBAs)	154(48.1)	140(43.8)	26(8.1)
vi.	Cocoa Certification Agencies/Organization	190(59.4)	124(38.8)	06(1.9)
vii.	Fellow farmers	315(98.4)	05(1.6)	0(0.0)
viii.	Friends and Neighbours	311(97.2)	09(2.8)	0(0.0)

Source: Field survey, 2016

Cocoa Farmers' Knowledge level in cocoa production

Knowledge level as it related to cocoa production was considered based on prevailing farming operations such as site selection, tillage practices, fertilizer application, weed control and harvesting. The result obtained from the listed activities showed that 92.5% of the respondents had wealth of knowledge in selecting suitable site for cocoa production, carried out minimum tillage practices to ensure good canopy formation (98.4%), and that cocoa planted in rainforest produce higher yields than that of derived savannah (99.7%). Also, most of the respondents had the knowledge of fertilizer application (92.8%), use of herbicides for weed control (95.0%) and pruning of the unwanted branches (98.1%). In addition, almost all the respondents knew when cocoa pod is matured for harvesting (99.7%), preferred sharp cutlass to harvest the pods (100%) and allowed the beans to ferment for 5 – 7 days. These findings revealed that all the cocoa farmers have high knowledge of cocoa production. This is an indication that cocoa farmers are not new in cocoa farming in the study areas. The result is in consonance with the findings of Oyediran *et al*. (2014) among cocoa farmers in Ijebu-East Local Government Area of Ogun State, Nigeria.

Table 3: Cocoa Farmers' Knowledge level in cocoa production (n = 320)

s/n	Cocoa Farmers' Knowledge level	Yes	No
i.	Suitable site for cocoa production should not be in sandy or water-logged soil	296(92.5)	24(7.5)
ii.	Cocoa requires minimum tillage practices to ensure good canopy formation during its early growth	315(98.4)	05(1.6)
iii.	Cocoa planted in rainforest produce higher yields than that of derived savannah	319(99.7)	01(0.3)
iv.	Fertilizer application should be done 4 weeks after establishment of cocoa on the permanent field which give optimum growth	297(92.8)	23(7.2)
v.	Spraying herbicide is the best weed control method in cocoa plantation	304(95.0)	16(5.0)
vi.	Pruning of the dead stems is essential for optimum cocoa growth	314(98.1)	04(1.9)
vii.	Cocoa pods matured when the pods turn yellow and its ready for harvesting	319(99.7)	01(0.3)
viii.	Harvesting should be preferably done with a sharpened sickle to minimize breakage	320(100)	0(0.0)
ix.	Fermentation last between 5 – 7 days	307(95.9)	13(4.1)

Source: Field survey, 2016

Attitude of Cocoa Farmers to the Trainings on Cultural Management Practices (CMP)

Attitude has been described as predisposition to act in a certain way and it is the state of readiness that influences a person to act in a given manner by Oyediran *et al*. (2014). Allo (2001) pointed out that one of the main factors limiting the development of effective training programmes for agricultural professionals in developing countries is the inadequacy of information on their training needs. Result of this research revealed that most (73.8%) of the respondents strongly agreed that considerable amount of money was spent to attend the trainings while few (19.7%) strongly agreed that the CMP recommendations were difficult to implement. The respondents however disagreed that the training was too short to grab detail of the training (64.4%) and not in-depth (72.5%). Moreover, majority (65.3%) of the respondents strongly agreed that they would spend more money to participate in future CMP trainings while most strongly agreed that the training is beneficial (84.1%) and satisfied with it (86.2%).

Table 4: Attitude of Cocoa Farmers to the Trainings on Cultural Management Practices (n = 320)

s/n	Attitude of cocoa farmers to the CMP trainings	SA	A	D	SD
i.	I spent considerable amount of money to attend the trainings	326(73.8)	46(14.4)	28(8.8)	10(3.1)
ii.	The recommended CMP are too costly to implement	63(19.7)	59(18.4)	187(58.4)	11(3.4)
iii.	The training period was too short to grab the detail of the training	38(11.9)	54(16.9)	206(64.4)	22(6.9)
iv.	I would spend more money on CMP if it's organized in future	209(65.3)	56(17.5)	50(15.6)	05(1.6)
v.	CMP training is not in-depth	39(12.2)	27(8.4)	232(72.5)	22(6.9)
vi.	The CMP training is beneficial to me because it is very relevant in boosting cocoa production	269(84.1)	38(11.9)	13(4.1)	0(0.0)
vii.	I am satisfied with the CMP training	276(86.2)	37(11.6)	07(2.2)	0(0.0)

Source: Field survey, 2016

Benefits derived from the trainings on Cultural Management Practices (CMP)

All the respondents affirmed that CMP training is an eye opener to a better cocoa farming practices (100%), more knowledge is acquired to boost cocoa production (100%), pest and diseases infection on the cocoa crops is gradually reducing (100%), damage to cocoa pods has minimized (99.7%). The result also revealed that output is improving (100%) while higher market acceptability (100%) and sales (100%) are achieved through CMP.

Table 5: Benefits derived from the trainings on good agricultural practices

s/n	Benefits	Yes	No	I don't know
i.	The training is an eye-opener to a better cocoa farming practices	320(100)	0(0.0)	0(0.0)
ii.	It adds more knowledge to my experience on cocoa production	320(100)	0(0.0)	0(0.0)
iii.	Reduced pest and diseases infection on the cocoa crops	320(100)	0(0.0)	0(0.0)
iv.	Reduced damage of the cocoa pods	319(99.7)	01(0.3)	0(0.0)
v.	Increasing output is recorded	320(100)	0(0.0)	0(0.0)
vi.	Increased in the market quality of the harvested beans	320(100)	0(0.0)	0(0.0)
vii.	Higher patronage and sales	320(100)	0(0.0)	0(0.0)

Source: Field survey, 2016

Cultural Management Practices (CMP)

The Cultural Management Practices (CMP) in this study are sub-divided into land preparation, nursery practices, production practices, and harvesting practices. The result shows that 23.8% of the respondents ploughed their farm twice before transplanting of cocoa while 45.6% never did this practice. The variation is attributed to the fact that cocoa are preferably cultivated in thick forest and the farmers used manual method to stump and clear

the land since tractors will not able to work very in such land terrain. Cultural operations involve farm sanitation through weed control by slashing of the weeds (with sharp cutlass) and removal of vegetative part of the plant (pruning). These routine practices are carried out to remove shade and control the height of cocoa tree to give the desired shape and ventilate farms to reduce relative humidity, disease and pest incidence (Adeyemi, 2000). Almost all (99.4%) of the respondents reported that they select suitable land for cocoa production to ensure rapid growth of cocoa seedlings. Construction of nursery bed and shed (98.1%), filling the polythene bags with top soil and line in rows (98.8%), selection of improved seeds variety (100%), and removal of deformed seedlings (100%) were regular activities carried out by the cocoa farmers prior to transplanting stage.

In the same vein, most of the respondents always transplanting of the seedlings from nursery to the permanent field (99.7%), pruning of the excessive branches (99.4%), slashing and brushing of weeds underneath cocoa trees (98.1%), and supplying new seedlings to replace missing stands (98.8%). Other CMP that are always carried out under cocoa production include application of fertilizer at rate of 375kg/ha (82.8%), spraying of prescribed insecticides and fungicides (99.4%) and removal of diseased pods which are either burnt or buried (98.4%). An effective use of fertilizer on cocoa would help not only to improve yield but also has the advantages of profitability, product quality and environmental protection (Opeyemi *et al.,* 2005).

The harvesting activities that are always practiced by almost all the respondents are harvesting ripe cocoa pods with sharp cutlass (99.1%), separation of wounded pods (89.4%), and broken the pods with the aid of club/wooden mallet (99.4%). The activities were also extended to covering heap of beans with plantain leaves for quick fermentation (99.4%), turning of the beans once in a day (98.8%), sun drying the beans for 5 – 7 days (99.7%), and parking the dried beans in the jute bags for storage (99.4%).

Table 6: Cultural Management Practices (CMP) (n = 320)

s/n	CMP	Always	Occasionally	Never
A.	**Land preparation**			
i.	Ploughing twice is done at interval of 2 weeks prior planting	76(23.8)	97(30.3)	145(45.6)
B.	**Nursery practices**			
ii.	Selection of suitable site for cocoa	318(99.4)	02(0.6)	0(0.0)
iii.	Construction of nursery bed and shed	314(98.1)	06(1.9)	0(0.0)
iv.	Filling the polythene bags with top soil and line in rows	316(98.8)	04(1.2)	0(0.0)
v.	Selection of improved seeds variety	320(100)	0(0.0)	0(0.0)
vi.	Removal of deformed seedlings	320(100)	0(0.0)	0(0.0)
C.	**Production practices**			
vii.	Transplanting of the seedlings from nursery to the permanent field	319(99.7)	01(0.3)	0(0.0)
viii.	Pruning of the excessive branches	318(99.4)	02(0.6)	0(0.0)
ix.	Slashing and brushing of weeds underneath cocoa trees	314(98.1)	03(0.9)	03(0.9)
x.	Supplying new seedlings to replace missing stands	316(98.8)	04(1.2)	0(0.0)
xi.	Applying fertilizer at rate of 375kg/ha	265(82.8)	55(17.2)	0(0.0)
xii.	Spraying prescribed insecticides and fungicides	318(99.4)	02(0.6)	0(0.0)
xiii.	Removal of diseased pods which are either burnt	315(98.4)	05(1.6)	0(0.0)

	or buried			
D.	**Harvesting practices**			
iv.	Harvesting ripe cocoa pods with sharp cutlass	317(99.1)	03(0.9)	0(0.0)
xv.	Wounded pods are separated and store within one day	286(89.4)	34(10.6)	0(0.0)
xvi.	Pods are broken with the aid of club/wooden mallet	318(99.4)	02(0.6)	0(0.0)
xvii.	Heap of cocoa beans are covered with plantain leaves for fermentation within 5 – 6 days	318(99.4)	02(0.6)	0(0.0)
xviii.	Turning the beans once daily for effective fermentation	316(98.8)	04(1.2)	0(0.0)
xix.	Drying the beans for at least 5 -7 days and do sorting of beans	319(99.7)	01(0.3)	0(0.0)
xx.	Pack the dried seeds in jute bags and stored in dry cool place	318(99.4)	02(0.6)	0(0.0)

Source: Field survey, 2016

Constraints to cocoa production

Cocoa production in the study areas is confronted with a lot of serious problems among which are poor feeder roads (100%), irregular supply of agro-inputs (90.0%), instability in government policy (88.4%), inadequate financial support by the commercial banks (85.6%), pest and disease problems (85.0%), and cocoa price fluctuations in the market (81.9%). Uwagboe *et al*. (2010) reported that low yield, inconsistent production patterns, disease incidence, pest attack and use of simple farm tools affect cocoa production in Nigeria. Other serious problems are improper monitoring and follow up on the recommended CMPs (68.1%), high labour intensive (60.6%), and poor extension education/information to the cocoa farmers on improved cultural management practices (53.1%). However, lack of proper communication channel between the cocoa farmers and trainers (36.9%) was not a serious problem to cocoa production in the study areas.

Table 7: Constraints to cocoa production (n = 320)

S/N	Constraints	Serious constraint	Less serious constraint	Not a constraint
1.	Unpredictable climatic condition	285(89.1)	35(10.9)	0(0.0)
2.	High labour intensive	194(60.6)	124(38.8)	02(0.6)
3.	Inadequate financial support by the commercial banks	274(85.6)	45(14.1)	01(0.3)
4.	Poor extension education/information to the cocoa farmers on improved cultural management practices	170(53.1)	120(37.5)	30(9.4)
5.	Lack of proper communication channel between the cocoa farmers and trainers (i.e. use of big grammers)	118(36.9)	169(52.8)	33(10.3)
6.	Pest and disease problems	272(85.0)	47(14.7)	01(0.3)
7.	Improper monitoring and follow up on the recommended CMPs	218(68.1)	96(30/0)	06(1.9)
8.	Cocoa price fluctuations in the market	262(81.9)	57(17.8)	01(0.3)
9.	Irregular supply of agro-inputs	288(90.0)	32(10.0)	0(0.0)
10.	Instability in government policy	283(88.4)	37(11.6)	0(0.0)
11.	Poor feeder roads	320(100)	0(0.0)	0(0.0)

Source: Field survey, 2016

Relationship between the socio-economic characteristics of the respondents and cultural management practices

The R-Square (0.12) showed that 12.0% of the variation in the level of cultural management practices was brought about by variation in the explanatory variables used in the linear regression model. The coefficient of age (t = 317.61), years of education (t = 1844.57) and farming experience (t = 252.89) were significant at $p < 0.05$ level of significance. This implies that the higher the age the more the farming experience and these will have influence on the cultural management practices. Also, high level of education will influence farmers to adopt new cultural management practices with the aim of improving the farm hygiene and cocoa productivity. Meanwhile, sex, marital status, and household size were not to the cultural management practices at $p < 0.05$ level of significance. The reason is that irrespective of gender, marital status and family size every farmer would have to carry out cultural management practices in order get better harvest from cocoa farms otherwise the output would be very low. Thus, the null hypothesis that "*there is no significant relationship between socio-economic and cultural management practices*" is rejected while the alternate hypothesis is hereby accepted.

Table 8: Linear regression of relationship between the socio-economic characteristics of the respondents and cultural management practices

Variables	Unstandardized Coefficient		Standardized Coefficient	t	Significance
	β	Std. Error	Beta		
(Constant)	30646.84	4766.30		6.43	0.000
Age	317.61	64.09	0.53	4.95	0.00*
Sex	2105.67	1327.73	0.09	1.59	0.11NS
Years of Education	1844.57	582.02	0.20	3.17	0.02*
Marital status	-605.51	1973.64	-0.02	-0.31	0.76NS
Farming experience	252.89	60.05	0.42	4.21	0.00*
Household size	-19.53	161.14	-.01	-0.12	0.90NS
Farm size	-118.84	184.87	-0.04	-0.64	0.52NS
Yield	-37.01	98.54	-0.02	-0.38	0.71NS
Model Fit Tests					
F – statistics	5.32				
R^2	0.12				
Adjusted R^2	0.10				
Prob(F-Statistics)	0.00				

Source: Field survey, 2016. * Significant at $p < 0.05$ level of significance

NS - Not-Significant at $p < 0.05$ level of significance

Relationship between the constraints to cocoa production and cultural management practices

The R-Square (0.26) revealed that 26.0% of the variation in the level of cultural management practices was caused by variation in the explanatory variable in the linear regression model. Constraints to cocoa production (t = 2.68) was significant at $p < 0.05$ level of significance. The implication is that constraints limit the cultural management practices in cocoa

production. Therefore, the null hypothesis that "*there is no significant relationship between constraints to cocoa production and cultural management practices*" is hereby rejected.

Table 9: Linear regression of relationship between the constraints and cultural management practices

Variables	Unstandardized Coefficient		Standardized Coefficient	t	Significance
	β	Std. Error	Beta		
(Constant)	1377.58	27.74		49.66	0.00
Constraints	2.68	0.92	0.16	2.92	0.00*
Model Fit Tests					
F – statistics	8.52				
R^2	0.26				
Adjusted R^2	0.23				
Prob(F-Statistics)	0.00				

Source: Field survey, 2016. * Significant at p < 0.05 level of significance

Relationship between the farmers' knowledge and cultural management practices
The R-Square (0.33) revealed that 33.0% of the variation in the level of cultural management practices resulted from variation in the explanatory variable in the linear regression model. Farmers' knowledge on cocoa production (t = -0.37) had no significant relationship with cultural management practices at p < 0.05 level of significance. This means that the farmers' knowledge on cocoa production does not influence cultural management practices adopted by cocoa farmers in the study areas. Therefore, the null hypothesis that "*there is no significant relationship between the farmers' knowledge on cocoa production and cultural management practices*" is hereby accepted.

Table 10: Linear regression of relationship between the farmers' knowledge and cultural management practices

Variables	Unstandardized Coefficient		Standardized Coefficient	t	Significance
	β	Std. Error	Beta		
(Constant)	1461.67	21.84		66.94	0.00
Farmers' knowledge	-0.37	2.50	-0.08	-0.15	0.88NS
Model Fit Tests					
F – statistics	121.20				
R^2	0.33				
Adjusted R^2	0.32				
Prob(F-Statistics)	0.00				

Source: Field survey, 2016. NS - Not-Significant at p < 0.05 level of significance

Relationship between the sources of information and cultural management practices

The R-Square (0.19) indicated that 19.0% of the variation in the level of cultural management practices resulted from variation in the explanatory variable in the linear regression model. Sources of information (t = 1.26) had significant relationship with cultural management

practices at p < 0.05 level of significance. This means that the sources of information available to cocoa farmers have bearing on cultural management practices adopted by cocoa farmers in the study areas. Therefore, the null hypothesis that "*there is no significant relationship between the sources of information on cocoa production and cultural management practices*" is hereby rejected.

Table 11: Linear regression of relationship between the sources of information and cultural management practices

Variables	Unstandardized Coefficient		Standardized Coefficient	t	Significance
	β	Std. Error	Beta		
(Constant)	1433.21	10.19		140.72	0.00
Sources of information	1.26	0.50	0.14	2.51	0.01*
Model Fit Tests					
F – statistics	16.29				
R^2	0.19				
Adjusted R^2	0.16				
Prob(F-Statistics)	0.00				

Source: Field survey, 2016. * Significant at p < 0.05 level of significance

Difference between the cultural management practices in Ogun and Ondo States

H_{02}: *There is no significant difference between the cocoa cultural management practices in Ogun and Ondo States.*

Results of the t-test showed that there was no significant difference in the cocoa cultural management practices in Ogun and Ondo States (t = 2.42, p = 0.06). It implies that cocoa cultural management practices among the farmers in the two States are the same. Therefore, the null hypothesis that "*there no is significant difference the cocoa cultural management practices in Ogun and Ondo States*" is accepted.

Table 12: t-test result of significant difference between the cocoa cultural management practices in Ogun and Ondo States

Variables	Sample size	df	Mean	Std. Dev.	Std. Mean Error	Mean diff.	t	p-value	Decision
Ogun	137	136	58.47	1.14	0.09	0.31	2.42	0.06	NS
Ondo	183	182	58.16	1.17	0.10				

Source: Field survey, 2016. NS - Not-Significant at p < 0.05 level of significance

CONCLUSION

The cocoa farmers are old but still economically active and innovative, married, experienced and operated on a medium to large scale; male are predominant in cocoa production. Most of the respondents had one form of formal education or the other so, they are literate. Cocoa Certification Agencies, cocoa farmers association and radio/television are predominant sources of information to cocoa farmers. Majority of the cocoa farmers carried out Cultural

Management Practices to obtain good yield. CMP trainings are highly beneficial to the farmers. Constraints however limit cultural management practices, cocoa output and monetary returns. Cultural Management Practices among cocoa farmers in Ogun and Ondo States are similar.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations were made in order to improve Cultural Management Practices and consequently improve cocoa productivity and farmers' income in the study areas:

1. provision of good road network to ease movement of cocoa farmers and their goods in and out of the study area;

2. there should be regular supply of quality agro-inputs by the agro-chemical suppliers and agro-dealers to enhance farmers' accessibility and appropriate usage and to reduce pest and diseases infestation of cocoa farms;

3. pricing policy that will favour cocoa farmers should be put in place by the government to help cocoa farmers out of ridiculous pricing of cocoa beans and poor sales;

4. adequate provision of financial support by the commercial banks is very essential to assist the cocoa farmers to expand and establish new cocoa plantations;

5. cocoa farmers wealth of experience and knowledge could be further harnessed by the extension agents through consistent trainings on improved cultural management practices to boost cocoa production in the study areas;

6. government should as well pay more attention to extension service through adequate funding to be able deliver their mandate and help cocoa farmers' sustain their farming activities;

7. private sector should not relent effort in organizing training, creating awareness and enlightenment on the better way of cultural management practices to increase output and encourage cocoa farmers in the study areas.

REFERENCES

Abiona, B. G. (2010). Comparative Analysis of integrated and Non-Integrated Fish Farming in Ogun State, Nigeria. Unpublished Ph.D. Thesis, Department of Agricultural Extension & Rural Development, Federal University of Agriculture Abeokuta. Pp. 43 – 44.

Adeogun, S. O. (2008). Adoption of cocoa rehabilitation techniques among cocoa farmers in selected states of Nigeria. An unpublished PhD Thesis in the Department of Agricultural Extension and Rural Development , University of Ibadan, Ibadan Nigeria. 86p.

Adeyemi, A. A. (2000). Effective management of cocoa farms in Nigeria for profitability. Cocoa Growers' Bulletin No. 52:21-31.

Adisa, B. O. and Okunade, E. O. (2005). Women-In-Agriculture and Rural Development. In. S. F., Adedoyin (ed). Agricultural Extension in Nigeria Agricultural Extension Society of Nigeria (AESON). c/oAgricultural and Rural Management Training Institute (ARMTI), Ilorin, 69-77.

Allo, A. V. (2001). Professional requirements of the extension worker in training the extension worker. FFTC extension bulletin No. 173.

Daramola, A. G., Fuwape, J. A., Ofuya, T. I., Okunlola, J. O., Ajibefun, I. A., Okuku, I. E., Oke, D. O., Aladesaiye, E., Badaru, K. B., Olaiya and A. O.(2003). Evaluation of Sustainable Options for Rehabilitation for Small Holder Nigerian Farmers. *Sustainable and Competitive Cocoa System in Africa.*

Ebewore, S. O., Egho, E. O. and Enujeke, E. C. (2013). Effect of Farmer Field School Training on the Management of Cocoa Marids (*Saghbergella singularis*) by Famers in Edo State Nigeria. *Asian Journal of Agricultural Sciences*, 5(1): 6-10.

Employment (MMYE) 2007. Labour practices in cocoa production in Ghana (Pilot survey). Retrieved from http://www.cocoaverification.net/Docs/Pilot%20survey %20report.pdf.

Oduwole, O. O. (2004). *Adoption of Improved Agronomic Practices by Cocoa Farmers in Nigeria: A Multivariate Tobit Analysis.* Ph.D. Thesis (Unpublished), Akure: Federal University of Technology, Nigeria.

Omoare, A. M., and Oyediran, W. O. (2015). A Survey on the Perception of Residents of Iwajowa L.G.A of Oyo State on the Contribution of Charcoal Production to Deforestation and Environmental Degradation, *Journal of Changes in the Environment: Strategies for its Sustainability,* a Production of Department of Biology, Adeyemi College of Education, Ondo State.

Opeyemi, A. A., Fidelis, O. A., Ademola, B., and Philip, O. (2005), Quality Management Practices in Cocoa Production in South-Western Nigeria. Conference on International Research on Food Security, Natural Resource Management and Rural Development.

Oyediran, W. O., Omoare, A. M., Ajagbe, B. O. and Sofowora, O. O. (2014). Attitude of Cocoa Farmers to Growth Enhancement Support Scheme (GES) in Ogun State, Nigeria. *World Journal of Biology and Medical Sciences 1* (3), 108 – 117.