

**DETERMINANTS OF FARMERS' PARTICIPATION IN THE YOUTH-IN-
AGRICULTURE PROGRAMME IN THE EASTERN REGION OF GHANA**

BY

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**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN PARTIAL
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DECLARATION

I, Victor Fred Ohene, author of this thesis titled, “DETERMINANTS OF FARMERS’ PARTICIPATION IN THE YOUTH-IN-AGRICULTURE PROGRAMME IN THE EASTERN REGION OF GHANA”, hereby declare that with the exception of references and quotations duly acknowledged, this work was entirely done by me under supervision in the Department of Agricultural Economics and Agribusiness, University of Ghana, from August 2012 to July, 2013.

I hereby declare that this thesis has never been presented either in whole or in part for any degree in this university or elsewhere.

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This thesis has been submitted for examination with our approval as supervisors.

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DEDICATION

I dedicate this thesis to the Almighty God for His grace and guidance throughout my academic pursuit and also to my wife, Sarah Ohene (Mrs.) for her understanding, emotional support and prayers during the period of study.



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To this end, I give glory to the Almighty God for His guidance, protection and love throughout my life and during the period of study.

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ABSTRACT

The government of Ghana introduced the Youth-in-Agriculture Programme (YiAP) in 2009 as one of the modules of the National Youth Employment Programme. The Government through the YiAP motivates the youth to accept agriculture as their main occupation by providing the necessary inputs and services (incentives) that the youth themselves under their present condition cannot provide. This study is an analysis of determinants of participation in the YiAP in three districts in the Eastern Region (Akuapem North, Akuapem South and Suhum/Kraboah/Coaltar) in order to ascertain whether those inputs and services provided are actually driving any positive response from the youth. Specifically, the level of participation by different categories of young farmers was estimated and the factors that determine young farmers' participation in the programme were identified. A total of 152 farmers were selected through random sampling, and descriptive statistics and the logit model were employed in the analysis. The results of the study showed that about 60% of respondents were participants in the YiAP between 2009 and 2012. The logit analysis reveals that the main determinants of participation in the YiAP are respondents' age, education, household size, farm size, farm income, access to credit, membership of an FBO, location and distance from farmers' house to the site of the programme. It is recommended that MoFA, District Agricultural Development Units (DADUs) and YiAP coordinators should embark on programmes towards sensitizing the youth on the incentive package and the benefits to be derived from participating in the YiAP in order to attain a high level of participation. Government, MoFA, DADU and YiAP coordinators should develop strategies to acquire more lands for the YiAP, encourage farmers to join FBOs in order to increase access to credit and also increase the quantities of inputs supplied to participants.

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ACRONYMS

AEO	African Economic Outlook
CAADP	Compressive Africa Agriculture Development Programme
CERSGIS	Centre for Remote Sensing Geographic Information Systems
DA	District Assembly
DADU	District Agricultural Development Unit
DPT	Development Participation Theory
ERG	Existence Relatedness Growth
FAO	Food and Agriculture Organization
FBOs	Farmer Based Organizations
FPR	Farmer Participatory Research
GDP	Gross Domestic Product
GSS	Ghana Statistical Service
ICT	Information, Communication and Technology
ILO	International Labour Organization
IOM	International Organization for Migration
ISSER	Institute of Statistical Social and Economic Research
JHS	Junior High School
LEISA	Low, External-Input Sustainable Agriculture
LPM	Linear Probability Model
MoFA	Ministry of Food and Agriculture
NYP	National Youth Policy
NTP	Negotiation Theory of Participation
NYEP	National Youth Employment Programme

NYPSA	National Youth Policy of South Africa
OLS	Ordinary Least Squares
PRA	Participatory Rural Approach
PAR	Participatory Action Research
PTD	Participatory Technology Development
RAAKS	Rapid Appraisal of Agricultural Knowledge System
SNYP	Second National Youth Policy of Nigeria
SRID	Statistics, Research and Information Directorate
UCC	University of Cape Coast
WLS	Weighted Least Square
YiAP	Youth-in-Agriculture Programme
YPARD	Young Professionals' Platform for Agricultural Research for Development

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The Government of Ghana considers agricultural production as an immediate source of employment for the youth, especially those in the rural areas (MoFA, 2011a). It therefore initiated the Youth-in-Agriculture Programme (YiAP) in 2009 as one of the modules of the National Youth Employment Programme (NYEP) to provide employment for the unemployed youth (MoFA, 2011a; AEO, 2012). NYEP was initiated in 2006 to train and provide employment opportunities for the youth (MoFA, 2011a). The Government through the YiAP motivates the youth to accept agriculture as their main occupation by providing the necessary inputs and services that the youth themselves under their present condition cannot provide (MoFA, 2011a).

Traditionally, the agricultural sector has been an important sector of the Ghanaian economy in terms of its contribution to GDP, export, employment as well a source of raw material for industry (World Bank, 2010; Osei, 2012; IOM, 2012). As such, agriculture is considered as one of the pillars of economic and industrial growth (ISSER, 2011; MoFA, 2011a), contributing an average of 28% to GDP from 2008 to 2012 (Osei, 2012; IOM, 2012). Agricultural activities usually represent the main source of employment in most rural areas because most rural households are farmers and their main source of food and income is from agricultural activities (World Bank, 2010; Abdul-Hakim and Che-Mat, 2011; IOM, 2012).

Agriculture employs about 41.6% of the economically active population aged 15 years or older (GSS, 2012). Of the 45.8% of agricultural households in Ghana, 95.1% are engaged in crop farming as compared to 40.5% in livestock rearing and 1.1% in tree growing (GSS, 2012).

However, these food crop farmers have the highest incidence of poverty among the agricultural households, rising from 49% (GSS, 2008) to 59% (GSS, 2012).

In addition, about 80% of agriculture output is produced by smallholder farmers who are mostly in the rural areas (GSS, 2000; MoFA, 2009, 2011b). However, these smallholder farmers employ rudimentary tools in production and do not use modern technologies; hence increase in output is mainly due to expansion of area cultivated rather than productivity increases (MoFA, 2009). ISSER in 2011 indicated that Ghana's dependence on agriculture for food, employment and other needs such as foreign exchange continues to rise.

In order to address the problem low level of application of improved technology, low level of technical assistance and improve access to inputs and services, four special areas were considered for participation under the YiAP. The four components include Crops/block farm, Livestock/Poultry, Fisheries/Aquaculture and Agribusiness (MoFA, 2011a).

However, this study focuses on the crop/block farm system. Under the block farm system, participation is voluntary and it may be by individuals or groups. Participants are trained and provided with production resources; inputs and services. The inputs include tractor service for land preparation; irrigation and mechanization systems; quality planting materials (improved seed); fertilizer (subsidy); pesticides; sacks, etc., while the services include training; extension information, technical support and marketing avenues (MoFA, 2009). However, preliminary investigations show that irrigation and mechanization systems as well as tractor services for ploughing are currently not provided in the Eastern Region.

The YiAP is also aimed at helping the youth generate appreciable income to meet their basic needs, ensure food security, improve living standards, and motivate them to stay in the rural areas (MoFA, 2011a). A farmer who continues to repay his/her loan/debt will be allowed to

continue with the programme for three (3) years. After that, he/she will be weaned-off the programme (YiAP) to acquire his/her own land and farm (MoFA, 2011a). As a result, the programme provided financial opportunities to 80 000 beneficiaries cultivating about 47 000 hectares of land with maize, rice, sorghum, soybean and vegetables in 2009 and 2010 (ISSER, 2011).

1.2 Problem Statement of the Study

Ghana has a high potential for producing food to meet national, regional and global agricultural demands. Yet current production levels meet only 50% of domestic cereal and meat needs, 60% of domestic fish consumption and less than 30% of raw materials needed for agro-based industries (MoFA, 2009).

More than 50% of Ghana's population is under the age of 30 years and the population is estimated to grow at an average annual rate of 1.787% (IOM, 2012). The estimated unemployment rate among the youth aged 15 to 24 in Ghana is 25.6%; twice that of the 25-44 age group and three times that of the 45-64 age group (IOM, 2012; AEO, 2012). A majority of the unemployed youth lack employable skills and the requisite educational qualifications required by most employers and hence are vulnerable at the labour market (AEO, 2012). In addition, food crop farmers have the highest incidence of poverty and they account for 59% of the poor (GSS, 2012). Several factors including lack of access to markets, high cost of inputs and low levels of economic infrastructure account for this outcome (GSS, 2012).

According to MoFA (2011a) 'there is a compelling evidence of an ageing farmer population in Ghana which must be addressed in order to facilitate sustainable agricultural

production.’ The average age of the Ghanaian farmer is about 55 years (MoFA, 2011a). The youth are not willing to take agriculture as their main occupation because they have a negative perception about farming. They view farming as an occupation with low income and economic returns and farmers as the uneducated and unskilled labourers (MoFA, 2011a). A majority of them rather prefer migrating to the city to look for jobs which are not readily available (AEO, 2012).

The government introduced the YiAP in 2009 as a component of the NYEP to motivate the youth to accept agriculture as their main occupation by providing certain farm inputs and services to the young farmers, facilitate access to land, ensure food security and also to change the negative perception the youth have about farming (MoFA, 2011a). This study was, therefore, conducted to ascertain whether the incentive package (inputs and services) provided by the government through MoFA is actually influencing the youths’ participation in the YiAP or not.

The study, therefore, poses the following questions: Is the incentive package having any positive impact on participation? What factors actually motivate the youths’ participation in the YiAP? The specific questions that will help in answering the research questions include:

- i. What is the level of participation by different categories of young farmers in the YiAP?
- ii. What factors determine participation in the YiAP in the Eastern Region?

1.3 Objectives of the Study

The main objective of the study is to analyze the determinants of participation in the YiAP in the Eastern Region and to ascertain whether the incentive package provided by the Government through MoFA is actually driving a positive response from the youth. The specific objectives include:

- (i) To estimate the extent to which different categories of young farmers have participated.
- (ii) To identify factors that determine participation in the YiAP in the Eastern Region.

1.4 Justification of the Study

The government provided incentives and it is expected that the youth will respond positively and so there will be high level of participation. It is therefore, important to understand the drivers of participation in order to target activities to improve those areas.

Determining the level of participation by different categories in the YiAP in areas such as age, gender, under the block farm, among others will give a clear picture of how participation is actually taking place. This will help to target certain areas for improvement and, therefore, in increasing competition among the various categories of the youth participants in line with objective III of FASDEP II and METASIP.

Promotion of the youths' participation in agriculture in a sustainable way has the potential of creating employment opportunities in rural areas, ensure food security, reduce poverty and crime and also curb mass rural-urban migration among the youth (MoFA, 2011a). Direct supervision and technical advice by MoFA officials will help improve land use and the application of science and technology among the young farmers. Identifying the socio-economic, technical and institutional factors that influence the youths' participation in YiAP will help policymakers and government adopt appropriate policies and strategies to sustain the programme and even attract more youth into it, and also improve institutional coordination. These outcomes are all in line with objectives I, II, IV and V and VI of FASDEP II and METASIP.

Literature has proven that as farmers aged, their willingness to adopt new or modern technology reduces. The youth (the young farmers) are relatively educated and can easily adopt modern technology and adjust to institutional changes (MoFA, 2011a). As they adopt improved technology and become highly efficient, their productivity will increase and this will in turn raise their income levels. High income from farming and food security will motivate them to stay in their communities and farm. Finally, the study will add to the body of knowledge in the field of agriculture, and also serve as a reference material for those who want to conduct similar research.

It is expected that the output of this study will provide adequate information that will help to increase the rate of participation by the youth, improve land use, increase productivity levels, enhance food security, improve rural income of young farmers and also reduce rural-urban migration in the Eastern Region in particular, and in Ghana in general in line with the objectives of the FASDEP II and METASIP.

1.5 Limitation of the study

A key limitation to the study is that, the study covers only three districts out of twenty-one, and so might not be truly representative of the region. In addition, some of the information provided by respondents might not be very accurate because some respondents do not keep records and hence may give estimates. The sample results may be different from the entire population results. The tools employed for data analysis have their own weaknesses which might influence outcomes, although this was highly controlled. Also, the study focuses on the youth farmers between the ages of 15-35 years in the three districts; however, there were

participants who are older than 35 years of age. Weighted Least Squares were employed to resolve the problem of heteroscedasticity while sample size is increased to minimize non-normality.

1.6 Organisation of the Study

The study is organized into five chapters. Chapter one is the general introduction to the study. It provides the background to the study, problem statement, objectives, justification, limitation and delimitations of the study. Chapter two reviews relevant literature on theories, concepts, conceptual framework and empirical studies that support the entire study design and methods of enquiry. Chapter three, methodology, presents the theoretical framework, the derivation of models or mathematical equations, study area, data requirement, sample size and sampling procedure. Chapter four presents the results of descriptive statistics and logit regression analysis and discussion of the results. The final chapter, five, presents the summary of study, conclusions and recommendations based on the findings.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews relevant literature that supports the entire study design and also the methods of enquiry. The review consists of theories, concepts and statements that relate to the problem statement, objectives, choice of variables and tools for data analysis. The chapter opens with a description of the concept of youth, and continues with alternative careers for youth, youth participation in non-agriculture, youth participation in agriculture, the YiAP, the conceptual framework for youth participation in YiAP, empirical studies on factors of participation in agriculture (production and off-farm) activities.

2.2 The Concept of Youth

The youth are usually referred to as the future leaders and are the most important human resource investment potential for any country's development (Second National Youth Policy of Nigeria [SNYP], 2009; National Youth Policy of Ghana [NYP], 1999). They are the greatest assets of every nation because the future prospects and potential of any country depends on its young people (SNYP, 2009). "The future of the country rests with the youth in many ways; their vision, dedication, enthusiasm, skills and their ability to manage change and grasp opportunities to fulfill their potentials" (NYP, 1999). However, their potential alone will not bring about any development. Therefore, their roles in the development process need to be clearly defined and

concrete steps taken to actually involve them in programmes and activities that will make them realize their full potentials (National Youth Policy of South Africa [NYPSA], 2009-2014; NYP, 1999).

Youth as a concept, however, varies from culture to culture and from society to society (NYPSA, 2009-2014). This means that different cultures, societies or countries may have different definitions for youth, although they may all belong to a certain age bracket or age group. The UN in 1985; cited by Bosompem *et al.*, (2011) defined ‘youth’ as “those persons between the ages of 15 and 24 years, without prejudice to other definitions by member states.” The Common Wealth Youth Programme (cited by Bosompem *et al.*, 2011) defines ‘youth’ as “the persons between the ages of 15 to 29 years.” According to the SNYP (2009), ‘The youth shall comprise of all young male and female citizens of Nigeria aged between 18-35 years.’ The NYPSA (2009-2014) also defines youth as; ‘Young people who fall within the age group of 14-35 years.’

The Ghana NYEP (2006) defined youth as those between the ages of 18-35 years. The NYP (1999) also defines youth as; ‘Young women and men who fall within the age bracket of 15-35 years.’ However, it further stated that ‘anyone who is acknowledged by deed as identifying with and committed to youth development may be recognized as a youth.’ For the purpose of this study, the NYP (1999) definition as stated in the Youth-in-Agriculture Policy document prepared by MoFA (2011a) is used. Hence, the youth shall include people who fall within the age bracket of 15-35 years and those who are above 35 years and are still participating in the YiAP may be recognized as youth.

2.3 Alternative Career Choices for the Youth

The provision of career and productive alternatives for the youth can play a crucial role in reducing youth unemployment and social vices among the youth in society (World Population Prospects, 2006). Occupational career choice frameworks influence policies and strategies to bring change, reduce barriers and strengthen supports for achievement of career goals or improve performance (Ampadu, 2012). The social cognitive career framework based on the general cognitive theory of Bandura (1986; cited by Ampadu, 2012) is premised on the assumption that vocation outcomes or choices are determined by interactions among a person's cognitive attributes, external environmental factors and over behaviour. Since the future is uncertain, success in career development is based on probabilities, perception, challenges and opportunities (Ampadu, 2012).

According to the World Population Prospect (2006) there are about one billion youth (15-24 years), representing 18% of the total population in the world. In Africa, about 16% (145 million) of the total population are youth; while over 50% of the population in Sub-Saharan Africa is under 30 years (World Population Prospect, 2006; Bosompem *et al.* (2011); IOM, 2012) and about 80% live in rural areas. In Ghana, about 69% of the population is under 30 years with over 75% of them under 35 years of age (World Population Prospect, 2006; Bosompem *et al.*, 2011). The UN World Youth Report (2012; cited by Manpower Group, 2012) indicates that the global youth unemployment rate reached its largest annual increase of 75.8 million in 2009 rising from 71.3 million in 2008 (ILO, 2011). However, there are many career opportunities that can offer the youth reasonable employment and wages and this depends much on choice.

Some of the choice options available to the youth are in the agricultural sector, others fall outside the agricultural sector while others fall outside agriculture but have aspects or links with agriculture. Some careers that are outside the agricultural sector include Banking, Medicine, Engineering, Teaching, ICT, Politics, Oil and Gas exploration, social services, among others. Agricultural careers include farming, teaching, agricultural engineering, agribusiness, horticulture, landscape, forestry and lumber services, food processing and catering services, among others (MoFA, 2011b). Sanchez (2005) classified farm and non-farm activities in the rural areas as: Agricultural wage employment (Hired workers in crop and livestock farming), Agricultural self-employment (own farm activity), Non-agricultural wage (Wage employment in manufacturing and/or services; food processing) and Non-agricultural self-employment (own enterprise in manufacturing and/or services).

In the Eastern region, the major occupations in agriculture that offer employment include; food crop and vegetable farming, livestock production, cash/non-traditional crop production, aquaculture (fisheries), post harvest, storage and marketing of produce, food processing, forestry and timber services, agriculture extension services, teaching, among others (MoFA, 2011b). However, the youth face several challenges in accessing some of these opportunities.

The major difficulties that the young farmers encounter in the region include scarcity of land within reasonable walking distance, unmotorable roads, high cost of renting or purchasing land, unfavourable share cropping systems, litigation and court issues, physical assaults by aggrieved parties, limited storage and processing facilities, etc. (MoFA, 2011b).

2.3.1 Youth participation in non-agriculture

Non-agricultural activities or employment are formal, informal, unpaid workers, casual and unemployment. Wambui (2010) describes the labour market structures in typical developing countries as being subdivided into four main categories: the formal sector (public and private), the informal sector (comprising of self-employment, informal sector wage labour, paid domestic workers, workers on monthly salary and casual workers), unpaid workers (people who work without pay in an economic enterprise operated by a related person) and the unemployed.

The youth, however, lack experience and requisite employable skills hence are mostly found in the informal, unpaid and casual workers categories or are unemployed. In Ghana, the estimated unemployment rate among the youth aged 15 to 24 is 25.6%; twice that of those between 25-44 years and three times that of the 45-64 age group (IOM, 2012; AEO, 2012). The unemployment situation in Ghana can be described as youthful phenomenon (Bosompem *et al.* (2011). According to the Manpower Group (2012) youth unemployment is always higher than adults globally because they are less experienced and have few skills. In addition, there is lack of information, networks and connections among the youth.

2.3.2 Youth participation in agriculture

Agriculture offers vast employment opportunities for the youth, especially in Sub-Saharan Africa (Bosompem *et al.*, 2011). Several opportunities exist along the value chain, from production, storage, processing, marketing, etc. till the products get to the final consumer. Typically, the youth are involved in producing agricultural crops (vegetables, food and cash crops), tending animals, processing and preparing food, harvest and post-harvest and storage activities, agriculture extension, teaching, working for wages in agricultural or other rural

enterprises, collecting fuel and water, engaging in trade and marketing, caring for family members and maintaining their homes (FAO, 2011).

These agricultural employment can be classified as on-farm, off-farm. On-farm agricultural include any agricultural activity carried out at home on 'own plot' of land (FAO 2011). Own plot of land may include inherited land, purchased, hired, leased land, shared-cropping, etc. Agricultural employment include: Agricultural wage employment and Agricultural self-employment. The FAO (1988; cited in Abdul-Hakim and Che-Mat, 2011) define off-farm activities as "the participation of individuals in remunerative work away from a home plot of land." Thus, any work carried out by the agricultural household other than working on their home plot of agricultural land was considered as off-farm activities. Non-agricultural employment include wage employment in manufacturing and/or services; food processing.

2.2.3 Incentive structure and career choice

Motivation theories posit that individuals "are motivated to the extent that their behaviour is expected to lead to desired outcomes" (Robbins, 2003). People's perceptions and calculations are filled with emotional content which determines how much effort they exert (Adalat, 2009). According to Robbins (2003); "Perception is a process by which individuals organize and interpret their sensory impressions in order to give meaning to their environment." Perception plays an important role in the way people make decisions. Perception, both negatively and positively influence human behaviour (Adalat, 2009).

Understanding perception is very important because people's behaviour is based on their perception of what the reality is, but not the reality itself (Adalat, 2009). For example, if the Government introduces very good incentives to motivate the youth to engage in farming, and yet

the youth perceive it to be little or no incentives to them at all, the government's efforts will not yield any positive results. As a result, a manager must understand the influence of perception on people's behaviour to be able to develop appropriate strategies which will positively influence perception and this will in turn make people perceive things positively. On the contrary, if people perceive programmes negatively, major problems will occur and the whole programme will be sabotaged. For example, if the youth have or develop a positive perception about the YiAP, it will positively influence their behaviour towards the programme and they will take a positive decision to participate in it, and vice versa.

Therefore, the attitude of both government and MoFA officials in charge of the YiAP, the expectations of the youth, size of land allotted to participants under the block farm system, the proximity of the farm to their communities, time of arrival of inputs and services, the social settings, among others will all go a long way to shape the perception of the youth about the programme. Hence, directors, coordinators and other officials in charge of the programme need to take a critical look at all these factors in order to motivate the youth to participate in the YiAP.

One way of looking at motivation is the ability and opportunity on the job. Success on the job is facilitated or hindered by the existence or absence of support resources (e.g., incentives). Mankiw (2006) posits that people respond to incentives. This is because, people make decisions by comparing costs and benefits, and their behaviour may change when incentives change. That is, when the incentive is good or positive, it motivates people to improve their performance and vice versa. Thus, the provision of inputs, services, information and technical assistance to young farmers by MoFA and Government serve as incentives for the youth to go into farming and at the same time improve productivity, income and enhance food security.

A supportive work environment positively contributes to good work performance while the lack of it negatively affects employee's performance. Job performance will ultimately lead to job satisfaction as well as higher motivation. Thus, MoFA and Government's support in the form of incentives will motivate the young farmers to improve performance, which will in turn lead to satisfaction.

2.4 Youth-in-Agriculture Programme in Ghana

The YiAP is a Government of Ghana agricultural sector initiatives introduced in 2009 to motivate the youth to accept agriculture as a commercial venture or their main occupation (MoFA, 2011a). Participation is voluntary, and any young man or woman between the ages of 15-35 years who is interested in agriculture can apply to participate in the programme. Also, institutions training farmers can also apply. Prospective participants are to register as individuals or groups with any MoFA district, regional office or contact the national YiAP secretariat for assistance (MoFA, 2011a). The objectives of the YiAP include:

To make the youth accept farming as a commercial business venture,

To generate appreciable income to meet their domestic and personal needs,

To improve living standard of the youth through better income and food security,

To motivate the youth to stay in rural areas, as inputs will be provided on credit basis and interest free,

To provide introduce modern of farming and modernize farming practices,

To introduce new crop varieties and animal breeds and diversify farming,

To change the negative perception about farming and the poor image of persons involved in agriculture, among others. The four components of the YiAP are briefly discussed below.

i. Crop/Block farm

It has two sub-components: general crops and block farm system. Under the block farm, state lands or land acquired by the government from private individual is ploughed and shared among young farmers in blocks. Inputs are supplied at subsidized prices on credit and interest free (MoFA, 2011a). The farmers get technical assistance and supervision from MoFA staff. Other individual young farmers who farm on individual plots where large tracks of land cannot be obtained will also receive the same assistance as block farmers (general crops). The main crops cultivated include maize, rice, sorghum, soybean, and vegetables (MoFA, 2011a). At the end of the cropping season, farmers may sell their produce to any buyer or buffer stock company and pay back their loans. Participants are to be weaned-off the programme after 3 years to acquire their own land and farm. The challenge here is how weaned-off young farmers can acquire land on their own when there are problems with land acquisition and the land tenure system throughout the country (MoFA, 2011a).

ii. Livestock and Poultry

Unemployed youth are to take up the production of livestock and poultry (broiler, layers, guinea fowls and piggery). Participants will be provided with day-old chicks for broilers, layers and guinea fowls. They will also be assisted with housing, feeding, medication (drug and vaccines), etc. until they are weaned-off the programme after one year. Participants are trained in the management of cattle, sheep, goat, pig, rabbit and grass cutter and provided with inputs (MoFA, 2011a).

iii. Fishery/Aquaculture

Under the aquaculture aspect, attention is focused on the production of tilapia since it is on high demand and has high acceptability in Ghana. Prospective beneficiaries are trained and provided with fingerlings, feed, fish cages, and other aquaculture inputs on credit. Participants have up to two (2) years to pay for inputs or credit. A participant is to be weaned-off the programme after one year (MoFA, 2011a).

iv. Agribusiness

This component is aimed at adding value to agricultural raw materials both food and non-food commodities through processing and marketing. The participants are trained on how to process and market agricultural produce. Areas include fruits, vegetables, soybean, cereals, plantain, root and tuber crops, fish, livestock and poultry processing. A participant is to be weaned-off the programme after one year and all other conditions apply here just like the other components (MoFA, 2011a).

2.5 Empirical Studies on Determinants of Participation in Agricultural Programmes

Youth-in-Agricultural programmes are relatively new or current areas that states and governments, especially in Africa, are exploring to solve the ever increasing youth unemployment problem. As a result, not many studies have been carried out on Youth-in-Agricultural Programmes; hence, the review includes studies on participation in on-farm or off-farm agricultural activities, agricultural production or youth-in-agricultural programmes.

A study carried out by Nnadi and Akwiwu (2008) on the “Determinants of Youths’ participation in Rural Agriculture in Imo State, Nigeria” using simple percentage count and logistic regression model, found out that 83.91% of the youth participated in rural agricultural production, while 16.09% did not. The rate of use of a technology or involvement in a programme was defined by Nkonya *et al.* (1997; cited in Nnadi and Akwiwu, 2008) as “the percentage of farmers who have adopted a given technology or participated in a given programme.”

A majority of the youth attributed their participation in agriculture to the availability of land and the dependence on land for existence by rural dwellers. Other reasons given for their participation in agriculture are that farming is the major employment in rural communities, their parents were farmers, agriculture is a major source of livelihood for rural dwellers, etc. The results showed that the youth participated in crop-based activities than animal-based agricultural activities. The high rate of participation (83.91%) was mainly attributed to the availability of farm land and the dependence of farmers on land for existence by rural dwellers, parents’ influence and difficulty in mobilizing income for other livelihood activities.

Factors that were found to determine the youths’ participation in rural agriculture are age, marital status, education, household size, parents’ occupation, parents’ farm income and dependence status. All these factors exhibited positively significant relationship except youths’ dependence status which was negatively related, though significant (Nnadi and Akwiwu, 2008).

A case study of the Youth-in-Agriculture Programme in Ondo State, South Eastern Nigeria was carried out by Muhammad-Lawal *et al.* (2009) to estimate the “Technical Efficiency of Youth participation in Agriculture.” The efficiency and inefficiency theories were used.

Frequency tables, percentage counts were used for objective one, Stochastic Frontier model by Battasi and Coelli (1995); cited by Muhammad-Lawal *et al.*, (2009) was used for objective two and a Cob-Douglas function was used for objective three. The results showed that about 83% of participants were males while 17% were females. The socioeconomic characteristics that affect the youths' production decisions include age, sex, marital status, education, family size and extension contact. The technical efficiency of the youth in the YiAP ranged between 32.62% - 96.25% with a mean technical efficiency of 85.23%. About 87% of variation in output was due to technical inefficiency by the participants.

Another study was carried out by Adebayo (2009) to determine "Constraints to participation in Income Generating Enterprises among Youths in Bernin Gwari in Local Government Area, Kaduna State, Nigeria." Youth and Participation theories were the basic theories. The study asserts that the youth are energetic, creative, innovative, productive and committed people who could bring about the expected development in agriculture. Descriptive statistics were used to describe data while Chi-square and Pearson product moment correlation were used to test the hypotheses. The results showed that 70% of participants were male while 30% were female. The most practiced income generating activities of the youth include farming (62%), food vending (13%), food processing (12%), and trading (12%). While 40% participated as full time, 60% participated as part time. The age, sex and extent of participation of participation were the significant variables.

Abdul-Hakim and Che-Mat (2011) carried out a study on the "Determinants of farmer's participation in Off-Farm Employment in Kedah Darul-Aman, Malaysia. The results of the analysis show that the main determinants that influence the farmer's decision to participate in off-farm employment are age, gender, household size, dependency ratio, remittance, land size,

types of agricultural activities, working hours allocated to the farm, the ratio of income from agricultural activities, working hours allocated to the farm, the ratio of income from agricultural sources in total income of the farmer.

Another study conducted in seven regions of Mainland Tanzania by Aikaeli (2010) to examine the determinants of rural income shows that despite several initiatives to reduce rural poverty in Tanzania, rural incomes have not improved significantly. The Generalized Least Square method was used to estimate the socio-economic and geographic factors on income of rural households and communities. The study indicates that rural poverty remains an economic problem.

The analysis found that improvement in four variables were significant and had positive impact on the incomes of rural households: the level of education of the household head, size of household labour force, acreage of land use and ownership of a non-farm rural enterprise (Aikaeli, 2010). The study also found that income was lower in female-headed households than male-headed households. At the community level, greater use of telecommunication, which enables increased access to market information, and improvement in road infrastructure have positive effects on rural incomes. With respect to climatic factors, adequate rainfall raised rural income, while the incidents of drought and floods impaired income generation (Aikaeli, 2010).

The study concluded that: causes of low income in rural areas are diverse, ranging from those confined to individual households to those extending to the entire community. Education of the household heads has positive impact on per capita income, hence investments in education is an income improving venture. Also, increased use of resources by households, particularly land and labour have positive impact on per capita income, however, the challenge remains of how to

facilitate expanded land use and to overcome the lack of adequate inputs for land development. Other challenges were availability of water and empowerment of women (Aikaeli, 2010).

Empirical studies in Nigeria have identified certain factors that reduce the youths' participation in agricultural activities. According to Adekunle, Oladipo, Adisa and Fatoye (2009); cited in Akpan (2010) several literature have shown that about 80% of youth residing in rural areas in Nigeria are engaged in agricultural activities, while about 90% of youth residing in urban areas are engaged in non-agricultural activities. Economic, social and environmental factors are factors that have been identified in literature to reduce youth involvement in agricultural production in Nigeria (Dethier and Effenberger, 2011). Economic factors include inadequate credit facilities, low farming profit margins, lack of agricultural insurance, and lack of initial capital and production inputs (Akpan, 2010). Social factors include public perception about farming, inadequate rural infrastructure and parental influence. The environmental factors include inadequate land, continuous poor harvest and soil degradation (Akpan, 2010; Dethier and Effenberger, 2011).

The survey also posits that the youth migrate to the cities to engage in non-agricultural activities mainly due to economic reasons such as perception of greater job opportunities in the cities, poor rural infrastructure and social amenities, search for better education and skill acquisition, general dislike of rural life, among others (Olayiwola, 2005; Enchebiri, 2005; cited in Akpan, 2010).

Asante *et al.*, (2011) also carried out a study on the topic: "Determinants of small scale farmers' decision to join farmer based organization in Ghana." The economic and social theories underlying the study were agricultural extension diffusion theories, theories on FBOs, among

others. The study was premised on the assumption that small-scale farmers can have easy access to market information, credit and input for their production, processing, and market activities by joining farmer based organizations.

The probit model was adopted for the study partly due to its ability to constrain the utility value of the decision to join variable lie within 0 and 1, and its ability to resolve the problem of heteroscedasticity. The results revealed that farm size, farming as a major occupation, access to credit/ loan and access to machinery services influenced farmers' decisions to join FBOs in Ghana. With the exception of household size, all the explanatory variables were found to conform to the a priori expectations. The age of the farmer, access to credit/loan, access to machinery services and farmers' income had positively significant effect on the decision to join an FBO. Access to loans/credit had the expected positive sign and was highly significant.

It was concluded that factors influencing farmers' decision to join FBOs include age, farm size, access to credit/loan, access to machinery and income. Farmers will join FBOs when they have access to credit/loans through FBOs (Asante *et al.*, 2011).

Conclusion

Agriculture is a career and its income generating potential is high though its flow can be slow and irregular. The participation of the youth is discussed in the literature and concepts such as utility, motivation and substitution drive participation. The factors that influence youth participation are diverse and different studies have identified socio-economic factors such as age, household, marital status, education, household size, parents' occupation, parents' farm income and dependence status, have access to credit/loans, etc.; institutional factors such as land tenure issues or systems, FBO membership, legal systems; environmental factors such soil and weather

conditions, geographical location; the technical factors include: extension contacts, advertisements, inputs, technical support and work experience.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter is divided in three parts. The first part reviews literature on the conceptual framework, theoretical framework and bases for the choice of variables. The second part is dedicated the data collection: the types and sources of data, sample size and sampling technique and survey instrument, while the third part described the study area.

3.2 Conceptual Framework

Agriculture provides many employment opportunities for the youth. However, most of the unemployed youth are not willing to accept agriculture as their major occupation because they perceive agriculture to be an occupation with low economic returns and is reserved for the uneducated and the unskilled (MoFA, 2011a). Some youth who are farmers also have little resources (little access to credit/loan facilities, land, marketing avenues, etc.) and, hence, earn very little from their farming enterprise. The government, therefore, provided an incentive package (farm inputs/credit facilities, access to land, extension support, training, marketing avenues, etc.) to motivate the youth to farm.

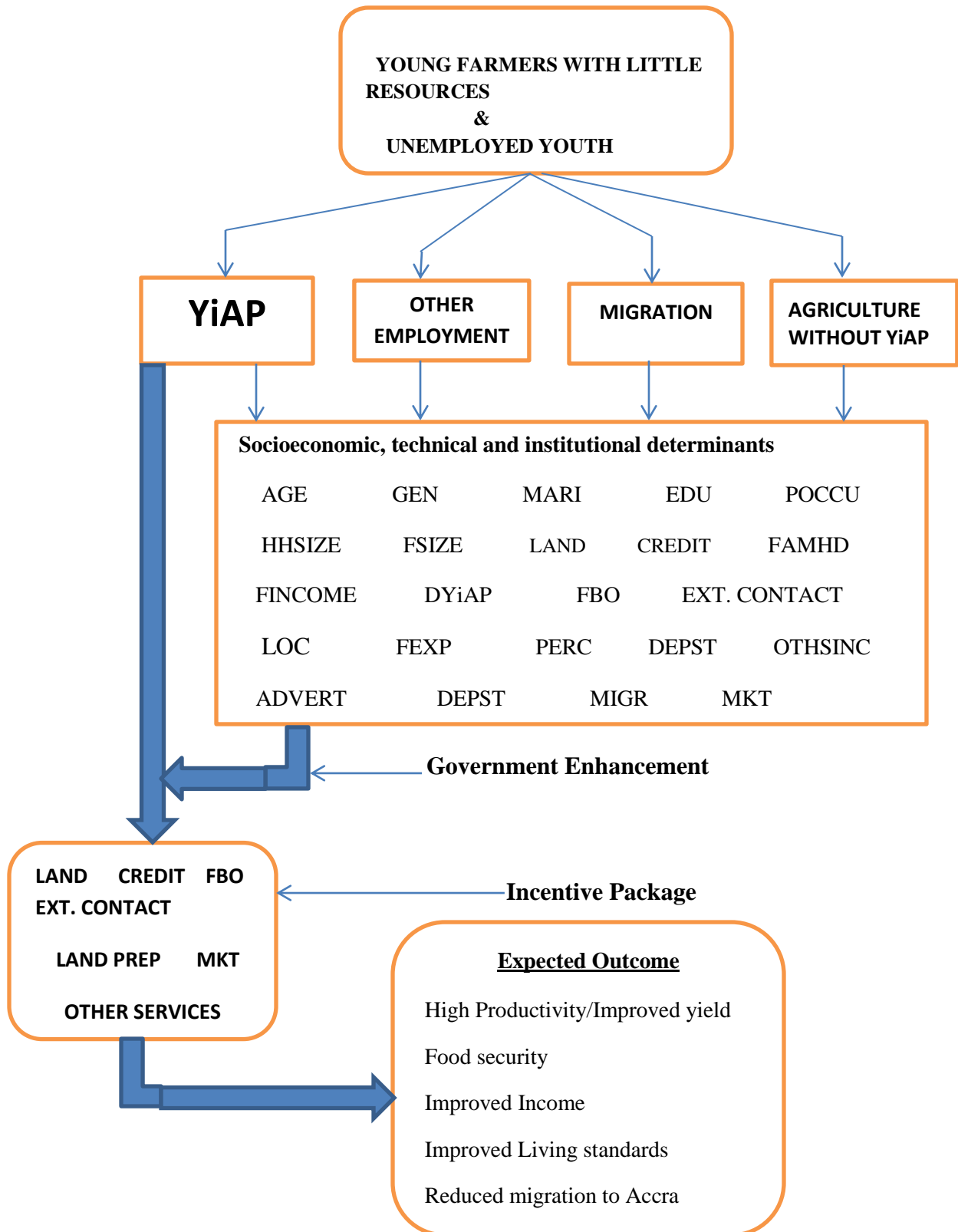
Those who participate in the YiAP have access to these incentives and vice versa. The unemployed youth and young farmers with little access to land, credit facilities, farm income and other services are faced with two decisions: whether to participate in the YiAP or choose other

available options. That is, they either participate in the YiAP or (engage in agriculture without the YiAP or engage in other non-agricultural employment in the Region or migrate to Accra in search of better job opportunities). These decisions are influenced by the socio-economic, institutional, technical, environmental, cultural factors, among others as illustrated in Figure 3.1.

The social factors include ethnic or political concerns, educational opportunities, gender issues, age, marital status, household size, public perception about farming, parental influence as well as psychological factors (expected gains if they migrate). The economic factors include employment opportunities, cost of living, access to market, access to credit, income, government policies, profit margins, agricultural insurance, proximity of the region to Accra, mining activities in the region, etc.

The technical factors include: extension contacts, advertisements, inputs, technical support, work experience, and the institutional factors include land tenure issues or systems, FBO membership, legal systems, etc. The environmental factors may include soil and weather conditions that may or may not favour the cultivation of certain crops in a particular geographic location, among others. Some of these factors may serve as incentives and will therefore motivate the youth to participate, while others may serve as barriers or constraints that limit their chances of participation. Such youth look for other alternative employment opportunities

Figure 3.1 Conceptual Framework



Factors influencing participation in the YiAP and expected benefits

in agriculture, non-agriculture or migrate from the region to Accra.

Migration patterns differ depending on the direction of movement, but the common types are rural-urban, rural-rural, urban-urban and urban-rural migration. However, migration here refers to rural-urban migration. Todaro and Smith (2009) argue that rates of rural-urban migration in developing countries have exceeded rates of urban job creation and thus go beyond the absorption capacity of both industry and urban social services. Migration in excess of job opportunities is both a symptom of and a contributor to unemployment and underdevelopment problems (Todaro and Smith, 2009). The Todaro Migration theory (Harris-Todaro model) posits that the decision to migrate is primarily an economic phenomenon. Migrants consider the various market opportunities available to them in the rural and urban sectors and choose the one that maximizes their expected gains from migration (Harris and Todaro, 1970; Todaro and Smith, 2009).

Understanding the causes, determinants and consequences of internal rural-urban migration creates understanding of the nature and process of development and also helps to formulate appropriate policies to solve the problem. This is because, any economic and social policy that affect rural and urban real incomes will also affect the migration process, and this will in turn alter the pattern of economic activities, income distribution and population growth (Todaro and Smith, 2009). In addition, it is imperative to understand the reasons why people migrate, what factors are important in their decision-making process and the consequences for rural and urban economic development.

These socio-economic, technical and institutional factors illustrated in Figure 3.1 are, however, under pressure from the social system, government policies and environmental factors

pushing the youth as to whether to participate in the YiAP, seek other employment in the Region or migrate to the city (Accra) where there is a probability of getting good employment, access to improved amenities and the psychic returns associated with living in the city, or seek self employment, formal or informal employment, further their education, among others (Todaro and Smith, 2009).

The culture of the people also may play a key role. As Solomon and Schell in 2009 put it; “Culture defines work styles and priorities: Culture is the visible and invisible values and beliefs that underlie behaviours and are unique to each society.” The culture of the people influences the kind of food they eat and therefore the kind of crops they grow and occupational choice (Solomon and Schell, 2009).

The interaction of these factors to a large extent will influence the youths’ decision to participate in the YiAP or not. The incentive package provided by the government will help to enhance their productivity and increase yield. This will in turn lead to food security, improve income and living standards of the farmers and, therefore, convincing them to stay in the rural area to farm because they can derive maximum benefits and satisfaction from their farming enterprise (MoFA, 2011a).

3.3 Theoretical Framework

The concern of this study is to find out whether the incentive package provided by government influences participation in the YiAP. This situation can be explained by consumer choice models which basis is rooted in utility theory.

Choice models are able to predict with great accuracy how individuals will react in a particular situation (Rungie, Coote and Louviere, 2011). Random utility theory assumes that the utility individuals derive from a choice object can be partitioned into a systematic component, capturing the attributes of the choice alternatives and the characteristics of the individual decision makers, and a random idiosyncratic component (Rungie *et al.*, 2011). Choice models proposed by Maydeu-Oliviere and Böckenholt (2005) is believed to be the most accurate and general purpose tool currently available for making predictions about human decision making behaviour (Rungie *et al.*, 2011).

The approach used by Maydeu-Oliviere and Böckenholt (2005) allows one to specify the form of the sample covariance matrix, particularly for the choice models (Rungie *et al.*, 2011). However, the binary choices must be transformed using threshold models, with the transformed data analysed with widely available standard structural equation modelling software (Rungie *et al.*, 2011). McFadden (1974, 2001) used this to derive the conditional logit model to represent discrete choice (Rungie *et al.*, 2011). Discrete Choice Modelling analyses the choice behaviour of individuals and groups who face discrete economic alternatives (Rungie *et al.*, 2011).

Utility theory, on the other hand, is concerned with people's choices, decisions and preferences. It is also concerned with people's judgments of preferability, worth, value, goodness, perception or any similar concepts (Fishburn, 1968; Kahneman, 2000a; McFadden, 2012). Utility theory is employed in disciplines such as Economics, Psychology, Statistics, Mathematics and Management Science to predict actual choice behavior or prescribe how rational people ought to make decisions or both (Fishburn, 1968; Read, 2004). Psychologists are interested in prediction of choice behaviour, whilst statisticians and management scientists are interested in prescription. Economists are also interested in both prediction and prescription

(Fishburn, 1968; McFadden, 2012). McFadden (2012) asserts that understanding and modelling consumer welfare is central in economics, with tension between elements of illusion, temperament, and subjectivity in consumer behaviour, and the need for stable, predictive indicators for choice and well-being.

Qualitative response models, which are strongly linked to utility theory, have been widely used in economics to investigate factors affecting an individual's choice from among two or more alternatives (Amaniya, 1981; Green, 1998; cited in Mishra and Perry, 1999). Models for estimating dichotomous choices in which the dependent variable is binary also has its root in the threshold theory of decision-making in which a reaction occurs only after the strength of a stimulus increases beyond the individual's reaction threshold (Hill and Kau, 1973, 1981, Pindyck and Robinfield, 1998; Asante *et al.*, 2011; Rungie *et al.*, 2011; Akudugu, 2012). The theory posits that when farmers are faced with the decision to adopt or not adopt an innovation, every farmer has a reaction threshold, which is determined by certain factors (Hill and Kau, 1973; Pindyck and Robinfield, 1998; Akudugu, 2012). Thus, at a certain value of stimulus below the threshold, no participation occurs while at the critical threshold value, a reaction is stimulated (Lewis 1954; Akudugu, 2012). Such phenomena are generally modeled using the relationship:

$$Y_i = \beta X_i + U \quad (3.1)$$

Where $Y_i = 1$, when a choice is made and 0, otherwise. This means

$$Y_i = 1 \text{ if } X_i \text{ is } \geq X^*$$

$$Y_i = 0 \text{ if } X_i \leq X^*$$

X^* represents the combined effects of explanatory variables ($\beta_i X_i$) at the threshold level.

The model is a binary choice model involving estimation of the probability of adoption of a given practice or participation in a given programme (Y) as a function of explanatory variable (X). That is;

$$\text{Prob (Y = 1)} = F(\beta'X) \quad (3.2)$$

$$\text{Prob (Y= 0)} = 1-F(\beta'X) \quad (3.3)$$

This implies that every young farmer in the Eastern Region also has a reaction threshold which is dependent on certain set of factors. The individual farmer either participates in the YiAP or not. This yields a binary dependent variable, Y_i which takes on the value 0 (for not participating in the YiAP) and 1 (for participating in the YiAP) and X_i is a set of explanatory variables. The youth are concerned with the satisfaction (utility) they will derive from participating in a programme or an activity. This satisfaction or utility is the income they derive from it. Hence, if the YiAP provides that satisfaction (income), they will participate.

The linear probability, logit and probit models are common models employed to estimate factors that influence the probability that a choice will be made (Gujarati, 2004; Greene, 2008; Gujarati and Porter, 2009). However, there are certain problems associated with the use of linear probability model such as:

- i). Non-normality of the disturbances (u_i);
- ii). Heteroscedastic variances of the disturbance;
- iii). Non-fulfillment of $0 \leq E(Y|X) \leq 1$ (Possibility of \hat{Y} lying outside the 0-1 range);
- iv). Questionable or low value of R^2 as a measure of goodness of fit.

v). The linear probability model assumes that $P_i = E(Y = 1 | X)$ increases linearly with 'X' (i.e., the marginal effect of X remains constant throughout), hence it is not logically a very attractive model (Gujarati, 2004; Greene, 2008; Gujarati and Porter, 2009). Therefore, there is the need for a probability model that has two features:

- i. As 'X' increases, $P_i = E(Y = 1 | X)$ increases but never steps outside the 0-1 interval, and
- ii. The relationship between P_i and X_i is non-linear (Gujarati, 2004; Greene, 2008; Gujarati and Porter, 2009). Logit model and probit model satisfy these conditions and give similar results (Gujarati, 2004; Greene, 2008).

Recent empirical studies such as Nnadi and Akwiwu, (2008) and Akudugu (2012) chose the logit over probit because of its simplicity, mathematical convenience and asymptotically consistent estimates. That is, the logit model is simple, it provides statistically sound results, it allows for the transformation of dichotomous dependent variable to a continuous variable ranging from $-\infty$ to $+\infty$ and its results can easily be interpreted (Gujarati and Porter, 2009; Akudugu, 2012). As a result, the problem of out of range estimates is avoided. In addition, the logit gives parameter estimates which are efficient and normal, so that analogue of the regression t-test can be applied (Gujarati, 1998, 2004).

Logit analysis is used to identify factors that affect the decision-making status; factors that affect the adoption of a particular technology; and test for brand preference and brand loyalty for a product in marketing (Gujarati, 2004; Nnadi and Akwiwu, 2008; Gujarati and Porter, 2009). The logit model was considered for this study and is described in subsection 3.3.1.

3.3.1 The logit model

In dummy regression models, it is assumed implicitly that the dependent variable Y is qualitative while the explanatory variables are either qualitative or quantitative (Gujarati, 2004). In this regression model, the dependent or response variable is dichotomous in nature, taking a 1 or 0 value. For example, an unemployed youth in the Eastern region is either participating in the YiAP or not. Hence, the dependent variable (participation in YiAP), can take only one of two values: 1 if the youth is a participant in the YiAP and 0, otherwise.

Logistic regression model is a qualitative choice model used to explain relationship between a dependent discrete variable and explanatory variables usually when the dependent variable follows a Bernoulli probability distribution (Gujarati, 2004; Gujarati and Porter, 2009). The logit of a number p is between 0 and 1. Logit model, which is used to estimate dichotomous choices, is based on the ‘probability’ of an ‘event’ occurring and is appropriate for determining factors that influence youth farmers’ participation in the YiAP. The robustness of this model is that it does not follow the assumptions of the Ordinary Least Square (OLS) regression.

Following Gujarati (2004), the logit model is specified as:

$$P_i = P(Y = 1 | X_i) = \beta_1 + \beta_2 X_i, \quad i = 1, 2, \dots, n \quad (3.4)$$

Where: $P_i = P(Y = 1 | X_i)$ is the probability of the i th farmer participating in the YiAP and $Y = 1$ means participation; $Y = 0$ means otherwise, $X_i =$ explanatory variables, $\beta_0 =$ the intercept, $\beta_i =$ the corresponding coefficients and n is the sample size.

Participation can also be represented as:

$$P_i = P(Y=1|X_i) = \frac{1}{1 + \exp[-(\beta_1 + \beta_2 X_i)]} = \frac{1}{1 + \exp(-z_i)} \quad (3.5)$$

Where $Z_i = \beta_1 + \beta_2 X_i$. This equation is known as the (cumulative) logistic distribution function. Here Z_i ranges from $-\infty$ to $+\infty$; P_i ranges between 0 and 1 and P_i is non-linearly related to Z_i (i.e. X_i), and thus, satisfying the two conditions required for a probability. P_i is non-linear in both X and β parameters.

The log of odds of participation is given by:

$$P_i = \frac{1}{1 + \exp(-Z_i)} \quad (3.6)$$

Then $(1 - P_i)$, the probability of not participation is:

$$(1 - P_i) = \frac{1}{1 + \exp(Z_i)} \quad (3.7)$$

Therefore, one can write:

$$\frac{P_i}{(1 - P_i)} = \frac{1 + \exp(Z_i)}{1 + \exp(-Z_i)} \quad (3.8)$$

$P_i / (1 - P_i)$ is the odds ratio in favour of participation in YiAP i.e; the ratio of the probability that a youth farmer in Eastern region will participate in YiAP to the probability that the youth farmer in the region will not participate in the YiAP. Taking natural log of (3.8), we obtain:

$$L_i = \ln [P_i / (1 - P_i)] = Z_i = \beta_0 + \beta_1 + \beta_2 X_i + U \quad (3.9)$$

Where: Y = Youth farmers' participation in the YiAP (participation = 1; otherwise = 0),

$\ln\left(\frac{P_i}{1 - P_i}\right)$ = log odds in favour of youth participants in YiAP; P_i = probability of the i th farmer;

β_0 = the intercept parameter; β_i ($\beta_1, \beta_2, \dots, \beta_n$) = parameters to be estimated; X_i = explanatory variables; U = error term (Pindyck and Robinfield, 1998; Gujarati and Porter, 2009).

3.3.2 Marginal effect of explanatory variables

In logit model, the slope coefficient of a variable gives the change in the log of the odds associated with a unit change in the variable, holding all other variables constant. The rate of change in the probability of an event happening is given by:

$$\beta_j P_i (1-P_i) \quad (3.10)$$

Where P_i is the probability of an event occurring and β_j is the partial regression coefficient of the j th explanatory variable (regressor) (Gujarati and Porter, 2009).

The relative effect of each explanatory variable on the likelihood that a young farmer will participate in the YIAP is given by the marginal effect as:

$$\frac{\partial P_i}{\partial X_j} = f(X_i \beta) * \beta_j, \quad (3.11)$$

Where $f(.)$ is the normal marginal density function. For dummy variables, the marginal effect with respect to variable X_j is found by taking the difference in predicted probabilities calculated at $X_j = 1$ and $X_j = 0$, holding other variables constant at their means (Gujarat and Porter, 2009).

3.3.3 Choice of explanatory variables for the logit regression analysis

The choice of variables for the above models was based mainly on related studies such as Sanchez (2005), Nnadi and Akwiwu (2008), Muhammad-Lawal *et al.* (2009), Aikaeli (2010), Abdul-Hakim and Che-Mat (2011), Asante *et al.* (2011), Eneyaw and Bekele (2012) and Akudugu (2012).

Age of a farmer (AGE): The age of the farmer was included in the models because it is used as the potential ability to access and utilize credit and also undertake farming activities. It is expected to either have a positive or negative effect on the farmers' decision to participate in the YiAP. Age is measured in years for the logit model. It is hypothesized to assume a quadratic function, and that very young farmers are considered immature to be able to undertake farming on a larger scale, while very old farmers who grow beyond their economically active age will not be able to undertake rigorous farming activities. Nnadi and Akwiwu (2008), Muhammad-Lawal *et al.* (2009), Abdul-Hakim and Che-Mat (2011) and Akudugu (2012) in similar studies found age to influence participation in Youth in agricultural programme, on-farm or off-farm activities.

The age variable is further divided into sub-categories to measure the level of maturity. Here, AGE 1 represents (respondents between 15-25 years), AGE 2 (respondents between 26-35 years) and AGE 3 (respondents between 36-49 years). Here, age is measured as a dummy and is used as a proxy for maturity. AGE 1 was specified (given the value, 0) and used as a base for comparing Age 2 and Age 3 to avoid dummy trap. A respondent within AGE 2 was assigned the value, 1, otherwise, 0 and those within AGE 3 were assigned the value 1, otherwise, 0.

Gender of a farmer (GEN): The gender of the farmer was included in the estimation of the logit and is expected to either have a positive or negative effect on the farmers' decision to participate in the YiAP. Men (males) were assigned a dummy value of one (1) and women (female) were assigned the dummy value (0). Sanchez (2005), Muhammad-Lawal *et al.* (2009), Abdul-Hakim and Che-Mat (2011), Akudugu (2012), Agbonlahor *et al.* (2012) in similar studies used gender as dummy variable in determining participation in on-farm or off-farm activities or agricultural production.

The literacy level of farmers (Education) (*EDU*): Education was included in the estimation because education is believed to increase the adoption of farm technologies and also improve household per capita income (Sanchez, 2005; Nnadi and Akwiwu, 2008; Aikaeli, 2010). Aikaeli (2010) posits that investment in the education income improving. It is measured as the number of years spent in formal schooling/education (in years) and it conforms to similar studies by Nnadi and Akwiwu (2008), Muhammad-Lawal *et al.*, (2009), Oladejo *et al.* (2011) and Akudugu (2012).

Marital status (*MARI*): The marital status was included in the logit estimation and is expected to be positive because married couples are supposed to bear additional responsibility of taking care of their families. Married farmers were assigned the dummy value of 1 while unmarried farmers were assigned the dummy value of 0. This is consistent with the findings of Nnadi and Akwiwu (2005; 2008) and Muhammad-Lawal *et al.* (2009).

Family Head status (*FAMHD*): Family head status was included in the estimation and is expected to be positive. Those with family head status bear the greater responsibility of carrying the providing the family needs (Nnadi and Akwiwu, 2008).

Household size (*HHSIZE*): Household size was included in the estimation and is expected to be positive. This is because families with larger household sizes have greater responsibilities of meeting the family's income and social needs. Those with a household size of five or more members were considered to be large, while households of less than five members were considered small. This is consistent with similar studies by Muhammad-Lawal *et al.* (2009), Aikaeli (2010) and Abdul-Hakim and Che-Mat (2011). Aikaeli (2010) indicates that

increase use of resources, particularly land and labour forces by the household also increase household per capita income.

Farm size (*FSIZE*): Farm size was included in the estimation and is expected to be positive because farmers with larger farm sizes are expected to obtain higher income from their farming activities. It is measured in acres. Aikaeli (2010), Abdul-Hakim and Che-Mat (2011) and Akudugu (2012) posit that farm size can be used to estimate the potential income of the farmer. Agbonlahor *et al.*, (2012) indicate that farm size significantly influenced the intensity of participation of co-operative members in the participation in off-farm activities. Thus, members with larger farm sizes are likely to obtain higher income and are less likely to participate in off-farm activities as opposed to members with smaller farm sizes.

Farming experience (*FEXP*): Farming experience was included in estimation of the logit regression and is expected to be positive or negative. It is measured in years. While farming experience helps a farmer to gain enough knowledge and expertise in undertaking certain farming activities, it takes quite a long period of farming to be able to gather this experience. Changes in climatic and weather conditions such as rainfall and temperature patterns take several years (sometimes up to thirty years) to occur. In this regard, very experience farmers are assumed to be above thirty-five (35) years of age.

However, young farmers who have farmed for about five years and more are expected to have gained enough experience to be conversant with certain farm practices and the adoption and application of certain farm technologies than those who have just begun farming for about a year or two. Farmers who have acquired some knowledge in school put this knowledge into practice

when they go into farming. Hence the effect of farm experience will depend on the individual farmer and the kind of knowledge and experience he/she has acquired over the years.

Farm Income (*FINCOM*): Farm income was included in the estimation and it is expected to be positive because it is the main drive for which most farmers go into farming or other economic activities. It is measured in Ghana Cedi (GHC). MoFA (2011a) posits that the youth are not willing to participate in the programme because they have a negative perception about farming and thus, view farming as an occupation with low income and economic returns. However, Abdul-Hakim and Che-Mat (2011) indicate that improving the household income of rural farmers could reduce poverty. Asante *et al.* (2011) found out that farmers' income had the expected positive sign and has a highly significant effect on the decision to join an FBO. Their study indicates that increasing farmers' income by one cedi increases the likelihood to join an FBO and that being a member of an FBO facilitates easy access to credit.

Access to credit (*CREDASS*): Access to credit/loan was included in the logit estimation and is expected to a positive effect on participation because credit form an important part of the farming enterprise in line with the findings of Asante *et al.* (2011). Lack of credit facilities hinders the plans and activities of the farmer and put him in a difficult situation. Akudugu (2012) also indicated that lack or inadequate access to credit is a crucial militating factor against farmers in financing their farm operations and is one of the major underlying factors of low agricultural productivity in Ghana.

Distance (*DYiAP*): Distance from farmer's house/town to the site of the YiAP was included in the estimation and is expected to have a negative effect on participation. This is because places where large tracts of land can be acquired for farming purposes are quite distant

from towns, communities and district capitals. Also, most government acquired lands for the YiAP may be closer to one community and farmers from other communities may have to travel (sometimes board cars) from afar to the site. Hence farmers who are far away from the site are less likely to participate in the YiAP and vice versa. It is measured in kilometers (km).

This is consistent with MoFA (2011b) who stated that scarcity of land within reasonable distance from settlements and unmotorable roads negatively influence agricultural activities in the Eastern region. This is also similar to the findings of Oladejo *et al.* (2011) and Akudugu (2012) who found out that distance from farmers homestead to one agricultural activity or the other have a negative relationship with participation in off-farm activities and credit supply to farmers respectively. Akudugu posits that farmers who are far away from rural banks are less likely to demand credit from the banks and vice versa. Abdul-Hakim and Che-Mat (2011) however, found distance to the nearest town insignificant in explaining the decision to participate in off-farm activities even though it was positive.

Location (LOCEFF): Effect of location was included in the logit estimation and is expected to be positive because participants in the block farm system under YiAP were all in communities where government acquired lands are available. This is consistent with the findings of Sanchez (2005) who found out that the ecoregions where a household lives also determines whether it participates or engages in agricultural activity or not. Akudugu (2012) also found out that the area where the farmer resides also determinant of the farmer's decision to participate in off-farm job or not. This also confirms MoFA's assertion in 2011b that scarcity of land within reasonable distance from settlements and unmotorable roads negatively influence agricultural activities in the Eastern region.

Farmers' perception (*PERC*): Farmers' perception about farming was included in the logit estimation and is expected to have a negative effect on the decision to participate in the YiAP. Farmers who perceive farming to be an occupation with low income and economic returns are assigned the dummy value of 1 and those who do not are assigned the dummy value of 0. MoFA (2011a) posits that the youth are not willing to participate in the programme because they have a negative perception about farming because they perceive farming to be an occupation with low income and economic returns. Akudugu (2012) in similar studies, found farmers' perception of cumbersome procedures for loan application to negatively affect credit demand from the rural banks.

Parents' occupation (*POCCU*): Parents' occupation was included in the logit estimation and is expected to have a positive effect on participation. A farmer with at least one parent being a farmer is assigned the dummy value of 1 while a farmer with none of the parents being a farmer is assigned the dummy value of 0. This is because farming is the main occupation or economic activity in the region and most young farmers might have gained some farming experience while helping their parents own their farms. Nnadi and Akwiwu (2008) posit that youth whose parents are farmers have greater predicted probability of participation in agriculture than those whose parents are not farmers. This is because the background and orientation of the youth by virtue of parents' occupation influences their desire, interests and engagement. He found that parents' occupation positively influenced the youth participation in agricultural production.

Dependency status (*DEPST*): Dependence status was included in the logit and is expected to have positive effect on participation. This is because although those who depend on their parents might gain from some parental advice and guidance while participating in the

programme, those who are independent are supposed to be in the majority. These independent young farmers can take critical decisions on their own and without parental interference. Farmers who are independent of their parents were assigned the dummy value of 1 and those who are dependent, the dummy value of 0. This is consistent with similar studies by Nnadi and Akwiwu (2010), Aikaeli (2010) and Abdul-Hakim and Che-Mat (2011).

Access to land (*DLAND*): Access to land or difficulty in acquiring land was included in the estimation of the logit estimation and is expected to be either positive or negative. Farmers who have difficulty in acquiring land for farming purposes are assigned the dummy value of 1 while those who do not are assigned the dummy value of 0. Akudugu (2012) found access to land to have positive relationship with demand for credit. Nnadi and Akwiwu (2008) indicated that the high rate of youth participation in rural agriculture in the Imo State was attributed to the availability of farm lands and also the dependence on land for existence.

However, in the Eastern Region of Ghana, most of the youth do not hold title to the land or have access to farm lands due to land tenure system, litigation, high cost of land, long distance from settlement, unfavourable share cropping systems and other related issues (MoFA, 2011b). These factors make it difficult for most farmers to get access to land for agricultural purposes in both the region and country as a whole.

Membership of a Farmer Based Organization (*FBO*): Membership of an FBO was included in the logit estimation and expected to have a positive relationship with participation. A farmer who is a member of an FBO is assigned the dummy value of 1 while a farmer who does not belong to any FBO is assigned the dummy value of 0. This is because those who belong to such groups have easy access to information, credit facilities from banks and input supply by

input providers as the group serves as security, collateral and jointly guarantee for each other (Akudugu, 2012). Akudugu (2012) also indicated that most the FBOs or social or income generating groups are formed by rural banks for credit disbursement and savings mobilizations. The rural banks rely on these groups for the provision of social collateral provided by poor borrowers, especially farmers for the advancement of credit.

According to Asante *et al.* (2011), many researchers have all found a positive relationship between decision to join farmer groups and access to credit. Asante *et al.* (2011); Ayamga *et al.* (2006) also indicate that farmers with higher incomes are more likely to join FBOs than their counterparts with lower incomes.

Other sources of income (OTHSINC): ‘Other sources of income’ was included in estimating the logit and is expected to have a negative relationship with participation in the YiAP. It is measured as a dummy variable. A farmer who has other sources of earning income aside farming is assigned a dummy value of 1 whilst a farmer without any other source of earning income besides farming is assigned the dummy value of 0. This is because young farmers who obtain higher income from other sources of activities off-farm are less likely to participate in the YiAP. This is consistent with similar finding by Abdul-Hakim and Che-Mat (2011) that remittance by received respondents (farmers) had a negative relationship with participation in off-farm employment (Aikaeli, 2010).

Effect of Advertisement (ADVERT): Effect of advertisement was included in the logit model and is expected to be either positive or negative. This is because young farmers can be attracted by advertisement for other jobs in both the print or electronic media. A participant farmer may hear of advertisement on the radio or TV or see it in the dailies and decide to go for

the job and abandon the programme. This will negatively affect participation in the YiAP. On the other hand, MoFA or government can also use this same advertisement in the same media to attract the youth and other young farmers to participate in the programme.

Migration (*MIGR*): Decision/Intention to migrate to Accra was included in the logit estimation and is expected to have a negative relationship with participation. It is measured as a dummy variable. The reason for the expected negative relationship with participation is due to the short distance from Eastern region to Accra and the willingness of most youth to migrate. It is assumed that the youth who have the intention of migrating to Accra in search of ‘white colour job’ will not be willing to participate in the YiAP. A farmer who has the intention of migrating to Accra is assigned a dummy value of 1 while a farmer without the intention of migrating to Accra is assigned the dummy value of 0. This is because in most developing countries including Ghana, there is massive rural-urban migration in the face of rising unemployment. Most youth in the Eastern of Region of Ghana easily migrate to Accra due to its proximity, in search of better job opportunities. This is consistent with the Harris-Todaro Model which posits that “Migrants consider the various market opportunities available to them in the rural and urban sectors and choose the one that maximizes their expected gains from migration” (Todaro and Smith, 2009).

Conclusion

From literature the variables that have been found to influence participation in agricultural activities and have been included in the regression analysis include age, gender, marital status, education, household size, family head status, dependence status, income, location, membership of a farmer group/FBO, occupation, farmers’ perception, access to land, access to credit/loan facilities, distance, farming experience, advertisement and farm size.

3.4 Methods of Data Analysis

Given agriculture as an occupational technology, the socio-economic and demographic characteristics of youth may influence the level of their participation in agricultural production (Damisa *et al.*, 2007; cited in Oladejo *et al.*, 2011). Descriptive statistics was analyzed using SPSS version 17.0 while logit model was analyzed using STATA version 12.0.

Descriptive statistics such as frequency distribution tables and percentages were used to analyze data on selected socio-economic characteristics of respondents and rate of participation by different categories of youth was estimated for objective one.

Logit model was used to analyse the relationship between selected socio-economic characteristics of the youth, institutional and technical factors that determine participation in the YiAP in the Eastern Region for objective two. Young farmers' participation in the YiAP was assigned a discrete choice variable (*yes or no*) where a selected youth farmer was asked to individually indicate whether he/she participates in the YiAP or not.

3.4.1 Estimation of the level of participation by the youth in the YiAP

Objective one of this study is to estimate the level of participation in the YiAP by different categories of the young farmers. The rate or level of youths' participation is usually measured by calculating the percentage of those who participated and those who did not participate (Nkonya *et al.*, 1997; cited in Nnadi and Akwiwu, 2008). Category one (1) refers to participants and non-participants; category two (2) refers to participation by age group (i.e., 15-25 years, 26-35 years, 36-49 years); category three (3) refers to participation by gender (i.e., the proportion of male and female participation in the YiAP) and category four (4) refers to mode of participation in the YiAP (whether on individual basis, block farm system or in groups). This

will help to identify the proportion of participation by each category and those areas will be targeted for improvement and, thereby, in increasing competition among the various categories. Simple percentage counts and frequency tables were used to estimate the level of participation by different categories of the young farmers in the programme. The formula for estimating the level of participation is given by:

$$L_i = \frac{n}{N} \times 100\% ; i = 1, 2, 3, \dots, n \quad (3.10)$$

Where L = Level of participation, n = Number of participants in a category, N = Total number of respondents or participants, L_1 = Category one, L_2 = Category two, L_3 = Category three and L_4 = Category four. The decision rule is that level of participation: below 50% (i.e., $\leq 49\%$) is considered low, 50-69% is considered moderate (average), 70-89% is considered high, and 90-100% is considered very high.

3.4.2 Identification of determinants of youth participation in the YiAP

The individual's decision to participate in the YiAP is dichotomous, involving two mutually exclusive alternatives; *Yes or No*. The individual farmer either participates in the YiAP or otherwise. An empirical representation of participation in the YiAP (Y_i) model by young farmer I to observable explanatory variables is given by:

$$Y = \ln\left(\frac{P_i}{1 - P_i}\right) = \beta_0 + \sum \beta_i X_i + U \quad (3.11)$$

Where Y = Participation in the YiAP; X_i is the vector of explanatory variables relevant to a farmer's participation in the YiAP; β is the vector of unknown parameters; U is the residual error term assumed normally distributed with zero mean and constant variance.

Given agriculture as an occupational technology, the socio-economic, technical and institutional characteristics may influence the level of participation in agricultural production (Damisa *et al.*, 2007; cited in Oladejo *et al.*, 2011). The empirical model is therefore specified as:

$$\begin{aligned} \ln\left(\frac{P_i}{1-P_i}\right) = & \beta_0 + \beta_1 AGE + \beta_2 AGE2 + \beta_3 AGE3 + \beta_4 EDU + \beta_5 HHSIZE + \beta_6 FSIZE + \beta_7 POCCU \\ & + \beta_8 DYIAP + \beta_9 DLAND + \beta_{10} LOCEFF + \beta_{11} CREDASS + \beta_{12} FINCO + \beta_{13} OTHSINC \\ & + \beta_{14} FBO + \beta_{15} PERC + \beta_{16} MIGR + U_i \end{aligned} \quad (3.12)$$

The variables, their descriptions, units of measurement and expected outcomes are shown in

Table 3.1

Table 3.1: Variables, their descriptions, Unit of measurement and their expected outcomes

Variable	Description	Unit Of Measurement	Expected Sign
Dependent Variable			
Y (<i>PARTYIAP</i>)	Participation in YiAP	Dummy (If participant =1; else = 0)	
Independent Variables			
AGE	Age of respondent	Years	+
AGE 1	Ages between 15-25	Dummy (If 15-25 =1; else = 0)	+/-
AGE 2	Ages between 26-35	Dummy (If 26-35 = 1; else = 0)	+/-
AGE 3	Age between 36-49	Dummy (If 36-49 = 1; else = 0)	-
GEN	Gender of respondent	Dummy (If male =1; otherwise = 0)	+/-
EDU	Level of education	Years	+
MARI	Marital status	Dummy (If married = 1; else = 0)	+/-
HHSIZE	Household size of farmer	Actual number of persons	+
FAMHD	Family head	Dummy (If head = 1; else = 0)	+
FEXP	Farming experience	Years	+/-
DEPST	Dependence status of farmer	Dummy (If at least one =1;else =0)	+/-
POCCU	Parents' occupation	Dummy (If at least one =1;else = 0)	+
DLAND	Difficulty in accessing land	Dummy (If yes = 1; else = 0)	+/-
FSIZE	Farm size of farmer	Acres	+
DYiAP	Distance from town to YiAP site	Km	-
LOCEFF	Effect of location on participation	Dummy (If near gov't land=1; else=0)	+
FINCOME	Farm income of farmer	GHC	+
OTHSINC	Other sources of income	Dummy (If yes =1; else = 0)	-
FBO	Membership of an FBO	Dummy (If yes =1;else = 0)	+
PERC	Perception about farming	Dummy (If negative =1;else = 0)	-
ADVERT	Effect of advertisement	Dummy (If advert = 1; else = 0)	+/-
MIGR	Decision to migrate to Accra	Dummy (If yes = 1; else = 0)	-

Source: Author, 2013

3.5 Data Collection

Under this section, the types and sources of data, sample size and sampling technique, survey instrument and the study area were discussed.

3.5.1 Types and sources of data

Cross-sectional data on the socioeconomic, farm, technical and institutional characteristics of youth farmers in the YiAP and other youth farmers who are not participating in the YiAP were required. Data was obtained mainly from primary source through field survey.

3.5.2 Sample size and sampling technique

Multi-stage sampling technique was used and this involves both probability and non-probability sampling techniques. The first and second stages of sampling involved purposive sampling, where three districts in the region (namely Akuapem, Akuapem North and Suhum) because of their proximity to Accra and their nature of engagement in the Youth-in-Agriculture Programme which suited the data requirement. This was done in consultation with the Eastern Regional Directorate of Agriculture and supervisors. The second stage involved identifying communities engaged in the block farm system or crop farming under the YiAP, in collaboration with District Directors and YiAP coordinators in the respective Districts.

The third stage involved selecting 65 youth farmers from the Akuapem North, 47 youth farmers from the Suhum and 40 youth farmers from the Akuapem south districts. About one-third (1/3) of the total number of participants in each District was targeted for interview. The YiAP coordinators provided the list of individual participants, groups of participants and those

involved in the block farm system from various communities in the three Districts. With the help of extension agents, communities in which similar numbers of non-participants could be obtained were identified. In these communities, the young farmers were interviewed and any young farmer who is a participant in the YiAP was assigned the value, 1 and a non-participant, 0. This was done to give a 50% chance to every youth farmer (i.e., both participants and non-participants in the YiAP) who live within these communities. In all, a total of 152 youth farmer were interviewed (made up of 92 participants and 60 non-participants in the YiAP).

3.5.3 Survey instrument

The instrument employed for the field survey was semi-structured questionnaire and personal interview. Primary data was collected through personal interview because secondary data on the youth farmers was not readily available and those that were available did not meet the study requirement. The questionnaire was designed in consultations with supervisors, some senior members and colleague students from the Department and literature; to ensure that the method chosen could solicit the kind of responses and concepts intended to measure and also conform to professional standards.

Based on the research problem and objectives, target population and sample frame were defined. The sampling technique, sample size, and expected responses were determined. Concepts to be measured (attributes, objects, occurrences, or processes), variables to represent concepts and level of measurement were chosen. The type of questions to include in the questionnaire, the order, wording, coding, sectioning (grouping) of questions to meet the requirement for each objective, the structure and layout, and the overall length of the questionnaire were determined. In all, forty-nine items (49) were included in the questionnaire.

Attitude and perception of respondents were measured using scales. Attitude measuring scale such as dichotomous scale (e.g., *Yes, No*); category scale (e.g., farm on family land, rented land, government land, etc.), Nominal scale (e.g., *Male, Female*), ordinal scale (e.g., *1, 2, 3, ..., n*) and rating scale were used (Zikmund, 2003). Reliability and validity were assessed to establish 'goodness' of measure (Sekaran, 2003; Zikmund, 2003). Reliability was measured to reduce bias and ensure stability and consistency in response over time. For example, if similar results will be obtained when questionnaires are measured at different times under the same conditions, then the measure is stable. Validity was to ensure that the questionnaire measure concepts and instruments intended to measure. For example, content validity (did it measure the concept?), face validity (did it measure what it purports to measure?), criterion validity (whether the measure correlates with other measure of the same construct or not), predictive validity (whether the measure predicts the future or not), etc. (Zikmund, 2003)

The questionnaire was pre-tested on some youth farmers in Anyaboni in the Upper-Manya District. After that the ordering of some items were changed and was repeated in Asarekrom and Mangoase the Suhum District a week later under similar conditions. The questionnaire was shown to be 78% reliable at 0.05 level of confidence. Errors were corrected and some questions were reframed based on suggestions and criticisms before the final questionnaires were printed for the interviews.

3.5.4 Area of the study

The study was conducted in three districts of the Eastern Region of Ghana between November and December, 2012. These include Akuapem North, Akuapem south and Suhum/Kraboah/Coaltar districts. The region covers an area of 19,323 square kilometers, which is

about 8.1% of Ghana's total land area. It has a population of about 2,633,154 representing 10.7% of Ghana's population, and a total of 21 districts (GSS, 2012). The region lies the wet semi-equatorial zone which is characterized by double maxima rainfall in June and October. It lies between longitude $0^{\circ} 00^{\circ}E$ and $0^{\circ} 20^{\circ} E$ of Greenwich Meridian and latitude $5^{\circ} 51^{\circ}$ and $6^{\circ} 10^{\circ}$ north of the equator (MoFA, 2011b). The vegetation is forest and savannah with soils which are suitable for the cultivation of a variety of cash crops, staples, vegetables and non-traditional crops for exports (GSS, 2000; MoFA, 2011b). Agriculture is therefore, the major occupation of people in the Region accounting for about 55% of industrial activities in Region (GSS, 2000).

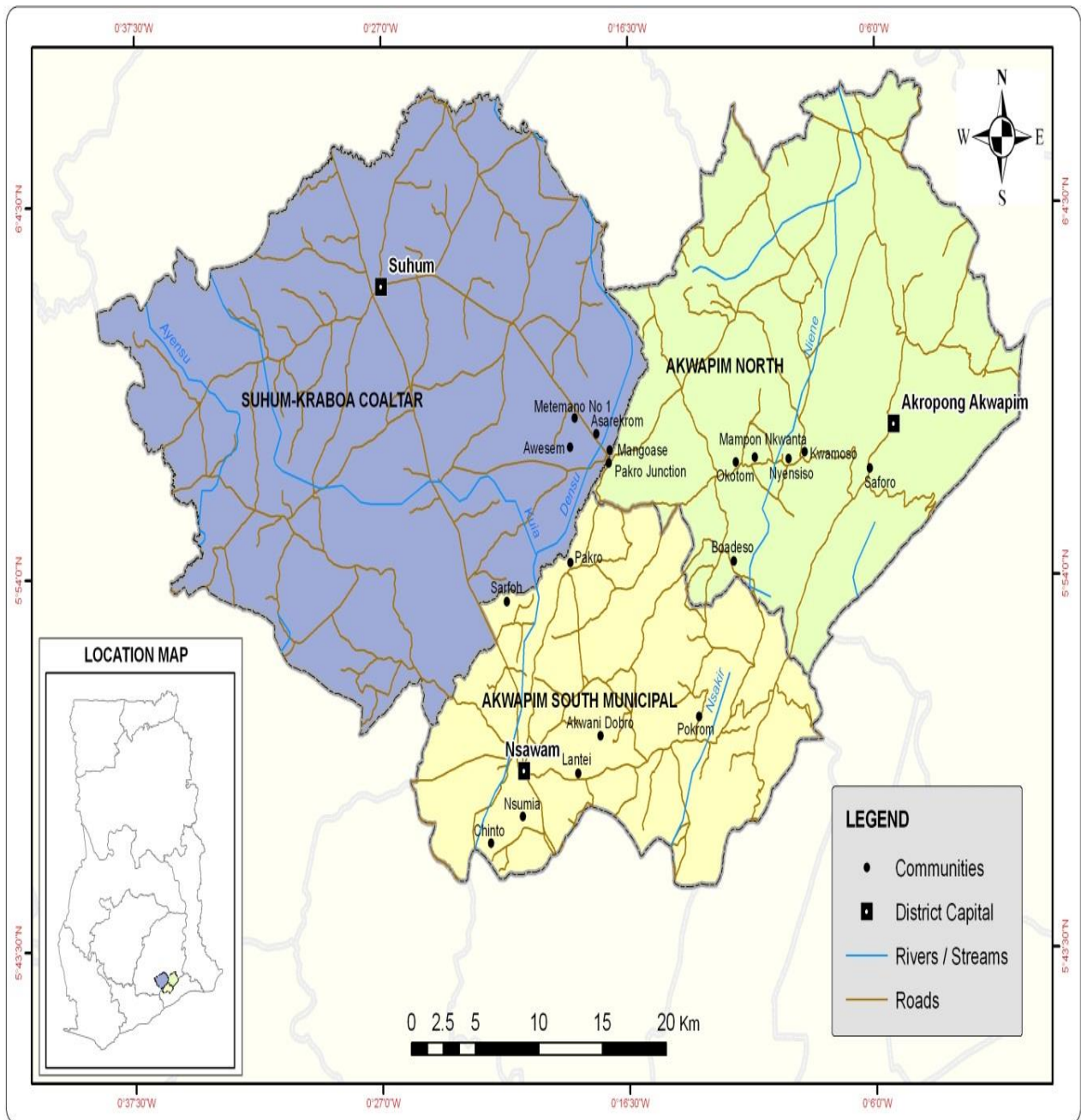
The Akuapem North District, with Akuapem-Akropong as its capital and covers an area of about 450sq kilometers which is about 2.3% of the total land area of the Eastern Region. It has a population of about 104,753 and about 67% of its population is engaged in agricultural activities (GSS, 2000; MoFA, 2011b). The rainfall pattern has two maxima from May to July and September to November with a mean annual rainfall of about 1270mm and a mean temperature of about $23.88^{\circ}C$. Communities from which data was collected include Kwamoso, Boadeso, Nyensiso, Mampong-Nkwanta, Okotom, Adenya, Saforo and Korkorm.

The Akuapem south municipality has Nsawam as its capital and covers an area of about 403sq kilometers. The mean annual rainfall is about 1250mm per annum and about 60% of the population engaged in subsistent and commercial farming (MoFA, 2011b). Communities from which data was collected include Lantei, Akwani Dobro, Nsumia, Chinto and Pokrom.

The Suhum/Kraboah/Coaltar District covers an area of 1,018 sq. kilometers with a population of about 188,661 (GSS, 2000; MoFA, 2011b). About 70% of the economically active population in the district is engaged in Agriculture (MoFA, 2011b). Communities from which

data was collected include Awesem, Metemano, Pakro Junction, Asarekrom and Mangoase as shown in the map below.

Figure 3.2: A map of the study area showing the communities visited for data



Source: CERSGIS, 2013

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results of the study and the relevant discussions. It includes socioeconomic and farm characteristics, summary of continuous characteristics, constraints to participation in the YiAP, level of participation and factors that influenced participation in the YiAP.

4.2 The Results and Discussion

This section presents the results in form of tables and bar charts based on the objectives of the study, and the discussion of the results in each table or chart and conclusions.

4.2.1 Socio-economic and farm characteristics of respondents

The results on the socio-economic characteristics of respondents are presented in Table 4.1. The results revealed that 9.2% of respondents were 25 years of age or less, 63.8% were between the ages of 26-35 years of age while 27.0% of respondents were above 36 years of age. From the table, about 73% of respondents fell within the age bracket of between 15-35 years. Also, 84.2 % of respondents were males while 15.8% were females. The results also revealed that a majority of respondents, 59.9% were married while 36.8% were single and the rest 3.3% were either widowed or divorced.

Table 4.1: Socio-economic characteristics of respondents

Characteristics	Participants	%	Non-Participants	%	Overall Freq.	%
Age						
15-25 years	8	5.3	6	3.9	14	9.2
26-35	54	35.5	43	28.3	97	63.8
36-49	30	19.7	11	7.2	41	27.0
Total	92	60.5	60	39.5	152	100
Gender						
Male	76	50.0	52	34.2	128	84.2
Female	16	10.5	8	5.3	24	15.8
Total	92	60.5	60	39.5	152	100
Marital Status						
Single	40	26.3	15	9.9	56	36.7
Married	51	33.5	41	27.0	92	60
Divorced	1	0.7	3	1.9	4	2.6
Widowed	0	0.0	1	0.7	1	0.7
Total	92	60.5	60	39.5	152	100
Educational level						
No education	1	0.7	6	3.9	7	4.7
Primary	0	0.0	6	3.9	6	3.9
JHS/MSLC	56	36.7	37	24.4	93	61
SHS	20	13.2	10	6.6	30	20
Tertiary	8	5.3	0	0.0	8	5.3
Technical/Vocational	7	4.6	1	0.7	8	5.3
Total	92	60.5	60	39.5	152	100
Family Head						
Yes	52	34.2	45	29.6	97	64
No	40	26.3	15	9.9	55	36
Total	92	60.5	60	39.5	152	100
Family size						
Small	20	13.2	31	20.4	51	34
Large	72	47.3	29	19.1	101	66
Total	92	60.5	60	39.5	152	100
Dependency status						
Yes	73	48.0	48	31.6	31	20
No	19	12.5	12	7.9	121	80
Total	92	60.5	60	39.5	152	100
Parent as a farmer						
Yes	73	48.0	50	32.9	123	81
No	19	12.5	10	6.6	29	19
Total	92	60.5	60	39.5	152	100

Source: Field Survey, December 2012

Concerning education, only 4.6% of respondents had no education at all. The rest, 95.4% had some level of education: 3.9% had primary education, 61.2% of respondents had either JHS or Middle school education, 19.7% of respondents had Senior Secondary/SHS education, 5.3% of respondents had tertiary education and 5.3% of respondents had either vocational or technical education. It can therefore be concluded that a majority of the respondents representing about 95% were educated, but to different levels. The low level of participants with tertiary education in YiAP was attributed to the lack of interest of many young graduates in agriculture by Muhammad-Lawal *et al.*, (2009).

The Table also revealed that 63.8% of respondents were family heads while 36.2% of respondents were not. A majority of respondents, 66.4% had large household size of five (5) persons or more, while 33.6% of respondents had smaller household size of four (4) persons or less. Also, a majority of respondents representing 79.6% were independent (do not live with their parents) whilst 20.4% of respondents still depended or lived with their parents. In addition, 80.9% of respondents had at least one parent being a farmer whilst 19.1% of respondents had none of their parents to be a farmer as shown in Table 4.1.

A summary of the results on farm characteristics of respondents are presented in Table 4.2. The results showed that 26.4% of respondents used only family labour on their farms, 31.6% used only hired labour while 36.8% used both family and hired and the rest 5.3% used group labour ('Nnoboa'). A majority of respondents 67.1% of respondents had other sources of earning income besides farming, whilst 32.9% did not have additional source of earning income besides farming.

Table 4.2: Farm characteristics of respondents

Characteristic	Participants	%	Non-Participants	%	Overall Freq.	%
Source of farm labour						
Family labour	22	14.5	18	11.9	40	26.4
Hired labour	31	20.4	17	11.2	48	31.6
Both family & Hired labour	34	22.3	22	14.5	56	36.8
Group labour('Nnoboa')	5	3.3	3	1.9	8	5.2
Total	92	60.5	60	39.5	152	100
Other sources of income						
Yes	52	34.2	50	32.9	102	67.1
No	40	26.3	10	6.6	50	32.9
Total	92	60.5	60	39.5	152	100
Membership of an FBO						
Yes	39	25.7	13	8.6	52	34.2
No	53	34.9	47	30.9	100	65.8
Total	92	60.5	60	39.5	152	100
Difficulty in acquiring land						
Yes	68	44.7	47	30.9	115	75.7
No	24	15.8	13	8.6	37	24.3
Total	92	60.5	60	39.5	152	100

Source: Field Survey, December 2012

A majority of respondents, representing 75.7% said they had some difficulty in acquiring land for farming purposes while 24.3% of respondents said they did not have difficulty in acquiring land for farming activities. Concerning how to improve access to land for farming purposes, 63.2% of respondents want government to enact special law for land acquisition for YiAP or farming activities, while 36.8% want government to lease the land from owners for the programme. When respondents were asked whether they were satisfied with inputs or services provided by MoFA/Government or not, a majority of them, representing 89.5% said no, while 10.5% of respondents said yes they were satisfied with inputs or services provided by MoFA/Government under the YiAP.

The results of the summary statistics for the continuous variables for age, household size, farm size and farm income of respondents are presented in Table 4.3.

Table 4.3: Summary Statistics for Continuous Variables

Participation in the YiAP	Age	Household Size	Farm Size (Acres)	Annual Farm Income (GHC)
Participants:				
Minimum	20	1	3	1050.00
Maximum	48	12	15	5000.00
Mean	32.48	6.12	6.33	2357.59
Non-Participants:				
Minimum	21	1	1	525.00
Maximum	49	8	7	3500.00
Mean	32.23	4.53	4.10	1478.42
Overall:				
Minimum	20	1	1	525.00
Maximum	49	12	15	5000.00
Mean	32.38	5.49	5.45	2010.55

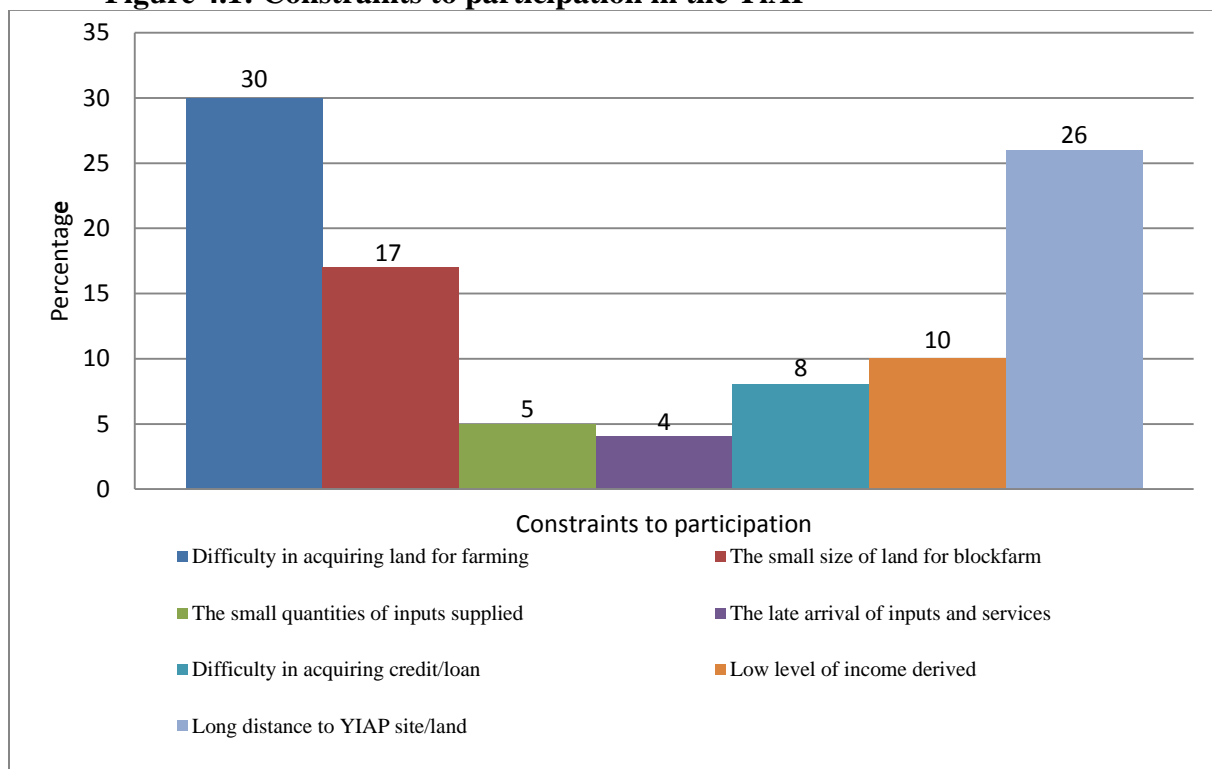
Source: Field survey, December 2012

The minimum age of respondents was 20 years and the maximum age was 49 with a mean of 32 years. Among participants, the minimum age was 20 years and the maximum was 48 years with a mean of 33 years. For the non-participants, the minimum age was 21 years and the maximum age of 49 years with a mean of 32 years. The minimum household size was 1 person and the maximum of 12 persons with a mean of 6. The minimum farm size was 1.00 acre and the maximum was 15.00 acres with a mean of 5.49 acres.

With regards to farm income, the minimum annual farm income of respondents was GHC 520.00 and a maximum of GHC5000.00 with a mean of GHC 2,010.25. The minimum annual farm income of participants was GHC1,050.00 and a maximum of GHC 5000.00. The minimum annual farm income of nonparticipants is GHC520.00 and a maximum of GHC3,500.00 with a mean of GHC1, 478.42.

The results on the constraints to participation in the YiAP in the Eastern Region were shown in Figure 4.1 below. From the Table, the main constraints to participation in YiAP include difficulty in acquiring land representing 30%, followed by long distance from farmers' residence, 26% and the small size of land allotted for block farm, 17%, low income derived from participation in YiAP (10%) and difficulty in acquiring credit 8%. The other constraints were small quantities of inputs supplied to participants (5%) and late arrival of inputs and services (4%). The results showed that the main constraints to participation in the YiAP were mostly related to land issues (about 78%), followed by low income derived from participation and difficulty in accessing credit/loan for farming purposes. Hence, if land related issues such as land acquisition are resolved and YiAP farms are located near farmers' communities, most of these constraints will no longer exist.

Figure 4.1: Constraints to participation in the YiAP



Field survey, December, 2012

Conclusion

The results from Table 4.1 revealed that 9.2% of respondents were 25 years of age or less, 63.8% were between the ages of 26-35 years of age while 27.0% of respondents were above 36 years of age. The results also showed that about 95% of respondent were educated, 84.2 % of respondents were males, 63.8% of respondents were family heads, 66.4% had large household size of five or more, about 79.6% of respondents were independent and 80.9% of respondents had at least one parent being a farmer.

The results from Table 4.2 showed that 26.4% of respondents used only family labour on their farms, 31.6% used only hired labour while 36.8% used both family and hired and the rest 5.3% used group labour ('Nnoboa'). Also, about 67.1% of respondents had other sources of earning income besides farming, while about 75.7% of respondents had some difficulty in acquiring land for farming purposes. More importantly, about 89.5% were not satisfied with inputs or services provided by MoFA/Government.

Following the results from Table 4.3, the mean age of respondents was 32 years, while the mean age for participants in the YiAP was 33 years and that of non-participants was 32 years. The mean household size was 6, while the mean farm size was 5.49 acres. The mean farm income of respondents was GHC 2,010.25 annually.

From Figure 4.1, the major reasons for the moderate level of participation in the YiAP were mostly land related issues (about 78% of the respondents). These include difficulty in acquiring land for farming, long distance from farmers' settlement to YiAP farm/land, the small sizes of plots allotted for block farm. Hence, if land related issues are resolved most of these constraints will be highly minimized or may no longer exist.

4.2.2 Level of participation in the YiAP

The results on the level of participation in the YiAP by the youth farmers are presented in Table 4.4. The level of participation in the YiAP was measured by calculating the percentage of those who participated and those who did not participate following Nkonya *et al.* (1997); cited by Nnadi and Akwiwu (2008). From the Table, 92 respondents, representing 60.5% participated in the YiAP, while 60 respondents, representing 39.5% did not participate. This shows that there is moderate level of participation in the programme in the Eastern Region.

Table 4.4: Level of participation in the YiAP

Characteristics	Frequency	Percentage
Participation in the YiAP		
Yes	92	60.5
No	60	39.5
Total	152	100.0
Participation by age		
15-25 years	8	8.7
26-35 years	54	58.7
36-49 years	30	32.6
Total	92	100.0
Participation by Gender		
Male	76	82.6
Female	16	17.4
Total	92	100.0
Mode of participation		
Individual	55	59.8
Group	16	17.4
Block farm	21	22.8
Total	92	100.0

Source: Field Survey, December 2012

One possible reason of the moderate level of participation is that although agriculture or farming is the main economic activity in the Region, most youth have difficulty acquiring land especially communities where government land is not available. Another reason could be the high cost of renting land since the youth do not hold titles to land and most the youth do not earn

high income or are unemployed. Some also consider the size of plot under the block farm and the quantity of inputs supplied to be too small. This finding is inconsistent with Nnadi and Akwiwu (2008) who found out that 83.91 % of the youth participated in agricultural production in Imo State of Nigeria.

In addition, of the 92 participants, only 8.7% fell within the age bracket of 15-25 years, 58.7% were between 26-35 years of age while 32.6% were between 36-49 years of age. This implies that there is a very low level of participation within the age bracket where the unemployment rate is highest among the youth in Ghana (i.e., about 25.6%). The 8.7% of participants being 25 years or less means that a majority of those who leave basic school or senior high school within the first five or ten years have lower participation rate in the YiAP. Hence, strategies of MoFA, DADU and YiAP coordinators should target the youth within this age bracket for improvement in their participation level. The results also showed that a majority of the participants (about 59%) were between 26-35 years of age.

About 82.6% participants representing 50.5% of the total respondents were males while 17.4% of participants, representing 10.5% of the total respondents were females. This finding is consistent with the findings of Sanchez (2005), Muhammad-Lawal *et al.* (2009), Adebayo (2009) and Oladejo *et al.* (2011) who attributed the high level of male participation in farming activities to the fact that males can do more tedious work such as farming than females who are traditionally regarded as homemakers and are confined to household chores and are also mostly engaged in other self-employment economic activities.

Also, 59.8% of participants representing 36.2% of the total respondents participated on individual basis, while 22.8% of participants representing 13.8% of the total respondents

participated in block farms and 16% of participants representing 10.5% of the total respondents participated in groups. The low participation by way of block farms is attributed to the fact that in the Eastern region, it is very difficult to acquire large tracts of land as block farms to be shared among the young farmers except in areas where there are reserved government lands. Rather, individuals or groups of young farmers acquire their own farm lands, and MoFA and the government supplies them with the inputs.

Conclusion

For objective one, it can be concluded that there is moderate level of youth farmers' participation in the YiAP in the Eastern Region (about 60%). The major reasons why some youth or farmers did not participate were land related issues (which forms about 78% of the respondents). Hence, addressing issues related to land acquisition and distance to sites for the YiAP will drastically reduce the constraints to participation. About 83% of participants are males. One possible reason is that males can do more tedious work such as farming than females (Muhammad-Lawal *et al.*, 2009). Another possible reason is that Women tend to focus on non-agricultural activities such as self-employment and household chores (Sanchez, 2005). About 77.2% of participants participate on individual and group basis with only 22.8% in the block farm system.

4.2.3 Determinants of farmers' participation in the YiAP

Before the logit regression, the explanatory variables were subjected to a two sample t-test to determine whether there were significant differences between the means of the individual variables for participants and nonparticipants. Table 4.5 shows results of the differences between

means of the variables for participants and nonparticipants in the YiAP following the two sample t-test.

Table 4.5: Differences between means of the variables for participants and Non-participants in the YiAP

Variable	Stand. error	Mean for Participants	Mean for Non-participants	P-Value
Age	0.5059	32.48	32.23	0.4069
ender	0.0297	0.83	0.87	0.7472
Education	0.2351***	10.50	8.35	0.0000
Marital status	0.0399	0.55	0.67	0.9153
Household size	0.1827***	6.12	4.53	0.0000
Dependence status	0.0673	0.79	0.80	0.5385
Parents' occupation	0.0203	0.79	0.83	0.7279
Farm size	0.3020***	6.34	4.10	0.0000
Farming experience	0.4439	10.59	10.97	0.6613
Distance from residence to YiAP farm	0.1076***	2.54	3.83	0.0000
Difficulty in acquiring land	0.0349	0.74	0.78	0.7310
Effect of location on participation	0.0355*	0.78	0.67	0.0811
Farm income	67.17***	2357.59	1478.42	0.0000
Access to credit facilities	0.0382***	0.98	0.27	0.0000
Other sources of income	0.0382***	0.57	0.83	0.0005
Membership of an FBO	0.0386***	0.42	0.22	0.0083
Effect of advertisement	0.0371	0.29	0.30	0.5340
Decision to migrate to Accra	0.0391	0.38	0.33	0.2789
Perception about farming	0.0384	0.34	0.33	0.4817

Source: Field Survey, December 2012

From the Table above, Education, Household size, Farm size, Farm income, other sources of income, Access to credit facilities, Distance from farmers' residence to YiAP farm and membership of an FBO are all significant at 1%. Age2, Age3 and effect of location on participation are significant at 10%. This implies that there are significant differences between the means for participants and nonparticipants in terms of education, household size, farm size, farm income, other sources of income, distance from farmers' residence to YiAP farm, membership of an FBO, access to credit and effect of location, ages between 15-35 years and 36 years and above. There are, however, no significant differences between means for participants

and non-participants for the rest of the variables. The significant variables in the t-test were the main focus in the logit analysis in this study.

The results of empirical estimation of the logit model showing the coefficients, standard errors, significance levels, marginal effects and the constant together with the log likelihood value, Wald Chi-Square, Pseudo R-square and the overall significance of the model is presented in Table 4.6.

From the Table, the log likelihood ratio (LR stat) statistic is significant at 1%, meaning that the explanatory variables included in the model jointly explain the probability of farmers to participate in the YiAP. This implies that the null hypothesis that participation of youths in YiAP is not determined by personal, social, technical and institutional factors is rejected. A Pseudo R-square of 0.8141 implies that all the explanatory variables included in the model were able to explain about 81% of the variations in the dependent variable (participation in the YiAP). This is an indication that the estimated logit model has integrity; it is appropriate and is generally good. The validity of the logit model in estimating determinants of farmers' participation in the YiAP is consistent with related studies by Nnadi and Akwiwu (2008), Abdul-Hakim and Che-Mat (2011) and Akudugu (2012).

From the results, age of respondent, education, household size, farm size, distance from farmer's house/town to the site of the programme or farm, membership of an FBO, effect of location on participation, access to credit facilities and farm income of respondents were found to be significant and hence influenced participation in the YiAP. Factors that were found to be positively related to participation are education, household size, farm size, membership of an FBO, effect of location, access to credit and farm income, while Age and distance to the YiAP site were found to be negatively related to participation.

Parents' occupation, access to land, effect of advertisement, perception, decision to migrate, Age 2 and Age 3 were all found not to be significant. Thus, parents' occupation,

Table 4.6: Logit Model estimates of factors that influence participation in the YiAP

VARIABLE	Coefficient	Std. error	P-Value	Marginal effect
Age of respondent	-0.3933**	0.1989	0.048	-0.0438
Age 2 (26-35)	1.7522	2.1370	0.412	
Age 3 (36-49)	4.9835	3.7219	0.181	
Education	0.7298**	0.2870	0.011	0.0812
Household size	0.9767**	0.4883	0.045	0.1087
Parents' occupation	-0.4956	1.5546	0.750	
Farm size	1.4622**	0.6458	0.024	0.1627
Difficulty in accessing land	-2.5499	1.7717	0.150	
Distance from house/town to YiAP site	-1.3277**	0.5207	0.011	-0.1477
Effect of location on participation	3.2107**	1.5800	0.042	0.5537
Farm income	0.0022**	0.0010	0.023	0.0002
Access to credit facilities	6.3587***	2.0490	0.002	0.8973
Other sources of income	-1.5342	1.2228	0.210	
Perception	-0.4400	1.5389	0.775	
Membership of an FBO	2.5481*	1.3615	0.061	0.2324
Decision to migrate to Accra	2.3824	1.6091	0.139	
Constant	-13.4106	6.9947	0.055	-

Log likelihood = -18.9509

Number of obs = 152

LR chi2(16) = 166.03

Prob > chi² = 0.0000

Pseudo R² = 0.8141

Significance level = ***p > 0.01, **p > 0.05, *p > 0.1

Source: Field Survey, December 2012

access to land, effect of advertisement and decision to migrate to Accra were not very important factors that influenced the youths' participation in the YiAP in the Eastern Region. It also implies that there are no significant differences between their means for participants and non-participants. This is contrary to the findings of Nnadi and Akwiwu (2008), who found out that parent's occupation, dependence status and access to land positively influence youths'

participation in youth in agriculture programme. This can partly be attributed to the differences in geographical locations and the fact that there are no significant differences between the means of these variable for participants and non-participants in the Eastern region. The non-significance of 'Age 2' and 'Age 3' implies that there are no significant differences between Age 2 (26-35) and Age 3 (36-49) in relation to participation in the YiAP. Meaning that age differences among the youth within the age bracket of 26-49 years did not really matter in making a decision on whether to participate in the YiAP or not. Thus, whether the participants fall within the age bracket 26-35 years or above the bracket did not have any significant impact on participation in the YiAP. This also implies that most of those who are aged between 36-49 years still regard themselves as youth in the Eastern region.

Age of respondent was significant at 5% with a marginal effect of -0.0438. The coefficient is negative and it implies that age is negatively associated with participation in the YiAP. The marginal effect of -0.044 implies that an increase in the age of respondent by one year will decrease the probability of farmers to participate in the YiAP by 4.4%. This is inconsistent with the a priori expectation of a positive relationship. This finding is also inconsistent with the findings of Nnadi and Akwiwu (2008), Muhammad-Lawal *et al.* (2009), Abdul-Hakim and Che-Mat (2011) and Akudugu (2012) who found age to be significant and positively related to participating in an agricultural activity. One possible reason is that the YiAP is meant for youth between 15-35 years and as farmers grow above that age they exit the programme, lose interest in participation or only a few above 35 years still participate.

Education was significant at 5% and the coefficient is positively related to the probability of participation in the YiAP. The marginal effect of 0.0812 implies that an increase in the educational status of respondent by one year will increase the probability of the youths'

participation in the YiAP by 8%. One possible reason for this is that the farm serves as a platform to practice the theoretical knowledge they have acquired from school. The result is consistent with the expectation that the youth are relatively educated and can easily adopt improved farming technologies. The result is also consistent with the findings of Sanchez (2005), Nnadi and Akwiwu (2008), Aikaeli (2010) and Akudugu (2012) who found age to be an important variable in participating in an agricultural activity.

Sanchez (2005) and Nnadi and Akwiwu (2008) found out that education contributes positively to an individual's capacities and increases adoption of farm technologies. Aikaeli (2010) found that education had a significantly positive relationship with rural household income and indicated that the higher the level of education of the household head, the higher the per capita income. Akudugu (2012) found out that the amount of credit that rural banks are ready to supply to farmers is positively influenced by the level of formal education of the applicant, and that farmers who had at least nine years of formal education are likely to be supplied with higher amounts of credit by the Rural Banks than those with less number of years.

The household size variable was significant at 5% and had a marginal effect of 0.1087. The coefficient is positive and implies that it is positively associated to the probability of participation in the YiAP. The marginal effect implies that an increase in the household size of respondents by one person will increase the probability of participation by the youth in the Eastern Region by 11%. The positively significant relationship with participation in the YiAP could be explained by the enormous family food security, income and other social requirements. This result conforms to the findings of Nnadi and Akwiwu (2008), Aikaeli (2010), Eneyaw and Bekele (2011) and Abdul-Hakim and Che-Mat (2011).

Nnadi and Akwiwu (2008) attributed the positive significant relationship with participation to the rational consciousness of family food security and social needs. Eneyaw and Bekele (2011) did indicate that this is possible because as the household size increases, family food demand also increases and so is family income. Aikaeli (2010) found that the size of household labour force was significant and had a positive coefficient which denotes that household per capita increases as the size of household labour force increases. However, the result of household size by Abdul-Hakim and Che-Mat (2011) exhibited a negative relationship and was attributed to the unwillingness to participate in off-farm activities as the family size increases.

Farm size was significant at 5% and a marginal effect of 0.1627. The farm size variable exhibited a positive relationship with participation in the YiAP. The marginal effect implies that an increase in farm size of respondent by one acre will increase the probability of youth farmers' participation in the YiAP by 16%. This result suggests that as farm size increases the probability of the young farmers to participate in the YiAP also increases. One possible explanation for this finding is that a larger size of land would enable the farmers to use more intensively modern technology and inputs which may in turn lead to higher yield and hence higher income, which is their major focus.

This is also possible since those who own large size of land normally find it easier to obtain credit from financial institutions than those with small land size. This is because large farm size has been associated with higher returns (income) after harvest. For example, sometimes rural banks inspect the size of the farm of a farmer before giving him credit/loan. The size of the farm gives an estimation/indication of returns/income after harvest.

The findings conform to the priori expectation of a positive sign and also agrees with the findings of Benjamin and Guyomard (1994), Benjamin and Kimhi (2003), cited in Abdul-Hakim and Che-Mat (2011) who indicate that as the size of agricultural land increases, the probability for the respondent to participate in an off-farm activity decreases because farmers obtain higher income from large farms.

Aikaeli (2010) found that Acreage of land use was significant and its coefficient was positive meaning that expansion of household land use increases or raises the household per capita income. Akudugu (2012) found farm size to be positively related to the demand for credit from Rural Banks to carry out their farming activities because farm size can be used to estimate the potential income of the farmer.

The farm income variable was significant at 5% with a marginal effect of 0.0002. The coefficient for farm income is positive and implies that farm income is positively associated with the probability of participation in the YiAP. This means that the higher the proportion of farm income, the higher the probability of youth farmers to participate in the YiAP. Although marginal effect is negligible, it conforms to the a priori expectation of a positive relationship. The marginal effect of 0.0002 implies that an increase in the farm income of the respondent by one Ghana cedi will increase the probability of the youth farmers to participate by 0.02%.

This is also consistent with the findings of Nnadi and Akwiwu (2008), Sanchez (2005), Asante *et al.*, (2011) and Abdul-Hakim and Che-Mat (2011). Nnadi and Akwiwu found parents' farm income to be positively related to participation in rural agricultural activities and concluded that high income from farming could influence the youth to develop interest in farming. Sanchez (2005) also found a positive relationship and indicated that the level of farm income influence

farmers participation in an on-farm or off-farm activities. Abdul-Hakim and Che-Mat (2011) however, found out that the ratio of income from agricultural sources to total income of the farmer is significant but was negatively related.

Access to credit variable was significant at 1% with a marginal effect of 0.8973. The coefficient for farmers' access to credit is positive and implies that access to credit is positively associated with the probability of participation in the YiAP. The marginal effect of 0.8199 implies that having access to credit facilities will increase the probability of participation in the YiAP by 90%. This means that youth farmers who have access to credit facilities have a higher probability of participating in the YiAP than their counterparts who do not. This is consistent with the findings of Asante *et al.* (2011) who found out that access to credit/loan influenced farmers' decisions to join FBOs in the Eastern Region. This is because the other members of the group serve as security and being a member of an FBO makes easier for them the access credit facilities from banks and other credit suppliers. They indicated that access to credit relaxes the financial constraint and this helps farmers to diversify their portfolio. The youth participate in the YiAP due the access to credit facilities such as fertilizer subsidy, improved seed, among others.

Membership of farmer based organization was significant at 10% and a marginal effect of 0.2324. The coefficient is positive and implies that membership of an FBO is positively associated with participation in the YiAP. This conforms to the a priori expectation of a positive sign. The marginal effect means that being a member of an FBO will increase the probability of participation in the YiAP by 23%. This is consistent with the findings of Asante *et al.* (2011) a positive relationship between joining an FBO and participating in agricultural activities. The study indicated that FBOs provide several services such as access to information, access to inputs, and access to loans, and also enhances rapid diffusion of extension delivery to farmers.

Distance from respondent's house or town to the site of the YiAP was significant at 5% and has a marginal effect of -0.1477. The coefficient is negative and it implies that distance is negatively associated with the probability of participation in the YiAP. The marginal effect means that an increase in the distance to YiAP farm by one kilometer will decrease the probability of a farmer to participate by 15%. Thus, the more distant the YiAP land/site is from the farmer's residence, the less likely it is for the farmer to participate in the programme. Long distances to their farms is a disincentive for participation in the YiAP as farmers will sometimes have to board cars to their farms or hire tracks to cart their farm produce after harvest. This transportation cost will reduce their margin of profit derived from their farm enterprise.

This is consistent with MoFA (2011b) who stated that scarcity of land within reasonable distance from settlements and unmotorable roads negatively influence agricultural activities in the Eastern region. This is also similar to the findings of Oladejo *et al.* (2011) and Akudugu (2012) who found out that distance from farmers homestead to one agricultural activity or the other have a negative relationship with participation in off-farm activities and credit supply to farmers respectively. Akudugu posits that farmers who are far away from rural banks are less likely to demand credit from the banks and vice versa. This finding is, however, contrary to the findings of Nnadi and Akwiwu (2008) who found out that distance had no effect on determinants of youths' participation in agricultural activities in the Imo state of Nigeria.

Effect of location variable was significant at 5% with a marginal effect of 0.5537. The coefficient of the marginal effect is positive and implies that location is positively associated with participation in the YiAP. The marginal effect of 0.5537 implies that young farmers who live in communities where there is government acquired land for YiAP have a probability of participation by 55%. One possible reason is that availability of land for agricultural activities is

critical to most participants in the Eastern Region. Hence, the youth who find themselves in or near communities where government land exists for the programme are more likely to participate. Some of these communities include Kwamoso and Okrakwadwo in the Akuapem North district, Asarekrom and Mangoase in the Suhum district, Anyaboni in the Upper Manya Krobo district, among others. This finding is consistent with Sanchez (2005) who found out that the ecoregions where a household lives also determines whether it participates or engages in agricultural activity or not. Akudugu (2012) also found out that the area where the farmer resides also determinant of the farmer's decision to participate in off-farm job or not.

Conclusion

Thus, for objective two, it can be concluded that the main determinants of farmers' participation in the YiAP were age, education, household size, farm size, farm income, membership of FBO, distance from farmers' residence to the YiAP site/farm, location and access to credit/loan facilities. Variables that were found to have a positive relationship with participation in the YiAP are education, household size, farm size, membership of an FBO, farm income, access to credit facilities and location, while age and distance from the farmers' residence to the YiAP site/farm were negatively related to participation in the programme.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, conclusions and recommendations of the study. The chapter is therefore divided into three sections. The first section summarises the results of the entire study, while the second section presents the conclusions and the last section presents the recommendations.

5.2 Summary of the Results

The primary objective of the study was to analyse the determinants of participation in the Youth-in-Agriculture Programme in the Eastern Region and to identify factors that motivate the youths' engagement in the programme. Specifically, objective one of the study was to estimate the level of participation by different categories of youth farmers; while objective two was to identify factors that determine participation in the YiAP in the Eastern Region in order to target those areas for improvement. Descriptive statistics was used to analyze objective one while the logistic regression model was used to analyze objective two.

The results indicated that 60.5% of respondents participated in the YiAP while 39.5% did not participate. In addition, about 58.7% of participants were aged between 26-35 years, 32.6% between 36-49 years and only 8.7% of participants were aged between 15- 25 years. Also 83% of participants were males while 17% of participants were females. About 60% of participants participated on individual basis, 17% in groups and 23% participate in block farm system.

The logit model analysis revealed that the main determinants of participation in the YiAP were age, education, household size, farm size, farm income, access to credit, location, membership of FBO and distance from farmers' residence to YiAP site. In this respect, variables that were found to have a positive relationship with participation are education, household size, farm size, farm income, access to credit, location, and membership of FBO. However, age and distance from farmers' residence to YiAP site negatively influenced participation in the programme.

The logit model analysis further reveals that access to credit was significant at 1%, while age, education, farm size, household size, location, farm income and distance from farmers' residence to the YiAP site/farm were significant at 5%; and membership of an FBO was significant at 10%.

5.3 Conclusions

Based on these findings, it can be concluded that there is moderate level of participation in the Youth-in-Agricultural Programme in the Eastern Region. There is low level of participation for the youths aged between 15-25 years. Male participation is higher than females. Most of the youth farmers participate on individual basis rather than in block farms and groups.

Age, education, household size, farm size, membership of an FBO, farm income, access to credit facilities, location and distance from the farmers' residence to the YiAP site/farm were the main determinants of participation in the YiAP. Therefore, these variables should be targeted for improvement in order to further increase participation in the region.

Education of the farmer had a positive impact on participation in the YiAP implying that farmers who have some formal education of the farmer have a higher probability of participation in the YiAP. Farm income had a positive impact on participation implying that high farm income motivates young farmers to participate in the YiAP. Farm size had a positive effect on participation implying that allotting larger land size to the young farmers has the probability of increasing participation in the YiAP. Household size had a positive impact on participation implying that young farmers with larger household sizes are more likely to participate in the YiAP than their counterparts with smaller household sizes. Location of the youth had a positive effect on participation implying that youth who live in communities where government acquired land is available for farming are more likely to participate than their counterparts who live far away.

Membership of farmer based organizations had a positive impact on participation implying that farmers who are members of an FBO are more likely to participate in the YiAP than those who are not. Access to credit had a positive effect on participation, implying that access to credit facilities motivate youth participation. Age of respondents had a negative effect on participation in the YiAP, implying that when they grow beyond a certain age (35 years), their participation decline. Young farmers who are very far away from land acquired for YiAP farms are less likely to participate in the programme.

5.4 Recommendations

Based on the findings of this study, it is recommended that:

- MoFA, District Agricultural Development Units (DADUs) and YiAP coordinators should embark on programmes towards sensitizing the youth (especially those who have just completed basic and second cycle schools) on the incentive package and the benefits to be derived from participating in the YiAP in order to attain a high level of participation.
- In order to motivate more youth to participate in the YiAP and improve income of farmers, Government, MoFA, DADU's and YiAP coordinators in the various districts should develop strategies targeting the following factors:
 - i. improving the literacy levels of farmers through workshops, seminars and other training programmes;
 - ii. increasing the farm size of farmers in areas where the youth/young farmers farm on government acquired lands by giving participants larger plots;
 - iii. encouraging farmers to join existing or form new FBOs/farmer groups;
 - iv. increasing access to credit facilities such as quantities of farm inputs supplied to participants and training the youth on how to reduce post harvest losses or store and market their produce in order to improve their farm income;
 - v. acquiring more lands for the YiAP from traditional rulers, chiefs and other private land owners and as close as possible to farmers' communities.
 - vi. Consider revising the incentive package given to participants by varying the incentives to meet the needs of the youth in a particular area rather than giving uniform or equal packages to all.

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APPENDICES

Appendix A: Sample Questionnaire

DEPARTMENT OF AGRICULTURAL ECONOMICS AND AGRIBUSINESS

COLLEGE OF AGRICULTURE AND CONSUMER SCIENCES

UNIVERSITY OF GHANA, LEGON

This questionnaire is seeking your opinion in an effort to solicit information to write a thesis on the topic **“Determinants of farmers’ participation in the Bock Farm component of the Youth-in-Agriculture Programme in the Eastern Region of Ghana.”** This study is being conducted in partial fulfillment of the award of Masters of Philosophy degree in Agricultural Administration. Your opinion is therefore needed for academic purpose only and will be treated confidential.

- | | |
|--|-------------------------------|
| 1. Interviewer’s name..... | 2. Questionnaire number |
| 3. Date of Interview/...../..... | 4. District |
| 5. Community | |

Socio-economic characteristics of respondents

- **Personal characteristics**

1. Gender of respondent 1. Male [] 2. Female []
2. Age of respondent
3. Marital status: 1. Single [] 2. Married [] 3. Devoiced [] 4. Widow/Widower []
4. Religion 1. Christian [] 2. Islam [] 3. Traditional [] 4. Others []

- **Household characteristics**

5. What is the size of your household?
6. What is your level of education?
7. If you did not complete school, indicate level reached.....
8. Are you the head of the family? 1= Yes [] 2=No []
9. Do you live with your parent(s)? 1=Yes [] 2=No []
10. Is any of your parents a farmer? 1= Yes [] 2= No []

- **Farm characteristics (Economic characteristics)**

9. What is the size of your farm (acres or hectares)?
10. What is the distance from your town/house to the site of the YIAP (km)?
11. How long have you been farming on your own (in years)?
12. What was your source of labour? 1. Family labour [] 2. Hired labour [] 3. “Nnoboa” []
13. What is your intensive/major food crop cultivated?
1. Maize [] 2. Cassava [] 3. Vegetables [] 4. others, specify.....
14. What is the value of your major crop in each production year (annually) in kg/bags/GHC?
1. 2009 2. 2010 3. 2011..... 4. 2012.....
15. Do you have other source of income or occupation besides farming? 1= Yes [] 2= No []
16. What is the major source of this additional income?
17. What is your estimated annual income from this source/occupation? GHC.....

- **Technical characteristics**

18. Do you participate in the Youth-in-Agriculture Programme? 1= Yes [] 2= No []
(For Participants in the YIAP only (If you do not participate, go to Question 23))
19. Were you required to open an account with any bank before you are given inputs?
1= Yes [] 2= No []
20. How do you participate in the YIAP? 1= Individual [] 2= Group [] 3 = Block farm []
21. What commodity/crop do you cultivate under the YIAP? 1= Maize [] 2= Cassava []
3= Vegetables [] 4= Others, specify.....
22. What is the size of land under cultivation in the YIAP? (acres).....
23. If you are a participant in the YIAP, chose among the under listed items in tables what inputs you were promised and what inputs you were actually supplied with.

Tick in the Year (YR) column the inputs/services you were promised and those you were given by government or MoFA

INPUT/SERVICE	YR. 1 (2009)		YR. 2 (2010)		YR. 3(2011)		YR. 4 (2012)	
	Promised	Given	Promised	Given	Promised	Given	Promised	Given
Improved seed(kg)								
Financial support (GH¢)								
Land for block farm(ha)								
Extension information (choose Code 1 below)								
Herbicides(kg)								
Insecticides(kg)								
Fertilizer (subsidy) (kg)								
Training (Code 2)								
Tractor service (Specify land size ploughed in Ha)								
Marketing avenue(Code 3)								
Irrigation & Mechanization								

CODE 1: 1= Information on agronomic practices [] 2= Pest & Disease Management []

3= Information on marketing opportunities [] 4 = Others, specify.....

CODE 2: 1=Technical skills [] 2=Credit acquisition [] 3=Adding value to produce []

4= Group dynamics [] 5= Linkage with other stakeholders []

CODE 3: 1= Guaranteed market price [] 2= NAFCO Purchase [] 3=Linkage to buyers[] 4=Allow farmer to look for buyers []

If given, indicate in the table below what quantity or amount you were given (kg/GHC/Ha)

INPUT/SERVICE	2009	2010	2011	2012
Improved seed (kg)				
Financial support (GH¢)				
Land for block farm (Ha)				
Extension information				
Herbicides (kg)				
Insecticides(kg)				
Fertilizer (subsidy) (kg)				
Training				
Tractor service (SOLP) (Ha)				
Marketing avenue				

For Non-Participants in the YIAP only

23. If you do not participate in the YIAP, what factors prevent you from participating?

1. Lack of interest [] 2. Lack of access to land [] 3. Parents do not support it []

5. Your application was rejected [] 6. The site for the YIAP is too far from your town/community [] 7. Other reasons, specify.....

24. Do you receive credit for farming? 1= Yes [] 2= No []

25. What form of credit do you receive? 1. Cash [] 2. Fertilizer (subsidy) [] 3. Others, list

26. What was the source of credit received?

1. Friends/Relatives [] 2. Bank [] 3. Government Programme [] 4. Moneylender []

27. How long were you required to payback (in years).....

28. In what form were you required to pay back? 1= Cash [] 2= Farm produce []

29. Do you have a challenge in taking credit for farming activities? 1= Yes [] 2= No []
30. Did the provider of the credit require collateral? 1= Yes [] 2= No []

• **Institutional characteristics**

31. Is land for farming difficult to acquire? 1 = Yes [] 2 = No []
32. How did you acquire land for farming? 1. Farm free on family land [] 2. Rented land []
3. Farm on government land [] 4. Squatter on the land [] 5. Own the land []
6. Through an FBO [] 7. Shared cropping []
33. If own land, which kind of ownership? 1. You inherited it [] 2. Purchased land []
34. Do you belong to any Farmer Base Organization (FBO)? 1= Yes [] 2= No []
35. If yes, what benefit do you obtain from being a member of the FBO?
State.....
36. What is the main challenge to acquiring land for farm expansion in your area?
1. Land tenure system [] 2. Litigation by different families [] 3. Cost of renting land for farming [] 4. Unavailability of land for farming [] 5. Others, specify
37. If land for farming is difficult to acquire in your area, what do you think Government/District should do to improve upon the process? 1. Lease the land from land owners [] 2. District/Regional house of chiefs to intervene in land acquisition process []
3. Enact special laws to acquire land for farming [] 4. Others, specify []
38. If Government/District assembly/House of chiefs acquires the land for farming, how should land owners be compensated? 1. Cash payment [] 2. A share of the produce should be paid to land owners after harvest [] 3. Others, specify []

• **Improvement of the YIAP**

39. Are you satisfied with the inputs and services provided by the Government/MoFA?
- 1= Yes [] 2 = No []

List from 1-6 the (from the most to the least pressing) reasons why you are not interested or satisfied with the YIAP

40. Why are you not interested in the YIAP/satisfied with the inputs and services provided by Government/MoFA? Because of: a. Difficulty in acquiring land [] b. The small size of land for block farm [] c. Small quantities of inputs supplied [] d. Late arrival of inputs and services [] e. Difficulty in acquiring credit for farming [] f. Low level of income derived from participation []

41. What do you think should be done to improve the YIAP?

.....

NB: Choose one option only in each question

42. What do you think should be done to motivate other youth to participate in the YIAP?

1. Introduction of national best youth farmer award []
2. Advertisement []
3. Educate the youth in schools on the programme []
4. Early supply of inputs []
5. Provide more/additional funding []
6. Others, specify

43. Where you influenced to participate in the YIAP by means of advertisement?

1 = Yes [] 2 = No []

44. What is your perception about farming?

1. Farming is for the poor people []
2. Farming is for those who are unemployed []
3. Farming is for the uneducated []
4. Any body at all can farm []
5. Any other, specify.....

45. Do you wish to stop farming in the near future? 1 = Yes [] 2 = No []

46. If yes, what factors will influence you to stop farming?

1. Better job opportunity
2. Opportunity to continue education
3. Opportunity to travel to Accra to look for job
4. Others, state.....

47. If a better job opportunity will make you stop farming, what is your dream job?

1. Banking [] 2. Teaching [] 3. Mining [] 4. Telecommunication job []
5. Business [] 6. Security service [] 7. Other(s), specify.....
48. If no, what are your future plans for farming? 1. Expand the size of your farm []
2. Add other crops or animals (Diversification) [] 3. Look for alternative occupation []
3. Others, specify.....
49. Do intend to move/migrate to live in Accra? 1 = Yes [] 2 = No []

APPENDIX B

Logistic regression

Number of obs = 152

LR chi2(16) = 166.03

Prob > chi2 = 0.0000

Log likelihood = -18.9509

Pseudo R2 = 0.8141

partyiap	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
age	-.3932858	.1988733	-1.98	0.048	-.7830703	-.0035013
age2	1.752166	2.137024	0.82	0.412	-2.436324	5.940656
age3	4.983503	3.72189	1.34	0.181	-2.311268	12.27827
hhsz	.9766711	.4883205	2.00	0.045	.0195804	1.933762
edu	.7297527	.2870367	2.54	0.011	.1671711	1.292334
poccu	-.4955959	1.55455	-0.32	0.750	-3.542458	2.551266
fsize	1.462217	.645766	2.26	0.024	.1965391	2.727895
dyiap	-1.327725	.520653	-2.55	0.011	-2.348187	-.3072643
othsinc	-1.534203	1.222765	-1.25	0.210	-3.930779	.8623736
fincome	.0021714	.0009517	2.28	0.023	.0003061	.0040367
loceff	3.210686	1.580032	2.03	0.042	.1138809	6.307491
credass	6.358686	2.048977	3.10	0.002	2.342765	10.37461
dland	-2.549904	1.771709	-1.44	0.150	-6.02239	.9225818
fbo	2.548087	1.361548	1.87	0.061	-.120498	5.216672
nperc	-.439964	1.538947	-0.29	0.775	-3.456245	2.576317
migrate	2.382399	1.60905	1.48	0.139	-.7712802	5.536079
_cons	-13.41057	6.99468	-1.92	0.055	-27.11989	.2987489

APPENDIX C

Marginal effects after logit

$$y = \text{Pr}(\text{partyiap}) \text{ (predict)}$$

$$= .87247256$$

variable	dy/dx	Std. Err.	z	P> z	[95% C. I.]	X
age	-.0437586	.02877	-1.52	0.128	-.100145	.012628		32.3816
age2*	.2353439	.34528	0.68	0.495	-.441402	.912089		.631579
age3*	.3553914	.27683	1.28	0.199	-.187194	.897976		.269737
hhsize	.1086685	.06237	1.74	0.081	-.013569	.230906		5.49342
edu	.0811953	.04749	1.71	0.087	-.011882	.174272		9.65132
poccu*	-.0492722	.14319	-0.34	0.731	-.329924	.23138		.809211
fsize	.1626924	.08045	2.02	0.043	.005018	.320367		5.45395
dypap	-.1477283	.08313	-1.78	0.076	-.310667	.01521		3.05263
othsinc*	-.1453068	.10606	-1.37	0.171	-.353175	.062561		.671053
fincome	.0002416	.00016	1.54	0.123	-.000065	.000549		2010.55
loceff*	.5536691	.25044	2.21	0.027	.06282	1.04452		.743421
credass*	.8972694	.11345	7.91	0.000	.674912	1.11963		.677632
dland*	-.1929869	.1383	-1.40	0.163	-.464053	.078079		.756579
fbo*	.232365	.15416	1.51	0.132	-.069775	.534505		.342105
nperc*	-.0517552	.18199	-0.28	0.776	-.408447	.304937		.335526
migrate*	.2261606	.15218	1.49	0.137	-.072112	.524434		.361842

(*) dy/dx is for discrete change of dummy variable from 0 to 1