# ADOPTION OF IMPROVED PRACTICES FOR COCOA PRODUCTION IN EKITI-STATE, NIGERIA.

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AEE/12/0432

A PROJECT

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DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION,

FACULTY OF AGRICULTURE, FEDERAL UNIVERSITY OYE-EKITI

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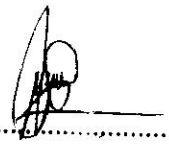
## DECLARATION

I, **AWOPETU, OLUWAFEMI JOHN**, hereby declare that this Project titled "**ADOPTION OF IMPROVED PRACTICES FOR COCOA PRODUCTION IN EKITI STATE, NIGERIA**" has been written by me and it is a record of my own research work. It has not been presented in any previous application for a higher degree. All borrowed ideas have been duly acknowledge.



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## CERTIFICATION

This research project written by AWOPETU OLUWAFEMI JOHN, has been read, approved and adjudged to meet part of the requirements for the award of B. Agric. Degree in Agricultural Economics and Extension of Federal University Oye-Ekiti, Ekiti State, Nigeria.

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## DEDICATION

This Project is dedicated to Almighty God and my mother Mary for her constant intercession.

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It is with great joy, I give thanks to Almighty God for the grace of life given to me and my family during my educational pursuit. My utmost gratitude goes to my supervisor, the Head of Department of Agricultural Economics and Extension, Prof. O. B. Adeniji, who supervised this work with his tight schedule. I acknowledge my assistant supervisor Mrs. C. M. Egbunonu for her kind gesture and support. I seize this great opportunity to acknowledge Dr. S. I. Ogunjimi, and the entire lecturers of Agricultural Economics and Extension Department, Federal University Oye-Ekiti for their mentoring and encouragement. I also acknowledge Dr. Adebisi Adelani of National Horticultural Research Institute (NIHORT) Ibadan for her corrections and encouragement at all time. It's my prayer that, the good Lord bless you all. Amen.

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## *ABSTRACT*

*This study assessed the adoption of improved practices for cocoa farmers in Ekiti state, Nigeria. A multistage sampling technique was employed to select one hundred and twenty (120) cocoa farmers. Data were collected through interview schedule with the use of structured questionnaire and analyzed using inferential and descriptive statistics, such as the mean, frequency distribution, percentages, and standard deviation. The study found that majority (79.2%) of the cocoa farmers in the study area were males with one form of formal education (92.5%) or the other. It was revealed that, most of the farmers in the study area are aware of improved agricultural practices, only few of those practices are adopted by the farmers. The study found that inadequate credit facility, inadequate equipment and machinery, inadequate capital and accessibility to those facilities, pose major challenges in the adoption of improved practices. The correlation result show that: age, marital status, household size, education level, religion and farming experience facilitate the adoption of improved practices. The ANOVA result show that output of adopters that use improved practices tends to differs compared to non-adopters but were not statistically significant. It is recommended that cocoa production can be increased in the study area, if there is ready market for cocoa seed at an appreciable price rate, if there is government support through provision of necessary facilities and if extension agent can step-up their services through frequent contact to the cocoa farmers.*



**Keywords**: Adoption, Awareness, Cocoa, Extension agent, Improved practices, Seedlings

## TABLE OF CONTENTS

## CHAPTER THREE: RESEARCH METHODOLOGY



## CHAPTER FOUR: RESULTS AND DISCUSSION

## LIST OF TABLES

## LIST OF ACRONYMS

**ADP:** Agricultural Development Programme

**AACP**: Assam Agricultural Competitiveness Project

**ANOVA**: Analysis of Variance

**CBN**: Central Bank of Nigeria

**CIMMYT**: The International Maize and Wheat Improvement Center

**CRIN**: Cocoa Research Institute of Nigeria

**CRTs**: Cocoa Rehabilitation Techniques

**CTA**: Technical Center for Agricultural and Rural Cooperation

**ESWLG**: Ekiti South-West Local Government

**GDP**: Gross Domestic Product

**IAR**: Institute for Agricultural Research

**NAERLS**: National Agricultural Extension and Research Liaison Service

**NARES**: National Agricultural Research and Extension System

**NIHORT**: National Horticultural Research Institute of Nigeria

# CHAPTER ONE

## 1.0 INTRODUCTION

### 1.1. Background of the Study

Cocoa (*Theobroama Cacao*) developed in the upper amazon region of Latin America. The word Cocoa in modern usage refers to the tree while the word Cacao refers to drinks made from its seed. The early development of the Cocoa industry in West Africa was entirely due to the initiative and entrepreneurship of the West Africa peasant farmers (Gibberd, 1951).

In Nigeria the government developed an interest in the cultivation of Cocoa since 1887 when Cocoa seedlings from the old botanic garden at Ebute Meta (Lagos) were sent up into the country (Ibadan) for trial. This explains why Cocoa cultivation gains its first and earliest impetus around Ibadan Oyo State of Nigeria. Opeke (1969).

Cocoa belongs to the genus Theobroma in the family of the *Sterculaceae*. Opeke (2012).

There are three large and distinct groups within the species T. Cacao these are: the Criollo Cocoa type which have slender tree, green pods or pods colored by Anthocyanin pigments, the Trinitario groups which contains hybrid populations of mainly Forastero Amazonian and Criolo and the Forastero Amazonian group which is characterize by green pods, absence of anthocyanin pigmentation, thick pericarp, strongly lignified mesocarp, plump and deep purple cotyledons when fresh.

The cocoa bean is composed of two parts: the non-edible part (tegument or shell) and the edible part (cotyledons or seeds). A total of 70% weight of the pod is made up of the shells which are used as fertilizer, animal feed or even fuel why the seed can be used in manufacturing of cocoa juice, cocoa butter, and chocolate Adabe and Lionelle (2014).

ECOWAS-SWAC/OECD (2007): was of the view that since 1960, world Cocoa production has increased threefold, from 1.2 to 3.6 million tons. This growth was punctuated by several jolts caused by structural adjustment policies of 1986, crop infestations, diseases and market

speculation. West Africa, the world leader, produces almost 60%, and its production is dominated by Côte d"Ivoire (1.3 million tons in (2005), Ghana (600,000 tons) and Nigeria (175,000 tons). FAO (2009). Lumpur (2007); Cocoa is produced in many countries that are typified by low or very low GDP- per head often with poor infrastructure and communications.

Okojie and Koyenikan (2012): Cocoa production in Nigeria witnessed a downward trend after 1971 , when its export declined to 216,000 metric tons in 1976, and 150,000 metric tons in 1986. This decline in growth rate of Cocoa production could be attributed to non-use of proven technologies and practices by farmers.

Krajewski and Ritzman (1999): define technology to be the know-how (knowledge and judgment of how, when, and why to employ equipment and procedures, physical things (equipment and tools), and procedures used to produce products and services). Craftsmanship and experience are embodied in this knowledge and often cannot be written into manuals or routines.

Schonberger and Knod (1997): view technology as principles, techniques, equipment, mechanics, policies, and so forth to be employed in creating or attaining the goods or services.

For the purpose of this study improved technologies are the various new "technical knowhow" for the promotion and development of agriculture. Oluyole *et.al* (2011). Cocoa production technology presents detail explanations of the technologies that could be employed to assure sustainable production of high quality Cocoa beans for global confectionary industry.

Okojie and Koyenikan (2012): for effective Cocoa production, certain technologies and practices must be used: these technologies include the use of improved varieties, coppicing, fertilizers, pesticide, tractor usage, herbicide, planting technique, site selection as

well as irrigation facilities. These technologies if used will go a long way in increasing yield and framers income.

## 1.2 Statement of Problem

Cocoa producing countries of the world are undergoing rapid economic and industrial development: rapid population growth (this necessitating the use of more land for growing staple food crops): Cocoa soil is getting reduced while other commodity crops (cashew and kola nut) are gaining marked international recognition as well as attaining increasing local importance.

Despite efforts by Federal Government of Nigeria to increase Cocoa, production over the years through, improved Agricultural technologies, there has been decline due to: rural-urban drift, declining age of Cocoa tree, construction of road, expansion of rural community, pricing, weather change, lack of information to farmers on Cocoa production and the use of crude implement. Nkang *et.al* (2007).

Adoption of improved technologies is believed to be a major factor in the success of the Green Revolution experienced by Asian countries (Ravallion and Chen, 2004; Kasirye, 2010).

On the other hand, non-adopters can hardly maintain their marginal livelihood with socioeconomic stagnation leading to deprivation Jain *et al.* (2009). Adoption of improved agricultural technologies has been associated with: higher earnings and lower poverty; improved nutritional status; lower staple food prices; increased employment opportunities as well as earnings for landless laborers Kasirye (2010).

Okojie *et al* (2012): however, most agricultural practices in use by most farmers remain largely primitive and underdeveloped.

Cocoa also is a source of income to farmers in the rural community in the Cocoa producing area of the state. As a result of the income generated from the sale of Cocoa, certain needs of

the farmers are met but as a result of certain factors, such as: old age of Cocoa tree, youth migration, age of farmers, insect infestation, time of maturity and government policy there have been decline in production of Cocoa. This study set out to evaluate the adoption rate of improved agricultural technologies for Cocoa production in Ekiti state, if adopted what is the level of adoption and if not, what are the factors militating against the adoption of the technologies.

### 1.3 Objectives

The broad objective of the study is to determine the adoption of improved practices for Cocoa production in Ekiti state, Nigeria.

The specific objectives of this study are to:

i. describe the socio economic characteristics of respondents in the study area;
ii. determine the source of awareness of improved practices;
iii. examine the level of adoption of improved practices;
iv. determine factors influencing adoption of improved practices of cocoa production; and
v. determine the constraints militating against adoption of improved practices by cocoa farmers in the study area.

### 1.4 HYPOTHESES

1 There is no significant relationship between the personal characteristics of the cocoa farmers and adoption of improved practices of cocoa production in Ekiti State.

2. There is no significant difference between the outputs of adopters of improved practices of Cocoa and non-adopters.

### 1.5 Justification of the Study

Many obstacles are on the way to the realization of the role of agriculture to Nigeria, namely internal factors: (climate change, micro economic, level of adoption of improved practices and agricultural sector policies); and external factors such as global training environment and

developmental assistance. These factors have adversely affected the growth of agriculture in Nigeria. Kareem *et al* (2010).

In recent time attention has been diverted from oil sector to agricultural sectors (that is year 2000). CBN (2002). Agriculture has contributed up to 41.5% to the gross domestic production (GDP) The GDP from agriculture compared with other sector of the economy including oil and gas, and distribution trade with 10.4% and 11.6% respectively, CBN (2001). The export revenue from the Cocoa produce has increased from #2.8 billion in 1990 to #19.97 billion in 2000 Kareem *et al* (2010). With the increase in production, agriculture has not fully performed its expected role in Nigeria, in the areas of: provision of raw materials to the industrial sector; provision of employment opportunities; generation of foreign exchange; ensuring food security; and growth of economy. This study is aim at assessing the adoption of improved practices for cocoa production in Ekiti state.

# CHAPTER 2

# 2.0 LITERATURE REVIEW

## 2.1 Cocoa production

Agriculture is of low benefit if there is no adequate investment in the agro processing. The real Gross Domestic Product (GDP) cannot grow if a country merely produces massive agricultural products which cannot be exploited for domestic use and exportation (Christianto and Smaranlanche *et.al.* (2008).According to Olowolaju, (2014). Nigeria used to be rank as one of the leading Cocoa producing countries in West Africa and no single agricultural export commodity has earned more than Cocoa.

Oladosu and Yekinni (2008). With respect to employment, the Cocoa sub-sector still offers quite a sizeable number of employments both directly and indirectly. In furtherance, Cocoa is an important source of raw materials, as well as source of revenue to governments of Cocoa producing states. Ogunfiditimi (1986).

With the relevance of Cocoa production, there is need for investment in up-to-date technology for the production of cocoa bean. .

## 2.2 Technology adoption

Various authors define technology in different ways. Loevinsohn *et al.*, (2013) define technology as the means and methods of producing goods and services, including methods of organization as well as physical technique.

Technology is the knowledge/information that permits some tasks to be accomplished more easily, some service to be rendered or the manufacture of a product. Loevisohn (2013).

Technology itself is aimed at improving a given situation or changing the status to a more desirable level. It assists the applicant to do work easier than he would have in the absence of the technology hence it helps save time and labor -Wabbi (2002).

Adoption is defined in different ways by various authors. Loevinsohn *et al.*, (2013) defines adoption as the integration of a new technology into existing practice and is usually proceeded by a period of „trying" and some degree of adaptation. Citing the work of Feder, Just and Zilberman (1985), -Wabbi; defines adoption as a mental process an individual passes from first hearing about an innovation to final utilization of it.

Adoption is in two categories: rate of adoption and intensity of adoption. The former is the relative speed with which farmers adopt an innovation, has as one of its pillars, the element of „time". On the other hand, intensity of adoption refers to the level of use of a given technology in any time period, -Wabbi (2002).

Defining technology adoption is a complicated task since it varies with the technology being adopted. For instance the study by Doss (2003); showed that adoption of improved seed in a survey done by CIMMYT classified farmers as adopters if they were using seeds that had been recycled for several generations from hybrid ancestors. In other studies adoption was identified with following the extension service recommendations of using only new certified seed (Doss, 2003; Bisanda 1998; Ouma 2002). Therefore in defining agricultural technology adoption by the farmers, the first thing to consider is whether adoption is a diserete state with binary response variables or not Doss (2003). That means definition depends on the fact that the farmer is an adopter of the technologies or non-adopter taking values zero and one or the response is continuous variable Challa (2013).

The appropriateness of each approach depends on the particular context Doss (2003). Many researchers use a simple dichotomous variable approach in the farmers" decisions of new technology adoption. This approach according to Jain *et al.* (2009) is necessary but not sufficient because the dichotomous response reflects the status of awareness of improved technology rather than the actual adoption. Therefore researchers should clearly state how

they are defining this term (technology adoption) so that they can develop appropriate tool to measure

### 2.3 Factors determining technology adoption

The adoption of new technology is described as innovation decision process through which an individual passes through the time of first knowledge of the innovation to a decision stage of either adoption or rejection and confirm the decision.

The decision to adopt innovations involves risk on the part of the farmer. The farmer therefore has to be convinced of the superiority of recommended technology over the existing one. There are many factors an individual will have to consider before finally adopting an innovation or rejecting it. First, is the factor related to the characteristics of the innovation, which should be understood by the researchers and the extension agents before introducing innovation to farmers? Second, are those factors associated with the achievement of farmers such as personal characteristics, social, physical and cultural environment and adopter's categorization?' Nweke, (1981). According to Mwangi and Kariuki, (2015): Technology factors, economic factors, institutional factors and household specific factors are the major factors that determine technological adoption. Farmers will want to consider some factors before adopting a technology and these factors goes a long way in determining the type of technology to be adopted by the farmer. Most of these factors to be considered before adopting technologies are discussed below:

#### 2.3.1 Technology factors

Characteristic of a technology is a precondition of adopting it. Trialability or a degree to which a potential adopter can try something out on a small scale first before adopting it completely is a major determinant of technology adoption (Doss, 2003). Technologies which are costly and complex for the farmers to apply will not receive the good will of the farmers hence their rejection. So the extension agent or agencies of agriculture should make sure that

the innovations taking to farmers must be relatively cheap so that it would be within the economic reach of the farmers. It should also be simple for the farmer to use by themselves without much external assistance. Okunade. (2006): opined that technology to be introduced must conform to norms and the belief of the people and should not run counter to the existing religion of the people.

### 2.3.2. Economic factors

**Farm size** can affect and in turn be affected by the other factors influencing adoption (*Lavison 2013*). Some technologies are termed as scale-dependent because of the great importance of farm size in their adoption (- Wabbi 2002). Many studies have reported a positive relation between farm size and adoption of agricultural technology (Kasenge. 1998; Gabre-Madhin and Haggblade, 2001 Ahmed, 2004; Uaiene *et al.* 2009; Mignouna *et al.* 2011). Some studies have shown a negative influence of farm size on adoption of new agricultural technology. Small farm size may provide an incentive to adopt a technology especially in the case of an input-intensive innovation such as a labor-intensive or land saving technology, (Mwangi and Kariuki 2015): this implies that most farmers were not well educated on the importance of land on the adoption of improved practices.

**Education** is one of the socio-economic factor that influence the uptake of innovation and this goes a long way in arousing the farmer's interest in application of the innovation. Job *et al.*. (2015). opined that cocoa farmers who could read and write, could serve as a drive in adopting cocoa technologies. According to Obinne (1991), education is an important factor influencing farm innovation uptake. This implies that educated farmers has the opportunity of adopting technologies than un-educated farmers.

**Household size** has a great role to play in family labor provision in the agricultural sector (Sule *et al.*. 2002). Household size is simply used as a measure of labor availability. It determines adoption process in that, a larger household have the capacity to relax the labor

constraints required during introduction of new technology (Mignouna *et al*, 2011: - Wabbi 2002). According to Job N. *et al*., (2015) since, majority of his respondents have household size of 6 people, He now concluded that the farmers have a fairly large household which could probably serve as an insurance against short falls in supply of farm labor.

**Age** is also assumed to be a determinant of adoption of new technology. Older farmers are assumed to have gained knowledge and experience over time and are better able to assess technological informations than young farmers (Mignouna *et al*, 2011: Kariyasa and Dewi 2011). On contrary age has been found to have a negative relationship with adoption of technology. Lawal and Oluyole (2008): are of the view that young farmers are more receptive than older ones as the older ones are not always ready to part with the old techniques for new ones and also that the more the number of visits by scientists to the farmers, the more the research results will be adopted and consequently higher productivity leading to improved welfare. Age is also likely to have effect on their management of resources and adoption of innovation in cocoa production.

### 2.3.3 Institutional factors

Katungi and Akankwasa (2010) found that farmers who participated more in community-based organizations were likely to engage in social learning about the technology hence raising their likelihood to adopt the technologies. (Nwangi and Karuiki 2015), found that farmers participation in a programme are generally of low literacy and income levels, though having higher score in levels of production and living standard than their non-participating counter parts in the area. Participation in community based organizations facilitates the access to credit which promotes the adoption of risky technologies through relaxation of the liquidity constraint as well as through the boosting of household's-risk bearing ability (Simtowe & Zeller, 2006).

## 2.4 Awareness of improved practices

As stated by Ghosh (2004), in modern time technology is a major force for industry and business to avoid obsolescence and promote innovation, a firm must therefore be aware of technological changes that might influence the industry in which it operate. Awareness of improved agricultural technologies is the first stage in the adoption process. Mosimbale, (2015); it is the stage where an individual or group first learns about the existence of a technology. Access to information reduces the uncertainty about a technology's performance hence may change individual's assessment from purely subjective to objective over time (Caswell et al., 2001; - Wabbi 2002). However access to information about a technology does not necessarily mean it will be adopted by all farmers. Farmers will only adopt the technology they are aware of or have heard about it. Onyenwaku (1991) discovered that lack of awareness of technology is the most limiting factor to adoption.

As reported by Ekong (2003): acquisition of information about a new technology is most important in determining adoption of technology. It enables farmers to learn the existence as well as the effective use of technology and this facilitates its adoption.

Research has established that farmer's awareness and adoption behavior is also a function of Socio-economic, socio-cultural and institutional factors such as farm size, age, level of formal education, income, household size and frequency of extension contact (Galzark; 1968; Clark and Akinbode, 1968; Basu, 1969; Voh 1979; Ako 1971 and Okwoche 1998). The change agents therefore have to double their effort towards using all the available resources and techniques to teach the farmers the required production skills Orebiyi, *et al*, (2004). It is the view of the experts that the declining crop yields culminating in high food prices can be halted if improved practice are brought to the doorstep of farmers. However, effective communication is seen as an essential tool for the establishment and maintenance of good social and working relationships and it enables people to exercise control over their

environment (Braimoh, 1988; Anyanwu, 1992). The purpose of awareness is to bring about change of attitude, knowledge, skills and aspiration of the receivers.

## 2.5 Level of Adoption

The availability of modern agricultural production technologies to end users, and the capacities of end users to adopt and utilize these technologies are also critical. Unfortunately, the Nigerian agricultural sector is characterized by low level of technology adoption and this according to Nigerians Ministry of Agriculture and Rural development (2010), contributes to the low agricultural productivity in the country. According to Lomash and Mishra (2003), technology has far reaching effects on business. Majumdar (1995) opined that innovative activities undertaken by firms as measured by the level of investment in new technology is a positive function of micro market pressures that they face from potential competitor. A firm which is unable to cope with technological changes may not survive. Lane (1991) stated that new technologies displace older methods and lead to improvements in productivity, but the decision to invest in new technology depends on the cost and benefits of adoption of the technologies. Technology directly or indirectly affects all kinds of micro and macroeconomic environment. It is playing an increasing role in both manufacturing and services. New and improved technology creates or support substitutes for producers, alternative services option and superb quality, the state of the art product of today may become obsolete tomorrow, thus technology accelerate the competitive forces (Turban *et al.*, 2003). Brigham (1983) opines that operating leverage of a firm is determined to a large extent by technology.

## 2.6 Constraints

In West Africa, one serious constraint to agricultural development is the limited access to agricultural information (Anthott, 1993). In Nigeria, various communication media are being used to transmit agricultural information to farmers in line with national policy on

agriculture. The communication media include farm magazine, leaflets, newsletters, newspapers, pamphlets, radio and television, among others (Dare, 1990). With the various communication media set aside, most of Nigeria farmers are still lagging behind in terms of information on improved practices. Existing literature is replete with the view that personal characteristics of the individual farmer affect to a large extent his adoption of new technology (Igbokwe, 1989). Akubuilo (1982) and Crunning (1971) independently observed that poor supply of production farm inputs, poor transportation facilities, lack of supervision of the farmers as well as the unstable marketing system are among the important constraints to adoption of innovations.

Access to agricultural credit is also one of the major constraint faced by farmers. The availability of credit to farmers go a long way in overcoming the fear of used of technologies. According to findings of (Mohamed & Temu, 2008) access to credit has been reported to stimulate technology adoption. This is because with an option of borrowing, a household can do away with risk reducing but inefficient income diversification strategies and concentrate on more risky but efficient investments (Simtowe & Zeller, 2006). Farmers are adult learners and if provided with necessary facilities they will want to work. Change agents have a major role to play in reducing constraints faced by farmers.

# CHAPTER 3

## 3.0 METHODOLOGY

### 3.1 Study Area

Ekiti State is situated entirely within the tropics. It is located between longitudes 4° 5' and 5° 45' East of the Greenwich meridian and latitudes 7° 15' and 8° 5' north of the Equator (www.ekitinigeria.net,2010). It lies south of Kwara and Kogi State, East of Osun State and bounded by Ondo State in the East and in the South. Ekiti State has 16 Local Government Areas. By 1991 Census, the population of Ekiti State was 1,647,822 while the estimated population of Ekiti state as at 2011 is 2,801,200 and at 3.5% growth rate in 2015 is 3,193,368. Ekiti State has a total annual rainfall of about 1400mm with a low co-efficient variation of about 30% during the rainfall peak months, and with an average of about 12 rainy days per annum (Adebayo, 1993). The vegetation of Ekiti State exhibits the microcosm of the low land rainforest zone. The climatic characteristics of high mean monthly temperature of about 1,400mm provide suitable conditions for the growth of forest, (Oke and O. Olayemi 2012).

Mainly an upland zone rising over 250 meters above sea level, Ekiti has a rhythmically undulating surface. The landscape consists of ancient plains broken by steep-sided outcropping dome rocks. These rocks may occur singularly or in groups or ridges and the most notable of these are to be found in Efon-Alaaye, Ikere-Ekiti and Okemesi-Ekiti.

Most of the inhabitants in the state are farmers who engage in cultivation of cash crop (e.g. Cocoa, cashew, citrus, kola nut, oil palm, plantain and banana) and staple crops (e.g. cassava, rice, Cocoa-yam, pepper, tomato and vegetable.

### 3.2 Sampling Techniques

A multistage sampling technique was used to select Cocoa farmers in the area of study in Ekiti state. The first stage involve the use of purposive sampling in collecting data from three Local government area in Ekiti state (Gboyin, Ise-Orun and Ekiti South-West) because of the high concentration of cocoa farmers in that area. The second stage involve selection of three (3) villages from the three Local Government Areas. The third stage involve a random sampling of 120 respondents base on the production grading figure of Ekiti state, from the highest producing local government to the lowest with 55 respondent from Gboyin, 44 from Ise-Orun and 21 respondents from Ekiti South-West Local Government. The mode of data collection is shown in Table 1

Table 1: Mode of Data Collection from the Study Area.

| Local Government Area | Number of farmers interviewed |
|---|---|
| Gboyin | 55 |
| Ise-orun | 44 |
| Ekiti South-West local Government | 21 |
| Total | 120 |

Source: Field survey, 2017.

### 3.3 Data Collection

Primary data were collected using interview schedule designed to collect information on: socio economic characteristics of the farmers: source of awareness of improved practices: level of adoption of improved practices; factors influencing adoption of improved practices and the constraint to access of improved practices.

### 3.4 Analytical Tools

The data were analyzed using descriptive statistics which were used to achieve objective 1, 2, 3, 4 and 5 respectively. These descriptive statistics were used to describe the variables used in the study while, Pearson Product Moment Correlation Coefficient was used to determine the relationships between the dependent and independent variables of the study. The descriptive and the regression coefficients were computed using the SPSS computer program as describe in Table: 2

**Table 2: Mode of Data Collection, Objective and Analytical Tools**

| Mode of data collection | Objective and Analytical tool | |
|---|---|---|
| Interview schedule using questionnaire | Socio-economic characteristics of farmers | Descriptive |
| Interview schedule using questionnaire | Source of awareness of improved Practices | Descriptive |
| Interview schedule using questionnaire | Level of adoption of improved practices | Descriptive |
| Interview schedule using questionnaire | Factors influencing adoption of improved practices | Descriptive |
| Interview schedule using questionnaire | Constraints militating against adoption of improved practices | Descriptive |
| Interview schedule using questionnaire | **Hypothesis 1:** There is no significant relationship between the personal characteristics of the cocoa farmers and adoption of improved practices in Ekiti State. | Pearson moment correlation |
| Interview schedule using questionnaire | **Hypothesis 2:** There is no significant difference between the output of adopters of improved practices of Cocoa and non-adopters. | ANOVA |

**Field survey, 2017**

# CHAPTER FOUR

## 4.0 RESULTS AND DISCUSSION

### 4.1. Socio-economic Characteristics of Cocoa Farmers in the Study Area

This section described the socio-economic characteristics of the respondents in terms of gender, age group, educational status, marital status, and experience in cocoa production.

The sex distribution of cocoa farmers in the study area shows that out of 120 respondents, there were (79.2%) males, while (20.8%) were females. This result conforms to most findings that cocoa farming/production was majorly the responsibility of men (Azam-Ali *et al.*, 2003).

The distribution of the respondents in Table 3 based on their age group indicates that, 13.3% fell within the age of 30 – 39 years, 4.2% fell below 30 years and 14.2% fell within 40 - 49 years, while 68.3% fell within 50 years and above. The mean age of respondents in the study area is 45.8. This implied that majority of the farmers were in their most economically active years or most productive years as opined by Anzanku *et al* (2006).

The educational status of the respondents revealed that out of 120 respondents selected, (7.5%) had no formal education, (30.8%) had only primary education, (42.5%) had only secondary education and (19.2%) had tertiary education. The moderate level of literacy among the respondents should have a positive effect on their productivity and hence, have an impact on their standard of living. This is so because majority of the respondents (92.5%) were literate with one form of formal education or the other and this implies that they would be highly receptive to technologies disseminated that could improve production and better adoption. This is in consonance with the view of Erhabor and Emokaro (2007) who opined, in line with World Bank reports that, the output of an educated farmer is about 13% higher than that of the uneducated. The obvious reason being that, the educated and literate farmer

have the added advantage of learning with little promptings, the rules and application of production inputs in order to achieve optimum result.

The result of the marital status of the respondents showed that (5%) were single, (87.5%) were married, (3.3%) were widowed and (4.2%) of them were divorced. Majority of the respondents were married. This implies that a sense of responsibility of married people is capable of prompting them to put more commitment to their farming activities and consequently enhance productivity towards meeting their family needs.

Experience is gained with age. The more experience the farmer is, the more likely is his ability to make effective farm decisions. Result of analysis on farming experience showed that (19.2%) had between 1 - 10 years of experience, (28.3%) of the respondents had about 11-20 years of experience, (31.7%) of the respondents have between 21-30 years of experience, (12.5%) of the respondents have between 31-40 years' experience and (8.3%) of the respondents had above 40 years' experience in cocoa farming. This implies that majority of the respondents (80.8%) had above 10 years of experience in farming and hence the greater tendency to be technically efficient, as indicated by Karki, (2004), Onyenweaku and Nwosu (2005), that there is a positive correlation between experience and efficiency in production. Furthermore, the results implies that cocoa farmers must have gained some level of expertise over the years, which further give them a better understanding of socio-economic factors that affect their production.

The household size shows that 5% of the respondents had below four persons as members of the family, 31.7% and 12.5% were for 4-6 members and 10-12 members respectively while majority were said to be having members within 7-9 persons and the remaining 1.7% had above 12 persons. The mean of household size of respondents in the study area is 8. This implies that, large size of household serve as opportunity to reduce hired labor which tends to increase cost of production.

Occupational distribution of the respondents shows that majority (41.2%) were farmers having it as their primary occupation while 20% are civil servants and 22.7% are traders.

11.7% were reported on being artisan and the remaining 1.7% engaged in other business. The implication of this result is that the respondents still engaged in other income generating activities; and this could be attributed to the seasonal nature of the production of cocoa (Yusuf, 2007). This denotes that information given is said to be reliable and accurate for research purpose.

Table 3: Distribution of Respondents by Socio-Economic Characteristics

| Variables | Response | Frequency | Percentage |
|---|---|---|---|
| **Gender** | Male | 95 | 79.2 |
| | Female | 25 | 20.8 |
| **Age of respondents** | Below 30 | 5 | 4.2 |
| | 30-39 | 16 | 13.3 |
| | 40-49 | 17 | 14.2 |
| | 50 & above | 82 | 68.3 |
| **Educational Status** | No formal | 9 | 7.5 |
| | Primary | 37 | 30.8 |
| | Secondary | 51 | 42.5 |
| | Tertiary | 23 | 19.2 |
| **Marital Status** | Single | 6 | 5.0 |
| | Married | 105 | 87.5 |
| | Widow | 4 | 3.3 |
| | Separated | 5 | 4.2 |
| **Farming Experience** | 1-10 years | 23 | 19.2 |
| | 11-20 years | 34 | 28.3 |
| | 21-30 years | 38 | 31.7 |
| | 31-40 years | 15 | 12.5 |
| | Above 40 years | 10 | 8.3 |
| **Household Size** | Below 4 persons | 6 | 5.0 |
| | 4-6 | 38 | 31.7 |
| | 7-9 | 59 | 49.2 |
| | 10-12 | 15 | 12.5 |

| | | | |
|---|---|---|---|
| | Above 12 | 2 | 1.7 |
| **Primary Occupation** | Farming | 53 | 44.1 |
| | Civil servant | 24 | 20.0 |
| | Trading | 27 | 22.5 |
| | Artisan | 14 | 11.7 |
| | Others | 2 | 1.7 |
| **Total** | | 120 | 100 |

### 4.1.1 Modes of Land Acquisition and Labor Source

This section describes the method of land acquisition and source of labor for farm activities Land as a factor of production may be acquired in different methods which may vary from one farmer to another. Table 4 presents the different mode of land acquisition and labor source by cocoa farmers in the study area. About 43.3 percent of the respondents acquired their land through inheritance, while 0.8, 9.2, 10.8 and 35.8 percent of the respondents sourced their lands through exchanged, purchased, leasehold/rent and gifts respectively. This implies that, with greater percentage of land being inherited by the respondents, fragmentation of farm lands would be very common in the study area therefore leading to low adoption of improved practices in the area.

The result of labor source reveals that 2.5% of the respondents used their friends as labor for the farming business while 39.2% used family labor and the remaining which represented majority (58.3%) of the respondents used hired labor. Findings in this research shows that majority of the respondents make use of hired labor which will increase cost of production. This has implication on cocoa production. The used of hired labor must have been as a result of the pull and push factor driving youths away from farming activities. Results of the research also shows that, most of the farmers used both family and hired labor in their farm operations. The use of family labor would therefore be benefited from the farming household as a cheaper alternative.

**Table 4: Distribution of Respondents Based on Land Acquisition and Labor Source**

| Variables | Response | Frequency | Percentage |
|---|---|---|---|
| Land Source | Purchased | 11 | 9.2 |
| | Inheritance | 52 | 43.3 |
| | Rent / Leasehold | 13 | 10.8 |
| | Exchanged | 1 | 0.8 |
| | Gifts | 43 | 35.8 |
| | Total | 120 | 100 |
| Labor Source | Family | 47 | 39.2 |
| | Hired | 70 | 58.3 |
| | Others: friends | 3 | 2.5 |
| | Total | 120 | 100 |

**Field Survey, 2017**

### 4.1.2 Other Types of Farming

Table 5: presents the other types of farming involved in by the respondents. It was reported that majority of the respondents engaged on poultry production while 15% and 36.7% engaged in piggery and goat production respectively while 5.8% were for fishery and the remaining 3.3% engaged in other forms of farming. This implies the farmers still engage in rearing of small birds and other animals which serve as source of security in case of emergency.

**Table 5: Distribution of Respondents Based on other Type of Farming**

| Response | Frequency | Percentage |
|---|---|---|
| Poultry | 47 | 39.2 |
| Piggery | 18 | 15 |
| Goat | 44 | 36.7 |
| Fishery | 7 | 5.8 |
| Others | 4 | 3.3 |
| Total | 120 | 100 |

**Source: Field Study, 2017**

### 4.1.3 Crops Intercropped with Cocoa

Table 6 reported on whether farmers intercrop cocoa with other crops. In response to this, majority (80.0%) of the respondents agreed on intercropping while 19.2% disagreed on intercropping cocoa with other crops. Cocoa is best intercropped with other crops such as Plantain/Banana for effective production and for effective management practice. Since cocoa takes a longer time to mature, Farmers have to intensify their diversification efforts by intercropping cocoa with other crops which relatively have shorter period of harvest.

The result revealed that intercropped crops planted include cocoyam (12.5%) and vegetables (2.5%) respectively while 16.7% planted Kola nut and the remaining which represented majority (68.3%) intercrop with banana/plantain as the case may be. As a result of time taken for cocoa tree to mature and the need for farmers to survive, intercropping cocoa with other crop help in minimization of risk which will not lead to hunger.

**Table 6: Intercrop: and the Type of Crops Intercropped with Cocoa**

| Variables | Response | Frequency | Percentage |
|---|---|---|---|
| Does Farmers | Yes | 97 | 80.8 |
| Intercrop Other Crop | No | 23 | 19.2 |
| With Cocoa | | | |
| | Total | 120 | 100 |
| Crops Intercrop with | Vegetables | 3 | 2.5 |
| Cocoa | | | |
| | Banana/plantain | 82 | 68.3 |
| | Cocoyam | 15 | 12.5 |
| | Kola nut | 20 | 16.7 |
| | Total | 120 | 100 |

**Field Survey, 2017**

## 4.2 Source of Awareness of Improved Practices

### 4.2.1 Awareness of Improved Practices and Its Adoption

Table 7 presents the various improved practices. It has been reviewed in literature that awareness of farm innovation are crucially dependent on the availability and frequency of farmers contact with extension workers Akinola, (1983); Igbokwe (2000); Tologbbonse and Adekunle,(2000) and Giroh *et.al*., (2007). Among the respondents, awareness of improved practices such as use of pesticides, improved seedlings, herbicides, planting techniques, site selection, fertilizer application and farm rehabilitation having a percentage of 94.2%, 91.7%, 85%, 87.5%, 59.2%, 89.2% and 67.5% respectively were highly aware of but awareness of irrigation and use of tractor was least created. Meanwhile, it was reported that stages of adoption were completely presented, but the use of pesticide and improved seedlings were highly adopted by the farmers in the study area. This shows that the practices that are used substantially are pests and disease management techniques and use of improved seedlings. Peasant farmers could improve their productivity if they adopt improved farming techniques; however, some new practices are sometimes complicated, making adoption difficult for non-literate farmers (Apantaku, *et al* 2008). Peasant farmers must understand these farming techniques before they can adopt and successfully use them and this requires effective teaching by agricultural extension service (agents) (Kesley and Hearne, 1995). According to Farinde and Jibowo (1996), the adoption and use of any extension teaching methods depends on caracteristics of the method, the type of audience to be reached by extension workers and the type of message (agricultural innovation) to be disseminated.

**Table 7: Awareness and Adoption Rate of Improved Practices**

N = 120

| Improved Agricultural Practices / Stages | Improved Seedling | | Farm Rehabilitation | | Fertilizer Application | | Pesticide Usage | | Irrigation | | Use of Tractor | | Herbicide | | Planting technique | | Site selection | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | F | % | F | % | F | % | F | % | F | % | F | % |
| **Awareness** | | | | | | | | | | | | | | | | | | |
| Aware | 110 | 91.7 | 81 | 67.5 | 107 | 89.2 | 113 | 94.2 | 64 | 53.3 | 55 | 45.8 | 103 | 85.8 | 105 | 87.5 | 71 | 59.2 |
| Not aware | 10 | 8.3 | 39 | 32.5 | 13 | 10.8 | 7 | 5.8 | 56 | 46.7 | 65 | 54.2 | 17 | 14.2 | 15 | 12.5 | 49 | 40.8 |
| **Adoption** | | | | | | | | | | | | | | | | | | |
| Adopted | 87 | 72.5 | 62 | 51.7 | 55 | 45.8 | 94 | 78.3 | 6 114 | 5.0 | - | - | 71 | 59.2 | 90 | 75.0 | 54 | 45.0 |
| Not adopted | 33 | 27.5 | 58 | 48.3 | 65 | 54.2 | 26 | 21.7 | | 95.0 | - | - | 49 | 40.8 | 30 | 25.0 | 66 | 55.0 |

**Source: Field Survey, 2017**

### 4.2.1 Source of Information on Improved Practices and Seedlings

Table 8 presents the various source of gathering informations on improved practices. 36.7%, 7.5% and 2.5% were from ADP, friends and CRIN respectively while 5% gathered informations through newspaper and majority (58%) were from radio. In Nigeria, various communication media are being used to transmit agricultural information to farmers in line with national policy on agriculture. The communication media include farm magazine, leaflets, newsletters, newspapers, pamphlets, radio and television, among others (Dare, 1990). Among them, radio is the most preferred tool of mass communication in Nigeria (Zaria and Omenesa, 1992; Omenesa, 1997; Ekumankama, 2000). Omenesa (1997) observed that radio programmes are usually timely and capable of extending messages to the audience no matter where they may be as long as they have a receiver with adequate supply of power. The absence of such facilities as road, light and water are no hindrance to radio. Similarly, such obstacles as difficult topography, distance, time and socio-political exigencies do not hinder the performance of radio. He further observed, that illiteracy is no barrier to radio messages since such messages can be passed in the audience own language. Another advantage of radio programme is that it can be done almost anywhere through the use of a tape recorder *(Nwuzor, 2000)*. It is probably because of these advantages of radio that many governments accord high priority to it as a means of reaching farmers.

Table 8 presented the various source of seedlings. Impact studies have revealed that, in Nigeria the introduction of improved varieties has provided food for 50 million people *Orebiyi et.al (2004)*. 32.5%, 4.2% and 3.3% were from ADP, IITA and CRIN respectively comprising, the formal source of improved seedling while majority (60%) sourced for their seedlings from harvested trees. The study shows that informal sources account for most of the supply of seedlings to farmers in the study area. This cast doubt on the quality of seeds used by farmers.

**Table 8: Sources of Information on Improved Practices and Seedlings**

| Variables | Response | Frequency | Percentage |
|---|---|---|---|
| Source of information on Improved Practices | ADP | 44 | 36.7 |
| | Radio | 58 | 48.3 |
| | CRIN | 3 | 2.5 |
| | Newspaper | 6 | 5 |
| | Others: Friends | 9 | 7.5 |
| | Total | 120 | 100 |
| Source of Seedlings | Newspaper | 39 | 32.5 |
| | IITA | 5 | 4.2 |
| | CRIN | 4 | 3.3 |
| | Harvested tree | 72 | 60 |
| | Total | 120 | 100 |

**Field Survey, 2017**

### 4.3 Level of Adoption of Improved Practices

The results in table 9 describing the years spent in using improved practices shows that majority (38.3%) of the respondents had been using the improved agricultural practices for a period below 10 years, 30.8%, 8.3% and 20.8% were for 10-19 years, 30-39 years and 20-29 years respectively while the remaining 1.7% accounted for those using the practices for a period above 40 years. This implies that most of the farmers have been using improved practices for years thus, giving them the opportunity to improve their production scale. The level of experience a farmer has on the use of improved practices the higher the benefit she/he derives from it. In consonance with Asiedu Emmanuel, (2014): the knowledge and experience of the farmers play a vital role in the dissemination and adoption of new practices.

The result describing the satisfaction with improved practices indicates that majority of the respondents were satisfied with the improved practices while only 15.8% were not. Cocoa farmer's response on satisfaction with improved practices shows their level of adoption. This implies that farmers in the study area are receptive to new practices introduced to them by extension agent.

Result based on satisfaction with improved practices indicate that 14.2% and 11.7% gave fair and poor response of level of satisfaction with improved practices while 1.7% and 19.2% were for excellent and very good respectively and the majority (53.3%) opined on good response. Majority response shows that the farmers in the study area are satisfied with the level of improved practices given to them. This implies that, the higher the level of adoption of improved agricultural practices, the higher the output of the farmers and the higher the level of satisfaction derived from the practices.

The result based on whether improved practices increased yield shows that majority (85%) of the respondents reported that the improved practices were able to increase their yield realized while only 15% disagreed. In consonance with Aneani *et al* (2012), it is predicted that increase in cocoa yield will have a positive impact on technology adoption because the resultant increased in cocoa income can serve as a motivational factors in adoption of improved practices. Farmers agreement on increase yield has shown their level of compliance with improved agricultural practices and this has helped increased their output.

**Table 9: Level of Adoption of Improved Practices**

| Variables | Response | Frequency | Percentage |
|---|---|---|---|
| Years spent Using Improve Practices | Below 10 | 46 | 38.3 |
| | 10-19 | 37 | 30.8 |
| | 20-29 | 25 | 20.8 |
| | 30-39 | 10 | 8.3 |
| | 40 and above | 2 | 1.7 |
| | Total | 120 | 100.0 |
| Satisfied with Improved Practices | No | 19 | 15.8 |
| | Yes | 101 | 84.2 |
| | Total | 120 | 100.0 |
| Level of Satisfaction with Improved practices | Poor | 14 | 11.7 |
| | Fair | 17 | 14.2 |
| | Good | 64 | 53.3 |
| | Very Good | 23 | 19.2 |
| | Excellent | 2 | 1.7 |
| | Total | 120 | 100.0 |
| Does Practices Increase Yield | No | 18 | 15.0 |
| | Yes | 102 | 85.0 |
| | Total | 120 | 100.0 |

**Field Survey, 2017**

### 4.4 Factors Influencing Adoption of Improved Practices for Cocoa Production

Table 10 shows that 64.2% of the respondents reported on having contact with extension agents, while 35.8% opined on no contact with extension agents. Access to extension services is critical in promoting adoption of modern agricultural production technologies because it reduce the negative effect of lack of years of formal education in the overall decision to adopt some technologies (Yaron *et al*, 1992). Access to extensions services therefore creates the platform for acquisition of the relevant information that promotes technology adoption. Access to information through extension services reduces the uncertainty about a technology's performance hence may change individual's assessment from purely subjective to objective over time thereby facilitating adoption. The implication of these findings is that farm households are more likely to adopt improved practices if they have access to extension services.

The table presents the various types of extension agents the farmers had contact with. It was reported that 31.7%, 28.3% and 2.5% were from ADP, NGOs and CRIN respectively while 1.7% opined on other types of agents and the remaining 35.8% represented those not having contact with any type of extension agents/organization. This shows that most of the respondents got information about cocoa production practices from the Agricultural Development Programme of the State. Oladosu *et.al* (2008) opined that extension service of Ekiti state ADP is the one that reach out most effectively to the majority of the respondents to meet their information needs: this is probably because of the interests of the governments at promoting the enterprise. This finding is supported by Arokoyo (2003) who said that the nation's agricultural research and extension system (NARES) is the most

important single determinant of the level of its agricultural development and hence the yard-stick of the quality of life of its people.

The result on membership of cooperatives indicate that 49.2% of the respondents were non-members of cooperative societies, (50.8%) were members. The implication of this finding is that the moderate rate of membership does not restrict accessibility to improved practices as well as finance which are essential for expansion purpose. These organizations could also serve as channels for extension contact with large number of the farmers, as well as, offer opportunities for participatory interaction with extension organizations. This implies that the higher the number of social/farmers organizations belonged to, by a farmer, the more improved practices the farmer would adopt. This could be attributed to the fact that constant interaction and contact with fellow members help farmers to become aware of new practices. Membership however may entitle members to borrow money from the group, hence the possibility of having access to credit to practice the adopted practice. Murphy (1993) stated that farmers communicate most frequently and effectively with fellow farmers. These farmers are more likely to obtain information from and be influenced in their farming practices and management decision by other farmers than by extension workers. Membership of cooperative society will help the farmers in the study area to pool resources through loan acquisition from banks.

The result on whether respondents had access to credit indicated that less than the average (39.2%) had access to credit while 60.8% being majority disagreed on credit accessibility. Access to credit has been reported to stimulate technology adoption (Mohamed & Temu, 2008). It is believed that access to credit promotes the adoption of risky technologies through relaxation of the liquidity constraint as well as through the minimizing of household's-risk bearing ability (Simtowe & Zeller, 2006).

This is because with an option of borrowing, a household can do away with risk reducing but inefficient income diversification strategies and concentrate on more risky but efficient investments (Simtowe & Zeller, 2006). The importance of farmer's access to credit is that the farmers will be able to expand their scale of production since, most of them have 3 plots of land or more.

The result on source of credit indicated that credit from cooperative societies was the most common source of fund as claimed by 22.5% of the respondents. 3.3% of the respondents sourced their funds from commercial banks and sales agents. 10% sourced from community banks while the remaining 60.8% accounted for those not having access to credit use. Considering the role of credit in agricultural production, Mosimabale, (2007) was of the view that, this lack of access to credit could be a limiting factor to enhanced production. Access to credit by farmers as explained above will help the farmers to increase their scale of production and the absence of credit retards it.

The result on land size indicates that 60.9% comprising majority of the respondents had below 10 plots as farm size, while 2.5% and 30.8% had land size within 31-40 and 10-20 respectively and 5.8% reported of owning land size of within 21-30 plots. Mosimabale (2012) was of the opinion that the size of the farmland determines the adoption of improved agricultural technologies. (Olayide *et al* 1980) opined that one of the characteristics of small scale rural farmers is fragmented land holding. The implication of this is that farmers with large farm size will want to apply improved practices to cover large area of land while those with small farm size may be reluctant in applying improved practice.

The result on accessibility of the farm roads indicates that 23.3% of the respondents reported on the road to the farm not being accessible, 76.7% opined on the road being accessible. The implication of this is that the accessibility of farmer to the farm will make for easy conveyance of farm input to the farm and also help farmers to convey their produce from the farm to the market thus, reducing stress associated with trekking.

The result on means of accessibility revealed that majority (47.5%) used motor cycle as means of transportation to their farm, this may be as a result of bad roads, presence of hills and river, making only motor cycle to be accessible to the farm, while 5.8% were for both motorcycle and car and 23.3% each reported on car only and the road not being motor-able. The road not been motor-able may limit the use of tractors and other heavy equipment for the cultivation of large area of land

The result on accessibility to hiring of farm machinery indicates that 20.8% hired farm machinery while majority 79.2% disagreed on hiring accessibility of farm machinery. Farm machineries are machines that make work easier and faster. The accessibility of farmers to farm machinery in the study area will make farmers to adopt new practices and also improve their scale of production. According to findings of this research most, of the farmers in the study area does not have access to farm machinery and this has greatly affected their scale of production.

The result of ready-made market for cocoa seeds indicated that majority (96.7%) reported on availability of ready-made market for any cocoa seed harvested while only 3.3% disagreed. Presence of market is one of the single determinant in adoption of improved practices and this encourages farmers to go into production since there is possibility of changing their goods for cash at any time frame. This

implies that presence of market for cocoa dried seeds has been a motivational factor for the cultivation of cocoa in the study area.

The report on the various buyers available for cocoa produced indicated that individuals were majority buyers (45.8%) while cooperatives and other farmers accounted for 40% and 9.2% respectively and the remaining 5% were response made in lieu of government. This implies that the individual determines the price of cocoa thus, allowing the farmers to make less profit and this also limit access to credit by farmers.

The report based on satisfaction with price of cocoa indicated that 60.8% of the respondents were satisfied with current price at which the cocoa seeds are being sold while 39.2% disagreed on the price fixed. Price is one of the major factor that determines cultivation of a particular crop. The implication of this is that when there is increment in cocoa price, farmers will want to invest more on cocoa production but when there is decrease in price, farmers will not want to go into cocoa production. Increment in cocoa price experience in 2016 encouraged most of the cocoa farmers in the study area to put in more effort in its cultivation.

**Table 10: Describing Factors Militating against Adoption**

| Variables | Response | Frequency | % |
|---|---|---|---|
| Contact with extension agent | Yes | 43 | 35.8 |
| | No | 77 | 64.2 |
| | Total | 120 | 100 |
| Types of extension agents | ADP | 38 | 31.7 |
| | NGOs | 34 | 28.3 |
| | CRIN | 3 | 2.5 |
| | Others | 2 | 1.7 |
| | None | 43 | 35.8 |
| | Total | 120 | 100 |
| Membership of Society | Yes | 61 | 50.8 |
| | No | 59 | 49.2 |
| | Total | 120 | 100 |
| Accessibility of Credit | Yes | 47 | 39.2 |
| | No | 73 | 60.8 |
| | Total | 120 | 100 |
| Sources of Credit | Sales Agent | 4 | 3.3 |
| | Cooperative Society | 27 | 22.5 |
| | Commercial Bank | 4 | 3.3. |
| | Community Banks | 12 | 10 |
| | None | 73 | 60.8 |
| | Total | 120 | 100 |
| Land size (plots) | Below 10 | 73 | 60.9 |
| | 10-20 | 37 | 30.8 |
| | 21-30 | 7 | 5.8 |
| | 31-40 | 3 | 2.5 |
| | Total | 120 | 100 |

| | | | |
|---|---|---|---|
| Accessibility of the Farm road | Yes | 92 | 76.7 |
| | No | 28 | 23.3 |
| | Total | 120 | 100 |
| Means of Accessibility of the Farm Roads | Motorcycle | 57 | 47.5 |
| | Car | 28 | 23.3 |
| | Motor Cycle & Car | 7 | 5.8 |
| | None | 28 | 23.3 |
| | Total | 120 | 100 |
| Access to hiring of Farm Machinery | Yes | 25 | 20.8 |
| | No | 95 | 79.2 |
| | Total | 120 | 100 |
| Presence of Ready-Made market | Yes | 116 | 96.7 |
| | No | 4 | 3.3 |
| | Total | 120 | 100 |
| Buyers Of Cocoa | Individuals | 55 | 45.8 |
| | Other farmers | 11 | 9.2 |
| | Cooperative | 48 | 40.0 |
| | Government | 6 | 5.0 |
| | Total | 120 | 100 |
| Satisfaction with Price | Yes | 73 | 60.8 |
| | No | 47 | 39.2 |
| | Total | 120 | 100 |

**Field Survey, 2017.**

### 4.5 Constraints to Access of Improved Agricultural Practices

The distribution of respondents' according to the constraints faced on access to improved practices on cocoa production is presented in Table 11. The result shows that inadequate credit facility (78.3%), inadequate equipment and machinery (70.8) and inadequate capital (70.7%) were the major constraints faced with very severe effect while other constraints such as: High cost of seedling, Inadequate input, inadequate knowledge, inadequate herbicide and pesticide were considered as the constraint of moderate (severe) effect and knowledge and land was the least constraint faced by the cocoa producers in the study area. The study revealed the most critical constraints to the adoption of improved practices in the study area were not different from the constraints faced by farmers generally.

**Table 11: Constraint to Access of Improved Practices**

| Constraints | Not Severe | | Severe | | Very severe | | | |
|---|---|---|---|---|---|---|---|---|
| | F | % | F | % | F | % | Rank | |
| Inadequate credit facility | 1 | 0.8 | 25 | 20.8 | 94 | 78.3 | 1st | Very severe Constraints Face by Cocoa Farmers |
| Inadequate Availability Equipment and Farm Machinery | 9 | 7.5 | 26 | 21.7 | 85 | 70.8 | 2nd | |
| Inadequate capital | 6 | 5.0 | 30 | 24.2 | 84 | 70.7 | 3rd | |
| High cost of seedling | 6 | 5.0 | 42 | 35 | 72 | 60.0 | 4th | |
| Inadequate input | 5 | 4.2 | 60 | 50.0 | 55 | 45.8 | 5th | Minimal Constraints Faced by Cocoa Farmers |
| Inadequate herbicide and pesticide | 10 | 8.3 | 63 | 52.5 | 47 | 39.2 | 6th | |
| Inadequate land | 66 | 55.0 | 22 | 18.3 | 32 | 27.5 | 7th | |
| Inadequate knowledge | 33 | 27.5 | 50 | 41.7 | 32 | 26.7 | 8th | |

**Field Survey, 2017**

## 4.6 Testing of Hypotheses

**4.6.1 Hypothesis 1:** There is no significant relationship between the personal characteristics of the cocoa farmers and adoption of improved practices in Ekiti State.

The findings as shown in table 12 presenting the Pearson correlation result on hypothesis one revealed that there was a positive relationship between age, marital status, household size, religion and farming experience while sex, educational level and occupation tends to show a negative relationship but none was significant. Thus, the null hypothesis is accepted, shows that personal traits of the farmers could not best predict the adoption of improved practices in the study area. This implies that lack of significance in all these personal characteristics could be due to interactive effects of traditional belief and custom. In consonance with Asiedu Emmanuel, (2014); Farmers find it extremely difficult to do away with traditional varieties because they maintained that they find them tastier and easier to preserve as compared to the improved varieties.

**Table 12: Result of Coefficient of Correlation (Pearson)**

| Matrix | Adoption | Age | Sex | Marital status | Household size | Educational level | Religion | Farming Experience | Occupation |
|---|---|---|---|---|---|---|---|---|---|
| Adoption | 1 | 0.018 | -0.042 | 0.013 | 0.122 | -0.058 | 0.096 | 0.065 | -0.038 |
| Age | 0.018 | 1 | 0.033 | 0.214* | 0.435** | -0.451 | 0.006 | 0.655** | -0.147 |
| Sex | -0.042 | 0.033 | 1 | 0.455** | -0.091 | 0.112 | 0.130 | -0.029 | 0.097 |
| Marital status | 0.013 | 0.214* | 0.455** | 1 | 0.135 | -0.052 | 0.054 | 0.131 | 0.166 |
| Household size | 0.122 | 0.435** | -0.091 | 0.135 | 1 | -0.332** | -0.056 | 0.252** | 0.156 |
| Educational level | -0.058 | -0.451** | 0.112 | -0.052 | -0.332** | 1 | 0.078 | -0.476** | 0.122 |
| Religion | 0.096 | 0.006 | 0.130 | 0.054 | -0.056 | 0.078 | 1 | 0.059 | 0.096 |
| Farming experience | 0.065 | 0.655** | -0.029 | 0.131 | 0.252** | -0.476** | 0.059 | 1 | -0.088 |
| Occupation | -0.038 | -0.147 | 0.097 | 0.166 | -0.156 | 0.122 | 0.096 | -0.088 | 1 |

**Source: Field Survey, 2017**

*** Correlation is significant at the 0.01 level (2-tailed).*

** Correlation is significant at the 0.05 level (2-tailed).*

**4.6.2 Hypothesis 2:** There is no significant difference between the output of adopters of improved practices of Cocoa and non-adopters.

From the ANOVA table presented output of adopters that used improved practices tends to differs compared to non-adopters but were not statistically significant revealing F-value (0.914), since the p value are > 0.05 (as shown in significant column in table 12). This implies that the null hypothesis is hereby accepted. This implies that lack of significance between adopters and non-adopters could be as a result of the cost attached with the use of improved practices.

Table 13: ANOVA RESULT

| Response | | sum of square | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Output of adopters and Non adopters | Between groups | 4.313 | 21 | 0.205 | 0.914 | 0.574 |
| | Within groups | 21.012 | 98 | 0.225 | | |
| | Total | 26.325 | 119 | | | |

**Field Survey, 2017**

# CHAPTER FIVE

## 5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

### 5.1 Summary

Cocoa is one of the major cash crops grown by cocoa farmers in Ekiti state. The cultivation of cocoa serves as major source of revenue to the state and income to farmers engaging in its production, thus necessitating the use of improved practices to increase production. The use of improved practices such as: use of pesticide and use of improved seedling has greatly help the farmers in the study area to increase their production. Extension agents and non-governmental agencies have played major roles in educating the farmers on the use of improved practices through various means, most especially, with the use of radio. With the use of radios many farmers has adopted one form of improved practices or the other which has help increased production.

Cocoa production can still be increased if farmers are ready to adopt other improve practices aside from the use of pesticide and use of improved seedlings.

### 5.2 Conclusion

Findings from this study shows that majority of the respondents in the study area were aware of improved agricultural practices though, may not have adopted the practices due to poor infrastructure, topography of the area and financial constraint.

For cocoa farmers to adopt improved agricultural practices, governmental and non-governmental agencies have to play their role in making sure, there is necessary facilities to help the farmers overcome their geographical challenge. government should provide incentives for farmers most especially, the young ones and the extension agent should be trained to meet up with the needs of cocoa farmers in the study area.

Information is also vital in adoption of improved practices, been the first stage of adoption it has to be taken seriously in-order for farmers to adopt practices that can best increased their yield.

### 5.3 Recommendations on Improving Cocoa Production

The study found that farmers in the study area are aware improved practices but certain factors are militating against the adoption of improved those practices. The study recommends that: government support, good farming practice, provide incentives, increment in cocoa price and the development of cocoa industries can help increase the adoption of improved practices.

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## APPENDIX

## DEPARTMENT OF AGRICULTURAL ECONOMICS AND EXTENSION

## FACULTY OF AGRICULTURE, FEDERAL UNIVERSITY OYE-EKITI, EKITI STATE.

**PROJECT TOPIC**: ADOPTION OF IMPROVED PRACTICES FOR COCOA PRODUCTION IN EKITI STATE.

SECTION A (Socio-economic characteristics of cocoa farmers)

1. Age: (Year) .....
2. Sex: Male ☐ Female ☐
3. Marital status: (a)Single ☐ (b) Married ☐ (b) Divorced ☐ (c) Separated ☐
4. Family size: .....
5. Year of schooling? .....
6. Religion: (a) Christian ☐ (b) Muslim ☐ (c) Traditional ☐
7. Farming experience: .....
8. How long have you been working on your present farm? .....
9. How do you acquire your cocoa plantation? (a) Inheritance ☐ (b) Family land ☐ (c) Rent/leasehold ☐ (d) purchased land ☐ (e) others specify.....
10. Size of your farm land: .....
11. Other types of crops cultivated aside from cocoa (a) Vegetable ☐ (b) Kolanut ☐ (c) Banana ☐ (d) Cocoyam ☐ (e) Others specify .....
12. Other types of farming engage in (a) Poultry production ☐ (b) Piggery ☐ (c) Goat rearing ☐ (d) fishery production ☐ (e) others pls. specify.....

14. Do you intercrop cocoa with other crops? (a) Yes ☐ (b) No ☐

15. If yes specify.....

16. Source of household income (a) Farming ☐ (b) Civil servant ☐ (c) trading ☐

(d) others pls. specify .....

17. Source of farm labour? (a) Family ☐ (b) Hired ☐ (c) Friends ☐ (d) others

specify .....

18. Are you a member of co-operative society (a) Yes ☐ (b) No ☐

If yes how many?.....

18a. Is your farm motor-able? (a) Yes ☐ (b) No ☐

18b. if yes what is the means.....

**SECTION B. (Source of awareness of improved Agricultural Practices)**

**19.** Tick the appropriate technology and adoption stage in the table below

19. Source of information on improved practices (a) ADP (b) CRIN (c) radio

(d) newspaper (e) bulletin (f) others specify.....

| Types of improved practices | Awareness | Interest | Trial | Evaluation | Adoption | Number of years or month of adoption |
|---|---|---|---|---|---|---|
| Used of improved seedling | | | | | | |
| Coppicing | | | | | | |
| Fertilizer application | | | | | | |
| Agro-chemicals | | | | | | |
| Irrigation | | | | | | |
| Use of tractor | | | | | | |
| Use of herbicide | | | | | | |
| Planting technique | | | | | ☐ | ☐ ☐ |
| Site selection | ☐ | ☐ | | | | |

20. Source of seedling for planting? (a) ADP (b) IITA (c) CRIN (d) from harvested tree

(e) others specify

**SECTION C (Factors influencing adoption of improved practices for cocoa production)**

21. Do you have contact with extension farmers? (a) yes ☐ (b) ☐

22. If yes how many times in a year? (a) Once ☐ (b) Twice ☐ (c) 3 times ☐ (d) 4

times ☐ (e) others specify.....

23. What type of extension agent do you come in contact with? (a) ADP ☐ (b) CRIN ☐

(c) IITA ☐ (d) NGOs ☐ (e) others specify.....

24. What type of information do they give you? (a) Improved practices for cocoa

production ☐ (b) Improved practices for vegetable production ☐ (c) Improved

 ☐

☐

practices for banana/plantain production (d) Improved practices for cassava production (e) others specify.....

25. Do you have access to credit? (a) Yes ☐ (b) No ☐

26. If yes source of your credit (a) Community bank ☐ (b) Commercial bank ☐ (c) Sales agent ☐ (d) Cooperative society ☐ (e) others specify.....

27. Do you have access to hiring of farm machinery? (a) Yes ☐ (b) ☐

28. If yes, where .....

29. Is there ready market for harvested cocoa seed (a) Yes ☐ (b) ☐

30. Can tractor get to your farm? (a) yes ☐ (b) no ☐

31. If no, why? (a) Presence of hills ☐ (b) Presence of river ☐ (c) Others specify.....

32. Who are your buyers? (a) individual (b) other farmers (c) cocoa farmers cooperatives (d) other farmers specify

33. How much are the buyers buying a kilogram of cocoa seed.....

34. Are you satisfy with the price (a) Yes ☐ (b) No ☐

35. If you are not satisfy what are the other market channel.....

**SECTION D (To determine Level of Adoption of Improved Practices)**

36. How long have you been using improved practices for cocoa production?.....

37. Are you satisfied with the improved practices given to you? (a) Yes ☐ (b) No ☐

38. If yes, what is the level? (a) Poor ☐ (b) Fair ☐ (c) Good ☐ (d) very good ☐ (e) Excellent ☐

39. Does it increase your yield? (a) Yes ☐ (b) No ☐

**SECTION E (Constraints to Access of Improved Practices)**

40. Do you experience any constraint associated with the use of improved agricultural practices for cocoa production? (a) Yes ☐ (b) No ☐

41. If yes indicate the following problem you encounter in cocoa production?

| Constraints | Very severe | Severe | Not severe |
|---|---|---|---|
| Inadequate knowledge | | | |
| Inadequate credit facility | | | |
| Inadequate availability of equipment and machinery | | | |
| Inadequate input | | | |
| Inadequate herbicide and pesticide | | | |
| Inadequate land | | | |
| High cost of seedling | | | |
| Inadequate capital | | | |

42. What are your suggestions and recommendations on how to improve Cocoa production in your areas.....