THE EFFECTS OF BENSO OIL PALM PLANTATION (BOPP) SMALLHOLDER FARMERS' SCHEME ON RURAL POVERTY REDUCTION IN THE MPOHOR WASSA EAST DISTRICT OF GHANA

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CERTIFICATION

I hereby declare that this submission is my own work towards the Executive Masters of Business Administration and that to the best of my knowledge, contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University or elsewhere, except where due acknowledgment has been made in the text.

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DEDICATION

This is dedicated to my wife, Grace Damoah Arthur and my sons, Joseph Damoah Arthur and Francis Damoah Arthur

ABSTRACT

The study set out to examine the Effects of Smallholder Oil Palm Farmers' Schemes on rural poverty reduction in Ghana with the BOPP scheme as a case study. This is intended to assess the extent to which the scheme is benefiting the participants and the community at large. A descriptive design was adopted to collect data from 200 smallholder oil palm farmers, including the smallholder scheme manager. Statistical tools used to analyse the data collected included descriptive tools such as means, medians, frequencies, and percentages. Mann-Whitney U test was also used to test for significant differences between some variables. Data from questionnaires and interview guides were transcribed and presented in discussions in support of the quantitative analysis. The study found that incomes of farmers were being improved through their participation in the scheme. These incomes had translated into higher access to health care, education, and food security for the households of smallholders. However, several challenges including low understanding of technical details, low pricing of oil palm leading to reduced incomes confronted the scheme. The roles of other stakeholders including BOPP, the government, and co-operatives were along the lines of supporting smallholders through loan facilities and subsidies, as well as helping improve on the prices offered for the oil palm fruits. The study recommended BOPP to review deduction from farmers' gross incomes. Furthermore BOPP should intensify technical training or adopt more understandable approaches for farmers. The government could offer more subsidies for farming implements and fertiliser for farmers and could also set a price ceiling on oil palm fruits.

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i) BOPP	:	Benso Oil Palm Plantation Ltd
ii) TOPP	:	Twifo Oil Palm Plantation Ltd
iii) GOPDC	:	Ghana Oil Palm Development Company
iv) NBPOL	:	New Britain Palm Oil Limited (Papua New Guinea)
v) RSPO	:	Roundtable for Sustainable Palm Oil
vi) CSR	:	Co-operate Social Responsibility
vii) FFB	:	Fresh Fruit Bunch
viii) IFC	:	International Finance Co-operation
ix) IFAD	:	International Fund for Agriculture Development
x) IIED	:	International Institute for Environment and Development
xi) DTE	:	Data Terminal Equipment
xii) IFA	:	Intermountain Farmers Association
xiii) FAO	:	Food and Agriculture Organisation
xiv) FIAIS	:	Food Insecurity Access Index Scale
xv) FEDEPALMA	:	National Federation of Oil Palm Growers of Colombia

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

In development analysis, Miskell (1995) asserts that the pursuit of natural resource exploitation is mostly the starting point of development pursuits and is aimed at improving the macro-level development of an economy. At the individual level, the immediate focus is to enhance the socio-economic conditions of producers and consumers for poverty reduction, especially at the household level. Economic development at one point in time for many developed countries therefore started in tandem with direct dependence on the natural environment. For example, coal mining in England and Germany during the 1960s and the corn belt of USA at its peak in the 1950s.

For several developing countries, natural resource extraction still remains their main source of development finance for poverty reduction schemes. An independent provider of sectoral and thematic Asian environment, social and governance (ESG) research, Responsible Research (2010), notes that in Malaysia, Indonesia, Brazil, Thailand and other developing countries, oil palm production serves as one major additive of their national incomes. In these countries, three main systems of oil palm production exists, namely; small-scale (production on less than 10 ha of land), medium-scale (farms ranging from 10 ha to 500 ha) and large-scale/plantations (farms exceeding 500 ha).

Large scale corporate plantations are responsible for substantial production of oil palm. However, an independent smallholder and mostly informal private sector exists that operates at a higher manufacturing cost, but nevertheless contributes immensely to total

production. According to Chaichee (2007), smallholders, in this context, mean family-based enterprises producing palm oil from less than 50 ha of land.

World Bank/IFC (2011) notes that, globally, three million smallholder heads of family are involved in the oil palm sector. In the two countries responsible for over 80 percent of world oil palm production, Indonesia and Malaysia, smallholders account for 35 to 40 percent of the total area of planted oil palm and as much as 33 percent of the output. Elsewhere, as in West African countries that produce mainly for domestic and regional markets, smallholders produce up to 90 percent of the annual harvest. For example, in Nigeria smallholders are reported to account for about 80 percent of total oil palm production.

Besides the contribution of smallholders to global production there are direct linkages between smallholders and plantations that reinforce efficiency and production in the oil palm industry (Curry & Koczberski, 2004; Rahman et al., 2008). World Bank/IFC (2011) attests to this assertion by emphasising that in practice, people in this smallholder category are often also holders of customary rights (land owners) and also labourers on nearby plantations. For example Siat employs in Gabon, about 7,000 smallholder farmers, who produce 75 percent of its oil palm, while the remaining 25 percent is produced by its nucleus plantations. The corporate plantations therefore have certain corporate social responsibilities to smallholders either in smallholders' capacity as land owners or employees of these firms.

According to Hohnen (2007), CSR is a growing phenomenon as a result of increasing recognition of the significant effect the activities of the private sector have on employees,

customers, communities, the environment, competitors, business partners, investors, shareholders, and governments. It is also becoming increasingly clear that firms can contribute to their own wealth and to overall societal wealth by considering the effect they have on the communities and among the people in which they operate when making decisions.

In Malaysia, Indonesia, Thailand, Papua Guinea, Brazil, Columbia, Gabon, and Uganda IFAD (2010) accounts of interventions of oil refineries and private sector associations to smallholders through collaborative efforts to identify common occupational challenges of smallholders and helping them overcome those occupational challenges related to oil palm production. The common challenges identified for the smallholder were related to agronomy, supply chain, and the larger socio-economic environment and legal structures within the economy.

In the area of agronomy, it is often realised that smallholders have inadequate scientific and technical regarding oil palm as a crop and best management practices. In Indonesia, Musim Mas, a private refinery, has instituted hands-on management programmes for smallholders to help them overcome this challenge. Similarly, technical assistance offered by NBPOL aims to offer scientific technical assistance to smallholders to assist in increasing yield (Colchester & Jiwan, 2006).

The environment within which smallholders operate is often seen to lack enabling organising structures, legal structures, market dynamics, and social dynamics. In Colombia, the national federation of oil palm growers (FEDEPALMA) plays a leading role in organising smallholders in associations to advocate for enabling legal grounds for

their operation (FEDEPALMA, 2003). In the supply chain domain, smallholders are often seen to have limited access to credit, infrastructure and mills. In Gabon, the Siat Group embarks on providing feeder roads for oil palm producers to control losses realised through poor infrastructure. In Ghana, GOPDC provides smallholder credit and learning and adaptation structures based on experience. The company has used several mechanisms to provide quality seed stock to smallholder oil palm farmers (World Bank/IFC, 2011).

The ultimate goal of these interventions is to increase incomes for smallholders. IFAD (2010) studies have shown that increased for smallholder farmers in most cases translate into extra income to purchase food and improve their diets, and to pay family expenses such as school fees. Thus, poverty reduction motives remain top priority of interventions aimed overcoming occupational challenges of smallholders.

According to Ghansah (2006) the Benso Oil Palm Plantation (BOPP), in the Western Region of Ghana, keeps its CSR to indigenous people through employment of local smallholders on BOPP's own nucleus estate covers 4,678 hectares and providing a total land area of 1,650 hectares for smallholders to cultivate. This is captured under the caption, BOPP Smallholder Project. In order to ensure the success of the Smallholder project, BOPP provides services to farmers, including pest and disease monitoring and control services, agricultural advisory services, management and administrative services, engineering services, as well as commercial and financial services, and roads construction and maintenance.

Through these services, smallholders are expected to increase production and consequently, their incomes. On the other hand, increased incomes are expected to lead to better socio-economic status measured by variables including food security, access to education, health, sanitation and proper housing for smallholders. The study therefore aims to examine the effects of the BOPP Smallholder Oil Palm Farmers' Scheme on the socio-economic status of smallholder oil palm farmers.

1.2 Statement of the problem

In the oil palm industry, large scale plantations and smallholders farmers complement each other (Curry & Koczberski, 2004). This is evident in the fact that smallholders are often the indigenous people with customary rights to land, but also often serve as labourers on plantations. Rahman et al. (2008) therefore asserts that these plantations have certain corporate social responsibilities (CSRs) to the local people, in their right as indigenes and owners of the land and also in their capacity as labourers of these plantations.

The establishment of BOPP deprived the inhabitants in the surrounding, communities of their farm lands and therefore their means of livelihood. It therefore increased their poverty status and hence the smallholder farmers' scheme was developed as part of BOPP's corporate social responsibilities to help solve this problem. The research therefore aims at assessing how the BOPP smallholder scheme has helped to reduce the poverty status of the participants and the surrounding communities at large.

1.3 Objectives of the study

The general objective is to examine the effect of the BOPP Smallholder Oil Palm Farmers' Scheme on the standard of lives of the participants and the surrounding communities.

Specifically, the study aims to:

1. Examine the contributions of the scheme to farmers' income, household food security, health, education and poverty reduction;
2. Identify the challenges faced by the smallholder oil palm farmers of the BOPP scheme.
3. Determine the roles that the stakeholders such as BOPP, farmers co-operatives and the government can play to address the challenges identified
4. Formulate strategies to improve upon the operations of the smallholder oil palm farmers' schemes in Ghana with the BOPP scheme as a case study.

1.4 Research questions

The study sought to answer the following research questions to complement the objectives:

1. What are the effects of the scheme on the income status of smallholders?
2. What are the contributions of the scheme to household food security, health, and family expenses of smallholders?
3. What challenges confront the interventions of the scheme?
4. What roles do stakeholders such as BOPP, farmers' co-operatives and the government can play to address the challenges identified?
5. What strategies can help improve on BOPP's oil palm famers' scheme?

1.5 Significance of the study

The study investigated into the challenges confronting smallholders and how the interventions of BOPP have contributed to overcoming these challenges. Successful techniques identified can serve as models that can be replicated for other smallholder schemes for other sectors of the agriculture industry. The study also provided further insight into the effects of the scheme on the income status of smallholders. This informed scheme managers of the level of success of the scheme. This also helped in the evaluation of specific techniques of the scheme aimed at improving incomes of smallholders as well as how incomes translate into their wellbeing.

1.6 Scope of the study

The study was conducted in the Benso Oil Palm Plantation (BOPP) in the Adum Banso community. The Scheme Managers were included in the study. The study was also limited to smallholder oil palm farmers engaged in the BOPP Smallholders Oil Palm Farmers' Scheme. The main variables of the study were income, health, food security, and education. These variables were examined as they pertain to smallholder oil palm farmers.

1.7 Limitations of the study

A look into the effects of the BOPP smallholder oil palm scheme on the stakeholders is broad and therefore could not be captured fully in a single research. The researcher may not be able to interview all the 438 farmers and therefore a random sample of 200 of the

total number of farmers was used. The field visits were limited to the sample selected instead of all the farms.

1.8 Organization of the study

The study was organised into five chapters. Chapter One is the introductory chapter and covers the background of the study, problem statement, objectives, research questions, significance of the study, scope, and organisation of the study. Chapter Two dealt with the review of theories and concepts which were related to the study. It also presents empirical studies and a conceptual framework for analysing the effects of the BOPP smallholder farmers' schemes on the lives of the farmers. Chapter Three presents the research methodology. This includes the study area, data collection, study population, sample size and sampling procedure. It also covers description and administration of the instruments for data collection. Chapter Four consist of the analysis of data and the discussing of the results. Chapter Five consist of the summary of the major findings, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter seeks to rationalise the involvement of BOPP in smallholder projects with the concept of corporate social responsibility (CSR). It therefore reviewed theoretical perspectives related to the broad concepts of corporate social responsibility. Topical issues within the context of the rationale for CSR and empirical studies on how CSR manifests in other smallholder oil palm farmers project in other countries was looked into.

The subsequent sections introduce the proposed theories adopted by the study, the conceptual issues to be reviewed, and the conceptual framework for the study

2.2 Theoretical framework

The study was set in theories and models of CSR. These theories seek to rationalise BOPP's initiative to provide technical and theoretical knowhow to smallholder oil palm farmers as part of their corporate social responsibility towards the Adum Banso community. However, different theoretical perspectives present CSR as engendered by varied motives and manifested through a proliferation of approaches.

According to Mele (2006), CSR theories and related approaches can be classified into instrumental, political, integrative, and ethical theories. These suggest that CSR can be applied for practical/instrumental purposes, as well as for political motives, satisfying or integrating social demands and corporate objectives, and for ethical reasons. Instrumental theories of CSR therefore propose that CSR is carried out only when it is of instrumental value, such as profit maximisation value, to the corporation.

Garriga and Mele (2004) assert that the Agency theory is the most established theory within the group on instrumental CSR theories. This was borne of Friedman's (1970) view that the only one responsibility of business towards society is the maximisation of profits to the shareholders within the legal framework and the ethical custom of the country. CSR is therefore seen only as a strategic tool to achieve economic objectives and, ultimately, wealth creation. Concern for profits does not exclude taking into account the interests of stakeholders, especially when the satisfaction of these interests can contribute to maximising the shareholder value (Odgen & Watson, 1999).

This theory suggests that BOPP's smallholder project must be for a profit maximisation objective. Due to the fact that most smallholders also work as farm
labour for the company, technical knowhow and assistance offered to smallholders, remain applicable to the company's plantations. Thus, by assisting smallholders to manage their personal farms, through the smallholder project, the firm is indirectly empowering its labour to better manage the firm's own plantation, which can lead to increased profits for shareholders.
In practice, an increasing number of studies (Frooman, 1997; Griffin & Mahon, 1997; Key and Popkin, 1998; Roman et al., 1999; Waddock & Graves, 1997) show a positive correlation between the social responsibility and financial performance of corporations in most cases. Thus, it is justifiable to use CSR as a profit oriented scheme.

Political perspectives of CSR stem from corporate constitutionalism, corporate citizenship, and integrative social contract theory. Corporate constitutionalism was borne by Davis (1960) in his assertion that social responsibilities of firms arise from the amount of social power that they have and the firm that does not use its social power responsibly will lose it because other groups eventually will step in to assume those responsibilities. Thus, a firm engages in social responsibility to assert its political power in society.

The political power of BOPP may be asserted in creating a ready market for smallholders' harvest, thus controlling the prices through compulsory sales of smallholders' harvest to BOPP. Thus, BOPP can monopolise the market for smallholders' harvest by offering competitive prices which other individuals and smaller firms may not be able to offer.

Within the context of political views on CSR, Donaldson and Dunfee (1999) propose that CSR is both a macro- and micro-social contract by firms and members of localised communities. According to Wood and Logsdon (2002), integrating the firm and community provides a platform for corporate citizenship where the community stands to benefit from the firm's actions. Thus, smallholders, who are indigenes of the local community, become beneficiaries of smallholder projects. These translate into increased incomes and access to social services and utilities for a better wellbeing. These views are borne in the Fiduciary Capitalist theory by Friedman and Friedman (1962) which presents the firm as endowed with the economic and political power to manage social demands of the local community.

Ethical theories are founded in the Stakeholder theory of Jones (1980). The theory states that corporations have an obligation to constituent groups in society other than stockholders and beyond that prescribed by law or union contact (Mele, 2006). BOPP's smallholder project is therefore also founded in maintaining ethical responsibilities to the local people who are both custodians of the land on which BOPP is established and also to smallholders who are community members and labour on BOPP's plantations. Through CSR, BOPP is not rationalised by profit orientation and political assertiveness, but also by the ethical principle to ensure that the people among whom the company has settled become economically, socially, and politically empowered through the efforts such as BOPP's smallholder oil palm farmers' project.

2.3 The concepts of rural development and rural poverty

Keane (1990) maintains that most of the world's poor live in rural areas. IFAD (2001) estimates that among the poorest 1.2 billion people in the world, surviving with less than a dollar per day, three out of four lived in rural areas. They constitute the poorest fifth of

world population and do not earn enough to cover their food needs. Ravallion et al. (2007) add that in 2002, 75 percent of the developing world poor still lived in rural areas. Approaches to reducing rural poverty and enhancing rural development therefore become eminent to global development.

Bassand, Brugger, Bryden, Friedman and Stuckey (1986) account that since the 1970's rural development as a concept has been highly associated with the promotion of standards of living and as a precondition for reducing rural poverty. This pro-poor concept of rural development was born from the understanding that, in societies where wealth is extremely concentrated incomes could grow without improving the well being of the most dispossessed. Thus rural development would mean the improvement of the welfare of all members of the rural population.

Chambers (2006) however maintains that one challenge reducing rural poverty, as engulfed in the concept of rural development, has been the classification of poverty as a concept and the determination of the variables as well as poverty thresholds. This terminological difficulty has been as a result of the multidimensionality of poverty and the fact that socio-economic situations vary from country to country. Anríquez and June (2007) also assert that the conceptualisation of poverty would have to be within a specific political, socio-economic, cultural, and academic setting. The value judgements of the population concerned would also have to be considered.

However, generic views of poverty may conform to material or non-material definitions. In material terms, Atkinson (1989) for example states that poverty refers to a situation where the subject cannot access the minimum level of resources, necessary for a

meaningful life. Gordon et al. (2000) elaborates that, poverty represents a standard of living or an income status, which is below the generally prevailing conditions of a population.

From these definitions, Haggblade, Hazell and Reardon (2002) assert that poverty may be conceptualised first, as income-poverty where the poor are the section of the population with incomes lesser than the national average, or a pre-determined threshold. It is asserted that the concept of income being referred to is discretionary income, which refers to the net income after tax deductions. The second concept of poverty from the perspective of quality of life involve a deprivation of or low access to shelter, clothing, education, as well as food and wholesome water. In other cases, it may extend to low access to personal means of transport, radios, television, and other material possessions. However, the core rural poor in this context would refer to those rural folk without access to the basic material needs that may include shelter, clothing, education, food and good water (Winter, 2004).

In Williams and Windebank's (2003) opinion poverty reduction comes about as individuals are offered capabilities or opportunities for increment in incomes and the reduction of monetary inequalities. The capability approach to poverty reduction often conforms to opportunity through education and paid work.

According to Ravallion, Chen and Sangraula (2007) one of the most accepted characteristics of development is a secular decline in the share of agriculture. Countries with larger rural populations shares are expected to be poorer since the main activity in the rural economies is likely to be agriculture. However, Anriquez and Stamoulis (2007)

maintains that with the 20th century green revolution of the Asian countries, such as India and China, through a fast industrialisation of agriculture and affective strategising and involvement of local populace suggests that agriculture still has a major role to play in development.

The attempt to reduce rural poverty through smallholders therefore exemplifies a local participatory approach to provide individuals with the opportunity or capability to earn incomes and to translate those incomes to the provision of food, healthy water and other material needs as well as improved access to social services, such as education and health for smallholders and their families.

2.4 The smallholder concept

Chaichee (2007) maintains that the term smallholder is a derivation from attempts at sustainable production of oil palm. It therefore represents a participatory development approach, which can involve a broad spectrum of local level participation in the oil palm industry. According to Rahman et al. (2008), local level participation may include the involvement of peasant farmers who have chosen to grow oil palm on their own plots or settlers and trans-migrants in areas under large-scale plantation. As distinct from indigenous peasant farmers, settlers and trans-migrants are often employed as labour on large-scale plantations.

The concept of local participation in smallholder projects may also include indigenous people who are landless because, their customary land rights have been overridden by land rights granted by the government to a plantation/company (Curry & Koczberski, 2004). In most cases, the company may allocate some hectares of land to these landless

indigenes, and purchase their harvest as inputs into the company's production process. Vermeulen and Goad (2006) add that farmers in debt to a plantation's cooperative may be involved in smallholder projects under the agreement that portions of their harvest will be used to defray their debts. IFAD (2010) therefore establishes that smallholders and other local involvements in palm oil are not always voluntary. Local people may have a low degree of choice when expansion of oil palm is seen as a major development pathway by local government, national government and the international donor community.

Colchester and Lumuru (2005) however, disregard the dimensions of local level participation embedded in the concept of 'smallholder' and defined the term, according to standards provided by the Roundtable on Sustainable Oil Palm, as family-based enterprises producing oil palm from less than 50 hectares of land. World Bank/IFC (2011) adds that in some countries, smallholders have more specific legal sense of aggregate land. For example, in Malaysia the term 'smallholder' is defined in terms of aggregate land of less than 40.46 hectares.

According to Segers and De Man (2006), among smallholders, the most important distinction is between supported growers, independent growers, and collective landowner schemes. Segers and De Man also describe supported smallholders as growers who cultivate oil palm with the direct support of either government or the private sector. The basic concept is that the government agency or private plantation company provides technical assistance and inputs of seed stock, fertilisers and pesticides, on a loan basis, sometimes partially subsidised by government. There may be a verbal or written contract delineating the agreement and possibly including guarantees of sales, plus terms for calculating the mill price. Vermeulen and Goad (2006) maintain that these are the terms

that apply to nucleus-plasma (PIR) smallholder project in Indonesia and a variety of land resettlement and rehabilitation schemes in Malaysia.

Ismail, Simeh and Noor (2003) describe independent smallholders as growers who cultivate oil palm without direct assistance from government or private companies and sell their crop to local mills either directly or through traders. In some cases, independent smallholders move from being just growers to independent oil mills and palm oil producers. Fairhurst (2003) for example, asserts that in Malaysia, independent growers are proliferating as independent mills, while other supported smallholder projects are moving towards less regulation and less subsidy. The concept on independent small holders is therefore being promoted as a means of establishing private small-scale enterprises to reduce poverty.

Collective landowner schemes conform to another option for local communities who hold land title or recognised customary land rights (Vermeulen & Goad, 2006). These are land leases or joint ventures, whereby local landowners rent out use rights of their land to a plantation company, or collect a share of profits based on the equity value of their land. This is not strictly a smallholder model, but can be an attractive alternative for local landowners. According to World Bank/IFC (2011), the collective landowner model is employed by the mini-estate or Konsep Baru in the Sabah and Sarawak regions of Malaysia. Similarly, the lease-lease-back schemes in Papua New Guinea also conform to a collective landowners model.

Simeh and Tengku-Ahmad (2001) observe that these distinctions are important for reasons that in the sense of rural development, smallholder oil palm production has the

potential to secure mutually beneficial outcomes for large and small producers and processors, enhance social and environmental sustainability at the landscape scale, ease land disputes between smallholders and large plantations and promote credibility among consumers. For the purpose of rural development, smallholder projects would therefore go beyond simple criteria for corporate responsibility to include local government participation and private sector support to improve the productivity of smallholders. Anriquez and Stamoulis (2007) rationalise this assertion that increased productivity has often been found to be positively correlated to increased incomes, and increased incomes positively correlate to poverty reduction.

2.5 Challenges of smallholder schemes

According to Diemer, Chinchilla and Griffee (2004), smallholder production has much to offer the future of the palm oil industry in terms of sustainability and credibility. In the two countries responsible for over 80 percent of world oil palm production, Indonesia and Malaysia, Vermeulen and Goad (2006) reports that smallholders account for 35 to 40 percent of the total area of planted oil palm and as much as 33 percent of the output. Elsewhere, as in West African countries that produce mainly for domestic and regional markets, smallholders produce up to 90 percent of the annual harvest.

However smallholders face a number of constraints in maximising their potential from palm oil production while maintaining local choice and autonomy. One major widespread challenge identified has to do with disagreements and uncertainty over land tenure recognising that systems must be in place to ensure this does not mean defaulting on loans from mills. Kartohardjo and Supriono (2000) found that in 2000, all 81 oil palm plantation companies in Sumatra, Indonesia, reported land disputes with local

communities. Report is also given of land disputes, often violent in nature, between many smallholders and land owners.

In many cases, smallholder farmers push for a handover of land from landowners, but the Sarawak Penan Association (2005) states the case that landowners are reluctant to invest in joint ventures by handing over land, because they see the passage of ownership of land as a right of inheritance rather than of exchange. Similarly, holders of customary land rights in Indonesia are challenging the lack of recognition of the rights of indigenous people in the allocation of land for oil palm plantations, and unfair practices in allocating plots to smallholders from the larger plantation area (Segers & De Man, 2006). The challenge is that land tenure disputes discourage investment and lead to low productivity.

Sagon (2000) observes that most leading oil palm companies in Indonesia and Malaysia go beyond legislation in settling land disputes to institute share-based systems that replace individual land holdings, based on the fact that smallholders agree. Strong public policy can also be essential for resolving long-standing conflicts over land.

According to Ghee and Dorral (1992), securing capital to meet upfront expenses may also pose challenges to smallholders. They explain that smallholders typically cannot meet basic conditions of collateral and minimum loan size to secure bank financing. Micro-finance institutions are the main solution. These may include interest-free loans for specified inputs, renegotiable terms and equity based on forms of recognition of land ownership other than formal land title. According to Casson (2000) and IIED and Proforest (2004), international and domestic banks provide large loans to estates but do

not target smallholders because smallholders lack of creditworthiness, have limited deal sizes, and hence applicable risk premiums are too high for smallholders.

In the absence of external sources of credit, a few companies provide favourable loan terms to supported smallholders, but in other cases onerous repayment terms are imposed. According to DTE (2005), communities in West Kalimantan, Indonesia, report that one company has expected credit repayments of 30 percent crude palm oil production per month on a credit of IDR 11.4 million which is equivalent to EUR1, 045. In top oil palm producing countries, such as Indonesia, cross-sectoral government subsidised credit schemes for individuals and cooperatives have been instituted to provide loans. Other adopted by companies, such as New Britain Palm Oil Limited in Papua New Guinea, has been the provision of interest-free credit, for selected farm inputs.

Diemer et al. (2004) maintain that information on prices and pricing policies, market opportunities, technical aspects of production and site management, and more fundamentally on rights and options under national law or formal agreements is also a major difficulty for many smallholders. Diemer et al (2004) further noted that the challenge is not only access to information, but trusting the information that comes in, given that independent sources are rare. Several other varied challenges, including trade-offs between cash crop production and food crop production, monopoly purchase by mills, and lack of broader social development have been identified for smallholders. These challenges, in the face of inappropriate interventions, can reinforce poverty among smallholders.

2.6 Interventions of smallholder schemes for poverty reduction

In Simeh and Tengku-Ahmad (2001) analysis, adopting smallholding as a poverty reduction strategy comes down to increasing productivity of smallholders. Within the context of productivity, the factors that drive smallholder productivity, income, and livelihoods fall into three main categories, namely; agronomy, supply chain, and enabling environment. The broad strategies to improve smallholder productivity and reduce poverty among them would be to support smallholders in the domains of agronomic practice, providing supply and input linkages, as well as setting up an enabling legal, social, and market environment that enhances production. World Bank/IFC (2011) however notes that within each of these areas, there are specific factors that represent both challenges and opportunities for smallholder development. Moreover, there are existing examples of private sector and local government involvement in smallholder development, within each of these factors.

2.6.1 Technical assistance for smallholders

Several types of agronomic factors are essential to smallholder development, in terms of the need to increase productivity as well as the importance of environmental sustainability. These include technical knowledge as well as quality of land and inputs (Vermeulen & Goad, 2006). Vermeulen and Goad elaborate that smallholders are often deficient in technical knowledge regarding oil palm as a crop and best management practices for its cultivation. Ghansah (2006) emphasises the importance of technical knowledge in the assertion that poor knowledge may lead to the selection of poor soil, misuse of fertiliser and pesticides, and the poor agronomic practices, such as slash and burn, which reduced harvest.

The technique to fulfil this knowledge gap is to provide smallholders with access to agricultural extension (Colchester & Jiwan, 2006). The purpose is to create opportunities for smallholders to gain access to agronomic information and training on best practices. Secondly, it is to enable smallholders to follow sustainable production guidelines, in terms of avoiding environmental damage and in terms of compliance with certification schemes, in which crops are certified as healthy and wholesome for sales. Diseased crops may not receive certification, thus leading loss of potential sales and income.

Teoh (2010) observes that soil management remains one of the biggest constraints to agricultural development in Africa. In most cases, local people, and by extension, most holders, need technical assistance on farming systems that enhances soil organic matter content and structure, such as under-cropping of legumes and use of green manures. These are also sought to be provided through availing extension services to smallholders.

The New Britain Palm Oil Limited (NBOL) in Papua New Guinea for example trained 53 local extension officers to conduct a preliminary survey to identify the types of technical assistance required by smallholders. Through the preliminary survey, the company identified that about 99 percent of their roughly 7,500 smallholders had some agronomic difficulties (NBOL, 2010). Other opportunities were created for the extension of the sector's extension capacity. The company partnered with the World Bank's Smallholder Agriculture Development Project to train extension officers and to communicate sustainable agronomic practices to smallholders. The impacts were not only witnessed in improved incomes and the livelihoods of smallholders as accounted by World Bank/IFC (2011), but also in significant capacity building in public sector extension. The company achieved the Roundtable for Sustainable Palm Oil (RSPO) certification for all its

smallholders in 2008 and increased their holding by 8,000 smallholders. Yield increment reaching as high as 50 percent were recorded for some smallholders.

In Brazil account is given of Agropalma, an oil palm company that has moved from just providing technical assistance to smallholders to offering comprehensive support. The company employs a full-time Agric Engineer, two technicians, and supporting staff who are exclusively focused on working with smallholders. On a weekly basis, a member of the company's staff visits each of its smallholder farmers to provide motivational and technical assistance (Rodriguez et al., 2010).

Casson (2000) maintains that while most companies engage in agronomic improvements by providing technical assistance and inputs to their smallholders, some see limitations in the results of these efforts. Teoh (2010) adds that often, extension officers instruct farmers on how to manage their own smallholdings. Officers recommend that they apply a certain amount of fertiliser, but farmers worry about the cost, and under apply. It leads to a lower yield. Agropalma in Brazil has therefore adopted a strategy to provide fertiliser to its smallholder farmers at the same cost that it receives from wholesalers for its own plantations, which is about half the local market price. Smallholders can therefore afford to make adequate purchases of farm inputs and implements, which ultimately lead to increment in productivity (Rodriquez et al., 2010).

Musim Mas, an oil palm company in Indonesia, manages smallholder plots in a more hands-on approach. The smallholders maintain ownership of their plots of land, but agree that the company will manage the cultivation centrally. The smallholders initially work as plantation workers during the planting period, and then ultimately harvest their own land

once fruit production begins. This approach enables the company to follow consistent practices across both its core plantation and the smallholdings. According to World Bank/IFC (2011), one critical success factor in this approach is the presence of strong cooperatives that are able to negotiate with the company and ensure smallholder interests. While Musim Mas provides management advice in the form of a dedicated advisor, the cooperatives serve to coordinate the administration of the plots. The approach has encouraged a more consistent application of agronomic techniques, and thus higher yields.

2.6.2 Offering supply chain linkages

Koczberski, Curry, and Gibson (2001) mention that for some smallholders, offering technical assistance for increased yield may be enough to make sales and income. Smallholders face several supply chain challenges in the production and sale of oil palm fruits. There may therefore be the need to create access to supply avenues, which offer ready processing and markets for harvest. Vermeulen and Goad (2006) adds that the supply chain does not just begin at the time of harvest, but involves all the activities that help farmers to sustain operations and sell their product. This may include access to credit, timely and consistent access to mills, and reliable infrastructure.

According to Ghee and Dorral (1992), credit needs of smallholders manifest in two folds. On the one hand, access to credit for initial investment is needed for planting, as the process of land acquisition, clearing, and planting can be a massive upfront investment for smallholders, and these farmers often lack collateral. The delay in the productive lifecycle of oil palm also means that these initial loans must be structured to allow deferred repayment. On the other hand, access to working capital for ongoing inputs is

needed to allow smallholders to consistently use fertiliser and other inputs over the life of the crop.

According to World Bank/IFC (2011) GOPDC provides an example of how a company can explore different structures for smallholder credit, learning, and adapting based on experience. Initially, GOPDC would enter into contractual agreements with smallholders, which gives smallholders a grace period of seven years after which loans must be repaid. This is to cater for the slow build of yield in oil palm production. In the repayment period, loans are spread out through a deduction on delivery of fruits. Once the annuity has been paid, the farmer gets the full value of his crop. However, this was creating risk of default, and a carry system was initiated where the farmers can buy the seedlings at a subsidised price, without a contract or an obligation to sell back to the company. These approaches have provided smallholders with the access to healthy resilient seedlings, which help in losses in plant and also improves harvest.

The consistency of market access is crucial in oil palm, especially if mills are not contractually obliged to buy from smallholders, such as with independents. The ability to access multiple competing mills will therefore allow farmers to seek the highest price, while encouraging competition in the supply chain so that smallholders are not too dependent on one buyer. This enhances the negotiating power of famers and transparency of mills regarding mill pricing, taxes, and fees (Bruce & Carmody, 2010).

In many cases, there are major problems with infrastructure and roads. The biggest challenge, in Obare, Omamo and Williams' (2003) opinion, is bringing fruits from the farm to the processing points. Sufficiency of transportation infrastructure therefore is

particularly important, due to the need for processing soon after fruits are harvested. Dimelu and Anyaiwe (2011) add due to the time-sensitive nature of oil palm harvesting, this is a particularly critical challenge for this crop. Functioning palm oil supply chains require roads, ferries, bridges, and access to water and electricity. Smallholder farmers often located in remote, rural areas suffer from being able to transport their fresh fruit bunches (FFBs) in time to local mills.

The Siat Group, in Ghana, has developed about 500 kilometres of roads in order to connect smallholder farms to collection points, some of which are up to 30 kilometres away. In Nigeria, where roads are more prevalent, Siat provides electricity to villages where smallholder farmers reside, for mainly local mills, to compensate for unreliability of the national electricity service, which often fluctuates (World Bank/IFC, 2011).

2.6.3 Providing an enabling environment

According to Koczberski et al. (2001), there are several types of factors related to the enabling environment that affect smallholder livelihoods. While these factors may be outside the direct influence of smallholders, they set the context for smallholder development. The type of smallholder structure, whether independent, supported, or a hybrid, has implications income generation of the smallholders. The distinction may be that the more supported may have easier access to credit and other technical assistance, but may be more bound by regulations than the more independent smallholder (Vermeulen & Goad, 2006).

The level of organisation among smallholders can also determine the type of environment they are exposed to. For example, whether farmers have formed cooperatives and if so

whether they are farmer-initiated or run by the plantation company (Ibitoye, Akinsorotan, Meludu, and Ibitoye, 2011). In most cases, cooperatives, especially if run by a plantation company, can access credit easier than independent smallholders, because cooperative are often more capacitated to negotiate for counter-offers that cater for insufficient collateral requirements and also to provide other services to its members.

The legal structure, including government policies and land tenure system has an important role to play in the entire structure of smallholding. Kodamaya (2011) elaborates that, government policies that influence smallholder development range from requirements on plantations for smallholder allocations, to price-setting formulas, to the administration of cooperatives. Local government's influence may be more pronounced, especially in instances where oil palm processing is adopted a strategy for local development. The local government will then seek to integrate the entire chain of production in its local level development strategy although that might conflict with smallholders' agenda and desired alternative management approaches.
Land owners also have an important role to play, within the context of renting land for cultivation. Gebreselassie (2006) comments that inconsistencies in enforcing laws requiring acquisition of land, especially land held through native customary rights, pose challenges for farmers, especially trans-migrant smallholders. Local government initiative to regulate customary provisions of land acquisition for consistency and on reasonable terms can help provide the right environment required for smallholders to acquire and cultivate land sizes that can bring about economies of scale.

Diemer et al. (2004) discuss concerns of market dynamics into environmental concerns necessary to complete the entire production system and the supply chain. Market

dynamics are captured under facilitating the smallholder's accessibility to certification systems, including appropriate mechanisms for incorporating smallholder involvement in certification, and sufficient demand for certified product. Providing access to reliable market information for smallholders can also facilitate supply chain functions needed for sales and income generation. Within this context, information regarding price dynamics and any relevant opportunities to participate in value added portions of the supply chain would be particularly important (Chan & Berrientos, 2010).

The broad context of the volatility of global prices in terms of how the market price ultimately translates into individual smallholder incentives would have to be considered. The trend in global prices can be analysed to inform production patterns and supply chain avenues. In response to price fluctuation of global commodity prices that affect oil palm (Ghansah, 2006), IFAD (2010) reports that Bidco Oil Refineries in Uganda has formed alliances with Oil Palm Uganda Limited and the Ugandan government to derive a pricing formula which eliminates the risk of monopolistic buying power by the sole purchasing private sector, thus ensuring fair financial returns to farmers. The price which Uganda smallholder farmers will receive for their FFBs represents about 75 to 80 percent of the world price, compared to about 60 percent paid to farmers in other countries in Africa.

Providing an enabling environment will also comprise fostering social development for smallholders. This is seen as a direct attempt towards poverty reduction for smallholders on the basis that the company or local government involved makes efforts to provide social services and facilities, such as health and education that enhance the quality of life of smallholders (Vermeulen & Goad, 2006). Anriquez and Stamoulis (2007) elaborate that access to health and education services is essential to the well-being of smallholders,

plantation workers, and their families. In the realisation that the regions of oil palm cultivation often have low human development index, World Bank/IFC (2011) reports that Siat group, in Ghana, has built about 650 housing units for its smallholder families. Several schools catering to children up to age 16 have also been provided. The schools provide education up to the secondary level. In Gabon, Siat has also built several hundred housing units for smallholders.

The cultural environment, concerning the gender dynamics prevailing in the production of oil palm needs considerable attention. In Papua New Guinea, Warner and Bauer (2002) report that men are often given the decision making role in families, thus men accumulate household income, which leaves women with little to depend on. In response to this, Mama Lus, an oil palm plantation, developed a scheme that provided women in smallholder households with nets to collect the loose fruits dislodged from oil palm bunches during harvesting. Women were paid separately from their husbands for the loose fruit thereby guaranteeing payment for their labour in loose fruit collection, thus providing them with personal income.

2.7 Conceptual framework

The conceptual framework suggests that the socio-economic effects of BOPP's smallholder project on smallholder oil palm growers begins with an integrative social contract between the objectives of BOPP, the personal and occupational functions of smallholders, and the community at large. BOPP as a firm is driven by profit maximisation for its shareholders, emphasising its political and economic power in the community. It is also driven by occupational and social ethics to the community in which it is established. Smallholders have a stake in BOPP's operations. They enjoy

occupational support in the form of technical knowhow, proper agronomical and farmland practices which they transfer to their private farm lots and also on BOPP's plantations as labourers. Smallholders also benefit from an enabling environment with accessible supply chain and markets for harvest.

The conceptual framework also asserts that the impact of the smallholder oil palm project manifests in two dimensions, namely; on the smallholder and on the firm. The expected effects of the project on the firm include improved labour skills and efficiency, improved farm yield and reduced losses, and higher profits for shareholders. The firm also asserts its acceptance in the community thus affirming its political status in the community. The effects on the smallholder relates to immediate impacts such as being endowed with knowledge on best practices. Readily accessible supply chain and market opportunities, as part of the project may also encourage more yield, thus leading to increases in sales. Socio-economic impacts come in as an ultimate goal of the project. Increased incomes are expected to be realised form increased farm yield. Increased incomes are in turn expected to translate into improved access to education, health and food security for smallholders. The conceptual framework presents a feedback loop to BOPP, indicating that the satisfaction of BOPP's objectives remains in loop which is instigated by set objectives and maintained by satisfied labour and community acceptance of the firm.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the phenomenal issues in the study, which are relevant to the proposed study area. It also elaborates on the study design, target population, sample size and sampling procedure, as well as the methods of survey instruments and data analysis.

3.2 Study Organisation

Benso Oil Palm Plantation (BOPP) was established in 1976 as a limited liability company. It is located in Adum Banso in the Mpohor Wassa East District of the Western Region of Ghana. It covers a total land area of 6,799 hectares including 1,650 hectares for the Smallholder scheme. The company was jointly formed by the Government of Ghana and Unilever Plc to undertake the cultivation of oil palm and processing of the fruits into crude palm oil. BOPP was formally listed on the Ghana Stock Exchange in 2004. The firm has a stated capital of GH¢2 million. It also has about 34.8 million issued shares from its 50 million authorised shares. Unilever Ghana Limited had about 58.45 percent of equities in BOPP. In March 2011 Unilever Ghana Ltd off-loaded its 58.45 percent of BOPP shares to Wilmar International from Singapore who have now taken over the management of the plantation. The BOPP Smallholder project was to settle oil palm

smallholder farmers on BOPP available land concession of 1,650 hectares (ha) involving 438 farmers with each farmer having an average of 4ha plot. Aside fulfilling it's co-operate social responsibility and transferring technical knowhow to these selected farmers, another equally important aim is to reduce poverty among the inhabitants through the provision of sustained income and livelihood. Farmers were selected from neighbouring villages namely Adum Banso and Benso through interviews. Beneficiary farmers were those who were prepared to work under BOPP supervision. The project was funded by the Agence Francaise Development (AFD) of the Government of France through the Agricultural Development Bank (ADB) of Ghana with a repayable loan at 16.25 percent per annum.

3.3 Study design

The study adopted a descriptive design because the study sought to ultimately describe the socio-economic effects of the BOPP Smallholder Oil Palm Farmers Scheme as it pertained at the time of the study. The study also adopted a cross-sectional design based on the relatively short period that the survey covered. The study also aimed to provide a one-point-in-time snapshot of the state of the BOPP Smallholder Oil Palm Farmers Scheme.

3.4 Target population

The study population was made up of all smallholders under the BOPP scheme and the Managers of the scheme. The target population therefore consist of 438 smallholder oil palm farmers and one Scheme Manager. One Scheme Manager was targeted because the study assumed that responses on the scheme will not vary much from one manager to the other.

3.5 Sample size and sampling procedure

The study purposively sampled the Scheme Manager because it is assumed that the manager had data on the official processes and interventions of the scheme. The manager may also have access to secondary data on recorded smallholders' yields and monthly income which may be needed for the study.

Table 3.1 Table for Determining Sample Size from a Given Population

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354

95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note:— *N* is population size,
***S* is sample size.**
Source: - Krejcie and Morgan (1970), Educational and Psychological Measurement, page 30, 607 – 610.

Table 3.1, Krejcie and Morgan (1970) sample size determination table above, was used as the reference for deriving the sample size for the research. The table predicts a sample size of 205 for a population of 440. Therefore 200 farmers out of the 438 were used as the sample size for the study. A list of all smallholders formed the sample frame and a lottery method was used to select the required sample.

3.5 Sources of data

The study employed the use of primary and secondary data. Primary data was sought from farmers of the BOPP Smallholders Oil Palm Farmers Scheme on the contribution of

the scheme to their occupations as farmers. Data on the effects of the scheme on their incomes, access to food security, health, and their children's education, where applicable, was also sought using questionnaires. Secondary data on the yields and income of farmers in the scheme was solicited from the Scheme Manager. The interventions instituted by the scheme and the challenges involved was solicited from the Scheme Manager using interview guide.

3.6 Instruments for data collection

The study employed the use of questionnaires to gather data from smallholder farmers. These questionnaires were made up of open-ended and close-ended questions and divided into four sections. Section A covered the socio-demographic data of smallholders. Section B solicited data on the known interventions of the scheme which are applicable to the smallholder. Section C sought data on the socio-economic effects of the scheme on the smallholder. Lastly, Section D solicited data on the challenges smallholders face in participation in the scheme. An interview guide was used to gather data from the Scheme Manager on the interventions of the scheme, the purpose of those interventions, the success rate of interventions, and the challenges that the company faces in the running of the scheme.

3.7 Pre-testing of Questionnaire

The instrument for data collection was pre-tested at the Twifo Oil Palm Plantation (TOPP) which also has a smallholder scheme for 255 tenant smallholder farmers. The essence of the pre-test was to test the instrument for data collection for consistency, accuracy, and applicability of questionnaire items. Data from the pre-test was also used to determine the reliability of the likert-type scale items of the research instruments.

The reliability of the questionnaire was determined using the likert-type scales. The Cronbach's alpha of these scales was compared to the stipulated alpha at which a set of data responses can be termed as reliable. According to Pallant (2005), a scale is considered reliable when it has a Cronbach's Alpha co-efficient of 0.7 or above.

3.8 Methods of data analysis

Demographic data of smallholders was described using frequencies and percentages. These were cross-tabbed with other socio-economic effects of the scheme and to disaggregate reported socio-economic impacts on the smallholders. Where applicable the chi-square values and p-values were reported to show statistically significant differences in distribution tables. The results from analysis of questionnaires were presented in tables, charts and figures. The analysis of the questionnaires was presented in qualitative discussions and integrated with reports from interview schedules.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results and discussion of the study in relation to the effects of BOPP Smallholder Oil Palm Farmers' Scheme on smallholder Oil Palm Farmers. The results of statistical significance and practical implications of the results are presented and discussed in relation to the specific objectives. The study targeted 200 farmers of the BOPP smallholder scheme, but 166 completed questionnaires were retrieved from the

field work. This represented a response rate of 83 percent. The first section of the analysis dwelt on the demographic characteristics of respondents, while the subsequent sections focused on the specific objectives of the study.

4.2 Demographic characteristics of respondents

The study sought to provide background information of respondents by examining their sex distribution, as well as their educational, occupational, and residential characteristics. These variables were studied in order to provide a context, as regards the characteristics of respondents, within which the study was conducted. The demographic variables were also studied in order to provide a basis for differentiating between responses, since aggregated responses may exclude some pertinent isolated concerns.

The results indicated that more male smallholders were captured in the survey. It also revealed that the majority of smallholders had attained only basic education and the highest educational attainment for all smallholders was secondary level education. The results indicated low level of education for both male and female smallholders, which confirm assertions that generally the educational level of farmers is low. For example, Ghansah (2006) asserts that the majority of farmers in Ghana have never attended formal school and most of those who have been to formal schools only completed at the basic level.

Table 4.1: Sex and educational background of respondents

	Sex		
Educational level	Male	Female	Total
No formal education	0(0.0)	22(32.4)	22(13.3)

Basic	78(79.6)	36(52.9)	114(68.7)
Secondary	20(26.9)	10(14.7)	30(18.0)
Total	98(100.0)	68(100.0)	166(100.0)

Percentages are in parenthesis
Source: Field survey, 2012

The disaggregated responses indicated that a greater percentage of males had attained basic and secondary education than their female counterparts. The study was therefore conducted in the context of a low educated population. Furthermore, the general responses on the effects of BOPP Smallholder Oil Palm Farmers' Scheme on smallholder Oil Palm Farmers are analysed in the context of a sub-population made up of more educated males.

Table 4.2: Household and farm characteristics of respondents

						Skewness	
Characteristics	Min	Max	Mean	Median	Mode	Stat	Error
Household size	5	13	7.48	8.00	8.00	0.926	0.188
Tenure with BOPP scheme	14	17	15.25	15.50	15.00	-0.665	0.188
Farm size	3.75	4.00	3.98	4.00	4.00	-3.243	0.194

Source: Field survey, 2012

The effects of smallholder scheme on farmers are presumed to have some relations to household size of famers. For example, Ismail et al. (2003) asserts the impact of the income factor can be differentiated based on household size and composition.

The results from Table 4.2 showed that the household size for the sampled smallholders ranged from 5 to 13 people per household, with an average household size of 8 people. According to the Ghana Statistical Service (2000), the average household size of the Mpohor Wassa East District where BOPP is located is 5.1. This indicated that the average household size for small holders was much larger than the average household size for the district. Keane (1990) also comments that larger households require more resources, which suggests that on the average smallholders would require more economic resources to maintain their households. The study also showed that the minimum tenure any smallholder had been part of the BOPP scheme was 14 years and the longest was 17 years. The average tenure with BOPP smallholder scheme was 15 years for the sampled smallholders.

The Scheme Manager indicated in an interview that the smallholder scheme had been operational for 17 years. This confirmed assertions on the number of years smallholders had been part of the scheme and also validated the average number of years respondents had been participants of the smallholding scheme. The effects of the scheme was therefore examined for a population of farmers who had worked for an average of 15 years on their smallholdings.

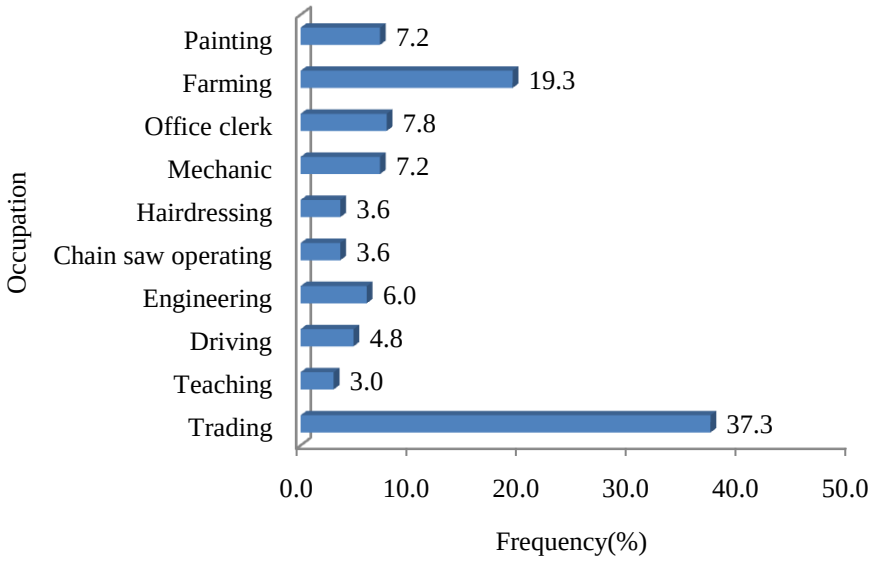
According to World Bank/IFC (2011), oil palm takes about 42 months or three and a half years for first harvest after cultivation. It presupposes that the small holder farmers have harvested oil palm for about eleven and half years on their smallholdings. Moreover, oil palm bears fruit in response to the rainfall pattern and hence there are two peak harvesting

periods in this region. Thus, smallholders have had average of 23 harvests. The implication for the study is that the socio-economic effects of 23 harvests on the smallholders are being examined.

The farm size was also assumed to have some important significance to yield, income, and the effects on the socio-economic lives of smallholders. From the analysis, it is shown that the average farm size was four hectares (4ha) per smallholder. This confirmed the Ghansah's (2006) report and statistics from the BOPP annual reports that each smallholder is allocated an average of four hectares of plot for cultivation. Moreover, each hectare can yield about 12 tonnes/ha/year, thus, each smallholder has an average of 48 tonnes/year/farmer. The subsequent analysis of the socio-economic effects of smallholdings is therefore conducted in the context of farmers with an average of 48 tonnes/year of oil palm fruits.

Teoch (2010) maintains that smallholders may also be independent growers and may also have other occupations. This may account for some of the changes in their socio-economic status. Thus, the study examined the occupational background of respondents to identify the occupations that may have contributed to some socio-economic effects on the lives of smallholders. An initial examination revealed that all the smallholders responded to have other occupations. This indicated that the socio-economic impacts of smallholdings would only be known when the effects on their other occupations are isolated from the total impact of their occupations. There is the likelihood that the total socio-economic impact of other occupations and smallholding on the smallholder may be greater than the isolated effect of only smallholdings. The bar graph shows that smallholders were often traders (37.3%) or famers (19.3%). Others also had different

occupations, but the study does not assume that the same contributory effects of these occupations to the impacts of smallholdings on the socio-economic status of respondents.



n = 166

Figure 4.1: Other occupations of respondents

Source: Field survey, 2012

In further analysis, it was revealed that a total of 150 as compared to 16 respondents indicated that they personally owned their smallholdings. The others indicated that they co-owned their smallholdings with other people. The study also showed that 5.4 percent of the sampled smallholders were employees of the BOPP Limited while 94.6 percent were either self-employed or employed by other firms. Given a chi-square statistic of 0.024 and a p-value of 0.878, the study found that there were no statistically significant association between the employment status of smallholders and their ownership of their smallholdings.

Table 4.3: Employment and farm ownership status

	Ownership status		
Employment status	Personally	Co-owned	Total

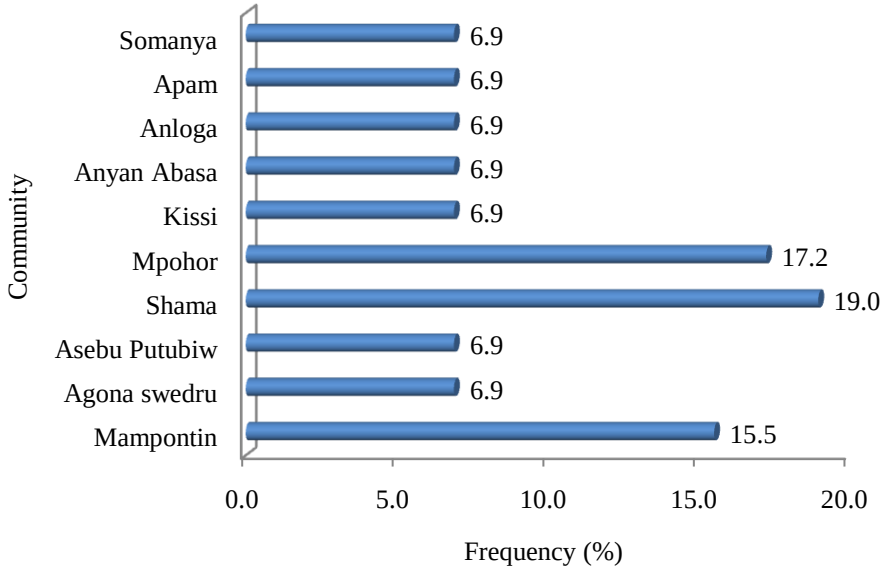
	owned		
Employed with BOPP	8(5.3)	1(6.2)	9(5.4)
Not employed with BOPP	142(94.7)	15(93.8)	157(94.6)
Total	150(100.0)	16(100.0)	166(100.0)

Chi-square = 0.024; df = 1; p-value = 0.878
Source: Field survey, 2012

The Scheme Manager of BOPP smallholders' scheme confirmed these results, indicating that the percentage of smallholders that are employed by BOPP Limited is about 3 percent. Thus, ones ownership of smallholding was not related to whether the individual was employed with BOPP or not.

In further examination, the study indicated that 65.1 percent of the sampled respondents were natives of their respective communities while 34.9 percent were migrants. The results showed much diversity in the community of origin for migrant farmers, as shown in Figure 4.2. About 10 cumminities were identified as the origins of migrant farmers, but those from Shama (19%), Mpohor (17.2%), and Mampontin (15.5%), together formed the majority.

The implication for the study is that the socio-economic impacts of the BOPP smallholder scheme was examined for a population from different communities, thus some specific characteristics of communities of origin may be associated with differences in the socio-economic impacts of the BOPP smallholder scheme.



n = 58

Figure 4.2: Community of origin of migrant farmers

Source: Field survey, 2012

4.2 Effect of the scheme on the income status of smallholders

The effects of the smallholdings according to Segers and De-Mann (2006) are channelled through the yield of crops. Importantly, higher yields are associated with higher earnings. Secondary data on the monthly tonnes of FFB harvested from smallholders, from 1998 to 2012, was subjected to analysis and the details are presented in Appendix 7.3. The results indicated that crop distributions for all the years, except 2008, were not normally distributed. Therefore, the medians were the representative averages for all the years studied, but the mean was adopted as the representative average for the 2008 crop.

The trend in tonnes of fruits showed a steady increase in the average tonnes of fresh fruit bunches (FFB) on smallholdings from 1998 (200.83 tonnes) to 2003 (1,785.51 tonnes), then an increase again in average crop in 2007 (1,527.50 tonnes). The average crop dropped from 1,527.50 tonnes in 2007 to 994.41 tonnes in 2010. From 2008, there was a steady decrease in average harvest from 1,456.10 tonnes to 994.41 tonnes in 2010. However, a monthly average crop of 1,250 tonnes was recorded for the first quarter of 2012. The results thus showed many fluctuations in the crop from smallholdings. The implication for the study is that the socio-economic impacts of smallholding may vary from year to year, depending on the fluctuations in crop harvested and associated incomes.

In relation to this the income from smallholdings was analysed in connection with the average tonnes of FFB for smallholders. Secondary data on the net income of smallholders from 2002 to the first quarter of 2012 was obtained by the study and analysed in conjunction with the crop from 2001 to the first quarter of 2012. The results, as indicated in appendix 7.3, showed that farmers' net income from smallholdings for the year-end 2002 was GH¢437,000. This was obtained from an average monthly crop of 1,499.13 tonnes. Given that there were 438 smallholders, a net income of GH¢997.72 per smallholder was calculated for the year 2002. The trends in net incomes and crop indicated that the incomes have no particular pattern. For example, in the year 2003, where the highest average crop (1,787.51 tonnes) was recorded, the net income for all the farmers was GH¢600,000, but a lower crop in 2009 (1,470.00 tonnes) yielded a net income of GH¢1,007,000. This indicated that there were other explanatory variables to the incomes of farmers other than their yield alone.

Findings from the primary data however contradicted the findings from the secondary data. From the primary data, a regression analysis revealed that farmers' yield (R-Square = 0.888) explained up to 88.8 percent of the variations in income of farmers. It also showed that the yield (R = 0.942) had a strong positive correlation with the income of farmers. Thus, it was found that as farmers' yield increases, so does their incomes from smallholdings and reductions in yield are highly associated with reduction in smallholders' incomes from harvest.

Table 4.4: Effects of yield on incomes

Variables	Unstandardised Beta	Std. Error	Standardised Beta	t	p-value
Constant	-34.089	12.019		-2.836	0.006
FFB harvest	1.170	.043	0.942	26.890	0.000

R = 0.942; R-Square = 0.888
Source: Field survey, 2012

This confirmed assertions that farmers' incomes can be linked to their crop yield (Obare, 2003; Koczberski et al., 2001). It therefore presupposed that increasing farmers' yields would directly impact on their incomes and on their socio-economic status. On the other hand, any reduction in the yield of farmers would connote a reduction in income and a fall in their socio-economic status.

Another regression model showed that deductions from the gross income of smallholders explained about 82.1% of the variations in the incomes of smallholders and the effects of deductions (t = 6.425; p-value = 0.00) on the variations in smallholders' net income was statistically significant at an alpha of 0.05. The model also indicated with a correlation co-efficient of 0.906 that deductions were strongly and positively associated with incomes of

farmers. Thus, it was shown that the deductions on farmers' incomes increased as their gross incomes also increased.

Table 4.5: Effects of deductions on incomes

Variables	Unstandardised		Standardised	t	p-value
	Beta	Std. Error	Beta		
Constant	323.314	92.970		3.478	0.007
Deductions	1.992	.310	.906	6.425	0.000

R = 0.906; R-Square = 0.821
Source: Field survey, 2012

In order to find out the effects of deductions on the incomes of smallholders, Wilcoxon signed rank test was employed. This test was used because an initial test of normality revealed that the gross income (skewness = 1.187) and net income (skewness = 0.881) from smallholdings were not normally distributed. Therefore, upon Pallant's (2005) recommendation, a non-parametric analysis was would provide the accurate results. According to the results, the total net income of smallholders ranged from GH¢410,000 to GH¢1,576,000 per annum, while smallholders' total gross income from their holdings ranged from GH¢488,000 to GH¢2,122 per annum. The average difference in the net income and gross income was about GH¢240,000 and this difference (z = -2.803; p-value = 0.005) was statistically significant at an alpha of 0.05. This indicated that deductions made from farmers' gross income significantly reduced their income status.

Table 4.6: Differences in gross and net incomes caused by deductions

	Annual income (000 GH¢)					Skewness	
Category	Min	Max	Mean	Median	Mode	Stat	Error
Net	410.00	1576.00	815.27	601.00	410.00	1.187	0.661
Gross	488.00	2122.00	1013.00	841.00	488.00	0.881	0.661

Mean Rank = 5.50; Sum of Ranks = 55.0; z = -2.803; p-value = 0.005

Source: Field survey, 2012

The implication was that smallholders' incomes were being significantly reduced by the rising deductions from their gross incomes. This may represent a source of reducing the economic status of farmers and may also contribute to some deteriorating effects in their socio-economic status. However, the Scheme Manager reported that these deductions were necessary to support and maintain the scheme for smallholders. The deductions as explained by the Scheme Manager, comprised the repayment of initial set-up loans, field maintenance cost, and other ancillary expenditures and acquisitions that were keen to the scheme.

The differences in farmers' harvest and incomes before and after joining the BOPP smallholder scheme were analysed from two perspectives; first from the perception of the sampled smallholders, and then statistically by using the actual yields and incomes of smallholders. From an initial analysis, smallholders indicated that their incomes from smallholdings form an average of 51 percent of their household income. The disaggregated results showed that income from smallholdings formed a greater percentage of female smallholders (60%) than their male counterparts (50%). This indicated that income from smallholdings represented an important source of household income for smallholders. Thus, the changes in income from smallholdings could significantly cause changes in the economic and welfare conditions of the households of smallholders.

Table 4.7: Percentage contribution to household income from smallholding earnings

	Contribution (%)					Skewness	
Sex	Min	Max	Mean	Median	Mode	Stat	Error
Male	35	70	52.56	50.00	50.00	0.568	0.254

Female	50	70	60.00	60.00	60.00	0.000	0.314
Total	35	70	55.47	51.00	50.00	0.093	0.199

Mann-Whitney U = 1226.500; z = -5.769; p-value = 0.000
Source: Field survey, 2012

The distribution of the percentage contribution of smallholding earnings to household income (skewness = 0.093) was not normally distributed. A non-parametric tool, Mann-Whitney U test, was therefore used to test for the statistical differences between the contribution smallholder scheme incomes makes to total household income for male and female respondents. A z-stat of -5.769 and a p-value of 0.000 indicated that there were statistically significant differences in the contribution that smallholdings make to the incomes of male and female smallholders. The results therefore confirmed that female smallholders relied more on income from smallholdings than their male counterparts.

A multiple response cross-tabulation was used to examine farmers' perception about the status of their incomes before and after joining the smallholders' scheme. The majority (83.7%) of the sampled respondents strongly agreed that the percentage contributions of income from smallholdings to total household income were representative of a significant increment in their incomes. The assertion was that farmers were of the view that, as compared to their farm incomes before they joined the BOPP smallholder scheme, their incomes had increased significantly. The results thus confirms other studies (Keane, 1990; Ravillion et al., 2007) that found increment in the income status of smallholders, using their prior incomes before their membership to the schemes as a base for comparison.

About two percent (2%) of smallholders disagreed that their incomes status was better than non-members of the smallholder scheme. With the exception of this group of

smallholders, the rest agreed on some level that they were experiencing better income status than their counterparts who were not participants of the smallholders' scheme. The results showed that farmers had a high level of confidence in the programme and also showed that they had positive perceptions about the scheme. Smallholders believed that the scheme was actually helping them improve their income status.

Table 4.8: Assessment of income status by respondents

Response	Increased earnings after joining scheme	Better income status than non-participants of the scheme
Strongly agree	139(83.7)	135(81.3)
Agree	27(16.3)	27(16.3)
Disagree	0(0.0)	2(2.4)
Total	166(100.0)	166(100.0)

Percentages are in parenthesis
Source: Field survey, 2012

The statistical impacts of the smallholders' scheme on the income status of respondents were also analysed using Wilcoxon signed ranks because the distributions for the variables, as shown in Table 4.8, were not normally distributed. The skewness statistics also indicated that the medians are more representative averages of the distribution. The results therefore suggested that before joining the scheme, some of the sampled oil palm farmers were harvesting an average of 150 bunches per harvest from their personal farms, compared to an average of 250 bunches per harvest from their smallholder farms of the

same size. This showed an increment of about 100 bunches per harvest. However, the test for statistical significance, with a z-stat of -1.087 and a p-value of 0.277 indicated that the difference in harvest of FFBs before and after farmers joined the scheme was statistically significant at an alpha of 0.05. The findings comfirms studies (Ogden & Waston, 1999; Rahman et al., 2008) that assert that smallholdings lead to significant increment in harvest, due to applied technology and modern knowledge on cultivation and nurturing of crops.

Table 4.9: Differences in crop and income before and after the scheme

Conditions	Mean	Median	Mode	Skewness	Z (p-value)
Harvest (FFB)					
Before scheme	221.75	150.00	150.00	0.769	-1.087
After scheme	241.81	250.00	300.00	-0.133	(0.277)
Income					
Before scheme	225.26	150.00	600.00	0.976	-1.552
After scheme	276.78	300.00	300.00	-0.707	(0.121)

Source: Field survey, 2012

The results also showed that farmers were generally earning an income of GH¢150 per harvest, but this increased to about GH¢300 after they joined the scheme. This showed that, farmers' average incomes per harvest increased by 100 percent after they joined the scheme, thus, confirming the general assertion by farmers that their income status has improved since they joined the scheme. However, the tests for statistical significance revealed that this increment in farmers' incomes (z-stat = -1.552; p-value = 0.121) was not statistically significant at an alpha of 0.05.

4.2 Contributions of the scheme to health, education and household food security

The effects of the smallholder scheme on the welfare characteristics of smallholders were examined based on the primary data from respondents. Thus, the analysis is embedded with the perceptual influences of the smallholders' scheme on the social welfare of smallholders and in some cases, their households. The study examined the social infrastructure available to smallholders and the extent to which their participation in the smallholder scheme has helped farmers access the better social services including health and education.

Respondents identified two types of health facilities available in their communities. The first was a community health centre, indicated by 16.3 percent of respondents and then a clinic, indicated by 83.7 percent of respondents. The available health facilities available to smallholders were therefore either a clinic or a community health centre. The implication of the findings to the study is that the limited options of health facilities available may restrict the choices of respondents and may inherently contribute to restrictions on significant change in choice of health facility before and after joining the scheme.

It was also shown that the majority of smallholders had never encountered any health complications that are associated with oil palm farming. However, the remaining 2.4 percent indicated that they had experienced injuries which were directly related to their occupation as oil palm farmers. Also all those who have ever experienced any injuries related to oil palm farming got the necessary treatment at the clinic. Similarly, the

majority of small holders who had not encountered any oil palm related injuries or ailments also solicited medical services from clinics in the community when they needed medical attention. This indicated a high patronage for clinical service, which were safer than other methods, such as self medication.

Table 4.10: Health facility preferences of respondents

	Oil palm related ailments		
Facility	Yes	No	Total
Clinic	4(100.0)	139(85.8)	143(86.1)
Community health centre	0(0.0)	23(14.2)	23(13.9)
Total	4(100.0)	162(100.0)	166(100.0)

Source: Field survey, 2012

In further examination, it was revealed that the majority (97.6%) of the sampled smallholders indicated that they have the economic access to any medical consultation they desire. Within this group of respondents, 54.9 percent expressed that their earnings from their smallholdings had very high contribution to their access to medical consultation, and an additional 37.7 percent expressed that their earnings from their smallholdings contributed highly to their access to medical consultation.

On the other hand, all the respondents who indicated that they were limited in their economic access to medical services also expressed that their earnings from smallholdings made moderate contributions to their access to medical service. These results therefore indicated that higher access to medical service can be associated with higher contributions of smallholding earnings to access to medical service. The effect derived between the two smallholding earnings and access to medical service was that

smallholding earnings contribute to higher access to medical service. Thus, smallholders with higher earnings may have higher access to medical consultation than those with lower earnings.

Table 4.11: Differences in access to health service

						Skewness	
Access	Min	Max	Mean	Median	Mode	Stat	Error
Full	35	70	55.94	52.00	50.00	0.210	0.202
Limited	35	40	38.75	40.00	40.00	-0.200	1.014
Total	35	70	55.47	51.00	50.00	0.093	0.199

Mann-Whitney U = 12.000; z = -3.465; p-value = 0.001
Source: Field survey, 2012

Further analysis revealed that income of smallholdings formed a greater percentage of household incomes for respondents who expressed that they had full access to any medical service they desired. Using the Mann-Whitney U test, it was shown that for this group of respondents, income from smallholdings formed as average of 52 percent of their household income, but 40 percent for those respondents who indicated that they were limited in their access to medical services. This difference was found to be statistically significant with a z-stat of -3.465 and p-value of 0.001.

It was inferred from the results that farmer earnings significantly explained the variations in respondents' access to medical service. Lesser earnings may therefore be associated with lower levels of access to medical care. Respondents were also asked to rate the level to which they believed their participation in the smallholders' scheme had improved their access to medical service. According to the results, 53.6 percent of respondents were of the view that their participation in the smallholder scheme had caused a very high

improvement in their access to medical services, while 36.7 percent agreed that their participation had caused a high improvement in geographical access to health service.

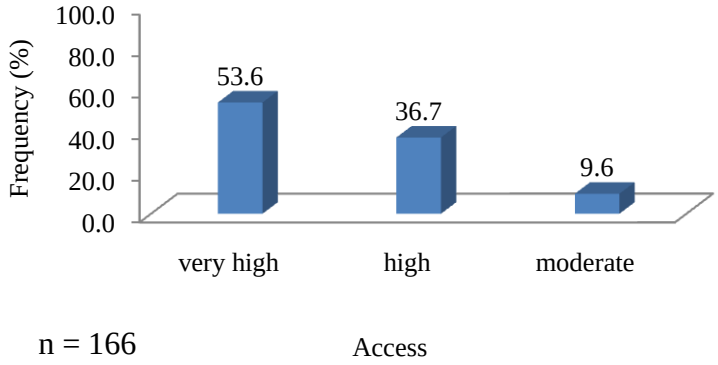


Figure 4.3: Effects of smallholder scheme on access to health service

Source: Field survey, 2012

In other smallholder schemes, for example as by the Siat Group, health centres were built for host communities and host communities could use constructed feeder roads from communities to other health centres. This encouraged a high access to health service. In the case of the BOPP scheme, the focus for improving access to health service seemed to be on increasing the economic access which is also important for geographical access to health facilities.

The identified educational facilities in the host community were unanimously indicated as primary schools with Junior High School extensions. This indicated that children of school going age could have access to basic and junior secondary education within their communities of residence. This was within the general framework of the Ghanaian society where most rural agrarian communities are only endowed with public primary schools and sometimes with some extensions for junior secondary facilities. Respondents unanimously also expressed that they had children of school going age but only 10.8 percent of the sampled smallholders responded that they had children who were not

enrolled in school. This indicated a high enrolment rate for the children of smallholders, who were of school going age. Further interviewing revealed that the only reason given for children's abstinence from school was the children's own recalcitrance and reluctance to enrol. Thus, the reason for non-enrolment had no relations with the oil-palm labour, production, or earnings.

In other examination of responses, three major means by which smallholdings had improved the access to education within the households of respondents were identified. The multiple response set showed that income from smallholdings had helped improve the access to education by providing money for tuition fees and for school feeding of the children of smallholders. As shown in Table 4.12, 23.3 percent of the responses indicated that earnings from smallholdings also improved access to education for the children of smallholders through the provision of money for other miscellaneous expenditure on education of children. These expenditures comprised PTA dues, expenditure on stationery, field trips, repairs and replacement of teaching and learning materials and school clothing.

Table 4.12: Contribution of smallholder scheme to access to education

Contribution	Frequency	Percent
Money for tuition fees	166	38.3
Money for school feeding	166	38.3
Money for other school expenses	101	23.3
Total	433	100.0

Multiple responses; n = 166
Source: Field survey, 2012

In other smallholder schemes, for example Siat group in Gabon, schools catering to children up to age 16 were provided with priority for smallholders' wards within the host community, thus improving access to education within those communities (World Bank/IFC, 2011). This represented a direct intervention of supplying the communities with schools. In the case of BOPP scheme, the focus is directed towards improving the economic capacity of guardians who can then enrol their wards in school.

The conditions of food security in the household of smallholders were examined based on Coates et al.'s (2005) Food Insecurity Access Index Scale. The examination covered a section of the FIAIS, which bordered on access to three square meals, the ability to eat the choice and amounts of foods desired, and the economic ability to acquire foods of choice. The examination showed that a slight improvement in smallholders' access to three square meals a day before they joined the scheme (81.9%) and after they joined the scheme (100%).

The major differences found in food security status for the two time periods, that is before and after respondents joined the smallholder scheme, were in the quantity of food that their households could access and their financial capacity to purchase the foods they desired. About 92 percent of respondents expressed that before they joined the scheme, some members of their household often had to eat lesser than they desired. Similarly, 91.6 percent of respondents also indicated that before they joined the smallholder scheme, some of their household members had to eat undesired meals because it was financially impossible to purchase those foods.

Table 4.13: Assessment of food security of respondents

Preamble: Me or my household members:	Time of joining the scheme			
	Before		After	
	Yes	No	Yes	No
Could have three square meals a day	136 (81.9)	30 (18.1)	166 (100.0)	0 (0.0)
Sometimes had to go a whole day without food	0 (0.0)	166 (100.0)	0 (0.0)	166 (100.0)
Often to eat lesser than they really wanted to	152 (91.6)	14 (8.4)	0 (0.00)	166 (100.0)
Had to substitute some foods because it wasn't financially possible to purchase those foods	152 (91.6)	14 (8.4)	0 (0.00)	166 (100.0)

Percentages are in parenthesis (Source: Field survey, 2012)

After joining the scheme however, all smallholders indicated that none of their household members had to eat lesser than they desired and also, it was always financially possible to purchase the foods they desired. The results were an indication of improvement in the food security status of the fraction of respondents who were having food insecurity problems. Again the strategy of the BOPP scheme is seen to an approach of improving the income factor, so as to make access to foods in the desired quantities financially possible. Given the responses, given it can be inferred that the strategy is effectively moving smallholders from some levels of food insecurity to completely food secure status.

This was confirmed by the percentage of farmers who indicated that their membership to the scheme had helped improve their household food security, as well as the percentage

that indicated agreed that their food security was better than the period before they became members of the scheme. The results are shown in Figure 4.4.

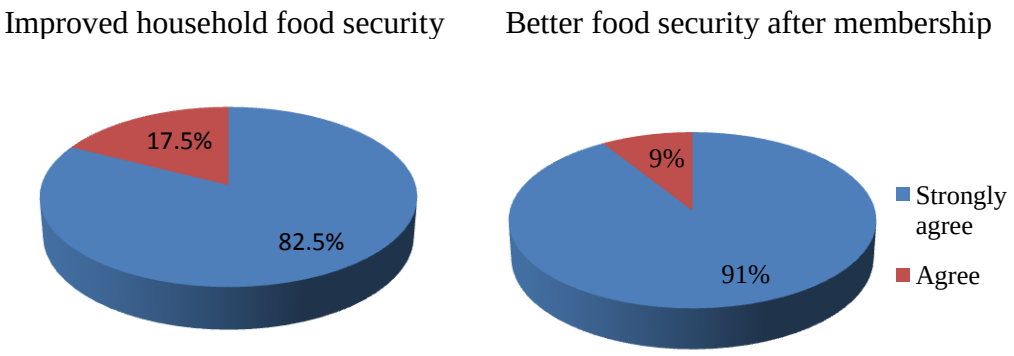


Figure 4.4: Effects of the scheme on food security of respondents

Source: Field survey, 2012

From the results it can be seen that all respondents agreed on some level that their households were more food secured and that they had better food security after they joined the scheme. This further confirms that from smallholders' perspective, the scheme was helping them become more food secured.

4.3 Challenges faced by the smallholder oil palm farmers of the BOPP scheme

Several studies (Kartohardjo & Supriono, 2000; Vermeulen & Goad, 2006) have found varied challenges to smallholder schemes. In different socio-economic environments, these challenges have taken different forms and affected the effectiveness of smallholding schemes in varied ways. The study examined the challenges faced be smallholder oil-palm farmers of the BOPP scheme in order to provide more insight into the challenges peculiar to the socio-economic background of the host community.

The multiple responses show that low investment capital, poor access to credit from lending facilities, and low price of oil palm on external markets were identified as the

most challenging factors for smallholders. The major effects of these challenges were poor motivation to continue the scheme and lower incomes than expected. The results therefore indicated that the challenges of smallholders were pervading from investment phase to marketing and sales. There was also an internal challenge that related to the pricing and purchasing terms inherent in the scheme. An effort to resolve these challenges should therefore be a comprehensive strategy, tackling both internal and external challenges to the scheme.

Ghee and Dorral (1992) similarly found that securing capital to meet upfront expenses may also pose challenges to smallholders. The results also confirmed Diemer et al.'s (2004) assertion that pricing policies, market opportunities and technical aspects of production are also major areas of difficulty for many smallholders.

Table 4.15: Challenges of smallholder schemes

	Effects		
Challenges	Poor motivation	Low income than expected	Total
Low investment capital	64(23.2)	84(23.7)	148(23.5)

Poor access to credit from lending facilities	64(23.2)	84(23.7)	148(23.5)
Low price of oil palm on external markets	64(23.2)	84(23.7)	148(23.5)
Unfavourable pricing terms and purchasing terms of scheme mangers	50(18.1)	51(14.4)	101(16.0)
Inadequate technical assistance	34(12.3)	51(14.4)	85(13.5)
Total	276(100.0)	354(100.0)	630(100.0)

Percentages are in parenthesis; Multiple response, n = 166
Source: Field survey, 2012

All the smallholders sampled consented that they had multiple problems with understanding some of the farm practices advocated by the scheme. The results in Table 4.16 showed that 42.4 percent of the responses confirmed that smallholders had problems understanding the fertiliser application procedures advocated by the technical team. The next most challenging practice area for smallholders was that of harvesting and evacuation (36.3%). This confirms studies that indicate that there are often challenges in the technicalities of farm practices when farmers are introduced to modern methods. In some cases, farmers tend to adhere to the methods they know best and feel inclined towards. Empirical studies show that it is after prolonged training that farmers begin to accept and practice the ways of tilling the land.

Table 4.16: Technical difficulties experienced by smallholders

Difficulties	Frequency	Percentage
Fertiliser application	133	42.4
Pruning	18	5.7
Circle weeding	49	15.6

Harvesting and evacuation	114	36.3
Total	314	100.0

Multiple response; n = 166
Source: Field survey, 2012

The scheme manager also had some concerns on the challenges of the scheme. It was indicated in interview that the common field challenges confronting the scheme had to do with poor field maintenance. This could be an indication that farmers did not understand the practices and therefore were not adopting new and improved methods which they were being introduced to. The manager also commented that some farmers do not pay regular visits to their farms, practice poor cultural practices and harvested at irregular intervals.

4.4 Roles of stakeholders in addressing the challenges of BOPP smallholder scheme

In order to address the challenges identified, the Scheme Manager mentioned in interview that BOPP offers technical assistance in the form of advice and assistance on good agronomic practices, fertiliser application, farm maintenance, and harvesting procedures. It was also indicated that assistance to farmers are offered during field advisory meetings, community meetings, and on-site guidance, which are managed by one manager and one supervisor. In further interviewing the manager rated their effort as effective in dealing with the challenges and controlling for further worsening of the problems identified. The results therefore assert that the role of BOPP Limited in addressing the challenges of smallholders has been to provide off-site and on-site technical assistance to farmers. However, other strategies apart from the personal appeals through meetings have been resorted to. The Manager identified them to include employment of contract workers to clean poorly maintained farms and suspension of monthly income to force or push

farmers to clean their farms. These were seen as also being effective, but were more costly and attracted agitation from smallholders.

Farmers also had some suggestions on the role that BOPP can play to resolve the perceived challenges of the scheme. The commonest asserted role (19.8%) suggested by smallholders was the provision of loan facilities for farmers. This was followed by the suggestion that farmers should be allowed to supervise the fertiliser application. This was perhaps as a response to the low understanding of smallholders with regards to fertiliser application. The issue of prices of FFBs was also mentioned. According to 13.3 percent of the responses, BOPP should involve farmers in fixing the prices of FFBs, while 15.4 percent of responses added that the scheme should offer a higher price for FFBs.

Table 4.17: Role suggestions for BOPP by respondents

Suggestions	Frequency	Percent
BOPP should involve farmers in fixing prices	43	13.3
Farmers should supervise fertiliser application	62	19.1
Offer high prices of FFB	50	15.4
Assist in loan facilities	64	19.8
Provide free medical care	13	4.0

Offer fertiliser subsidy	25	7.7
Provide farm tools	18	5.6
Weigh all the FFB before loading unto the truck	24	7.4
Provide better feeder roads	12	3.7
Intensify technical advice	13	4.0
Total	324	100.0

Multiple response; n = 166
Source: Field survey, 2012

Since the focus of the scheme seemed to be on influencing the socio-economic status of farmers through improvement in their income status, it would be a good strategy to find means of increasing the percentage shares of farmers in the sales of FFBs. The responses also connoted some level of dissatisfaction of farmers with the current pricing system and the prices of FFBs. According to World Bank/IFC (2011), the prices of primary commodities, such as oil palm, have been an issue of contention between farmers and buyers. However, Agropalma and GOPDC have developed a pricing system that offers smallholders higher prices for their FFBs.

Smallholders also identified some roles that the government and farmers' co-operatives, as stakeholders, can play in resolving the challenges which are confronted on their smallholdings and also to improve their socio-economic status. Most (81.9%) smallholders were of the view that the government's role would be more helpful in offering them more subsidies on fertiliser. On the other hand, the majority (69.3%) of farmers were of the view that farmers' co-operatives/associations had a major role to play in negotiating with BOPP for better prices for FFBs with a subsidiary role of helping them to access loans from banks.

Kodamaya (2011) indicates that government policies that influence smallholder development range from requirements on plantations for smallholder allocations, to price-setting formulas, to the administration of cooperatives. This may also include subsidies on farm implements as a form of indirect accruals for farmers.

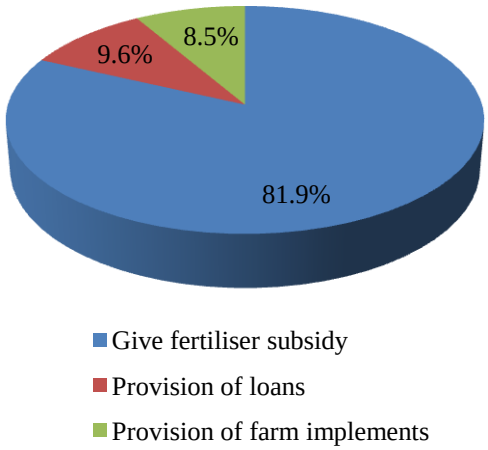


Figure 4.5: Roles of government in smallholder schemes

Source: Field survey, 2012

DTE (2005) and World Bank/IFC (2011) also assert that in top oil palm producing countries, such as Indonesia, cross-sectoral government subsidised credit schemes for individuals and co-operatives have been instituted to provide loans for farmers. The roles asserted by farmers are therefore not different from those being practiced by other stakeholders in smallholder schemes in other countries.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of major findings of the study. It also presents the conclusions drawn from the study as well as recommendations derived from the conclusions of the study.

5.2 Summary

The study set out to examine the Effects of BOPP Smallholder Oil Palm Farmers' Scheme on poverty reduction among participants. A descriptive design was adopted to study 200 smallholder oil palm farmers. The scheme manager was also involved in the study. Questionnaires were used to collect quantitative data from smallholder farmers, while interview guides were employed to solicit qualitative data from the scheme manager. Statistical tools used to analyse the data collected included descriptive tools such as means, medians, frequencies, and percentages. Mann-Whitney U test was also used to test for significant differences between some variables. Data from the questionnaires were transcribed and presented in discussions in support of the quantitative analysis.

The study assessed the effect of the scheme on the income status of smallholders and the following were found:

1. There was a steady increase in the average yield of FFBs from smallholdings and this was associated with steady but fluctuating increases in average income from smallholdings. However, the data trends in yields and associated incomes from 1998 to 2008 did not show that high annual yields could be associated with high incomes. Nevertheless, the data collected from the sampled smallholders showed that higher yield can be associated with higher incomes.
2. Deductions from gross incomes of smallholders significantly reduced the annual incomes of oil palm farmers, from an average of GH¢841,000 to GH¢601,000 per farmer.
3. The majority (83.7%) of farmers responded that their incomes from oil palm had increased significantly after they joined the smallholder schemes. Similarly, the majority (81.3%) of smallholders responded to have higher incomes than non-

participants of the scheme. In statistical computations, the difference in farmers' incomes from oil palm before and after joining the scheme was not statistically significant.

Secondly, the study examined the contribution of the scheme to health, education and food security of smallholders and the major findings were:

1. Smallholdings earnings significantly explained the variations in respondents' access to medical service, such that farmers with higher incomes from smallholdings had higher access to medical services.
2. Farmers were generally convinced that their participation in the scheme had improved their access to health services.
3. Smallholders were generally of the view that their participation in the programmes has improved their households' access to education through proving money for tuition, school feeding and other school expenses.
4. The conditions of household food security had improved for most farmers with respect to the period prior to their engagement in the scheme.

The major findings regarding the challenges faced by the smallholder oil palm farmers of the BOPP scheme were:

1. Difficulties in understanding technical details of farming practices
2. Low investment capital
3. Poor access to credit from lending facilities
4. Low price of oil palm on external markets
5. Unfavourable pricing trends from the scheme
6. Inadequate technical assistance

In examining the role of stakeholders in smallholder schemes, it was found that:

1. BOPP had roles to play including giving high prices for the FFB of farmers, assisting in guaranteeing loans for farmers, and subsidising farming implements for smallholders.
2. The roles of the government identified by smallholders included fertiliser subsidies, loans, and provision of farm implements. The roles of cooperatives identified were in negotiating with BOPP for better prices and helping farmers to secure loans from banks.

5.3 Conclusions

Based on the major findings the study concluded that incomes of farmers were being improved through their participation in the scheme although it may not be statistically significant. These incomes had translated into higher access to health care, education, and food security for the households of smallholders. However, several challenges confronted the scheme and these included low understanding of technical details, low pricing of oil palm leading to reduced incomes. The roles of other stakeholders including BOPP, the government, and cooperatives were along the lines of supporting smallholders through loan facilities and subsidies, as well as helping improve on the prices offered for FFBs.

5.4 Recommendations

The recommendations made on the basis of the major findings and conclusions are as follows:

1. BOPP should review its deductions as it significantly reduced the profit margins of farmers and could have implications for their well-being.

2. BOPP should offer prices base on the trends in the world market price of Crude palm oil for farmers in order to increase their chances of increasing their earnings.
3. BOPP should intensify technical training or adopt approaches that make it easier for farmers to understand the technical aspects of farming practices regarding oil palm.
4. The government could offer more subsidies for farming implements and fertiliser for farmers and could also set a price ceiling on oil palm fruits.

5.5 Suggestions for further studies

Further studies could be conducted in identifying and addressing the challenges of the smallholder scheme. The study could also be broadened to other smallholder schemes for other cash crops in order to reduce rural poverty.

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7.0 APPENDICES

7.1 QUESTIONNAIRES FOR SMALLHOLDERS

The interview schedule examines the socio-economic impacts of Smallholder Oil Palm Farmers' Scheme on smallholder Oil Palm Farmers. Your response will contribute greatly

towards meeting this objective and shall be used only for the purpose of this study. The confidentiality of your responses is assured.

Section A: Demographic characteristics of smallholders

1. Sex
2. Level of education
    a. None [ ]
    b. Basic [ ]
    c. Secondary [ ]
    d. Tertiary [ ]
3. Household size
4. Indicate whether you are a native or a migrant farmer?
5. If you are a migrant farmer, where did you migrate from?
6. How many years have you lived in the community?
7. How did you become a participant of the scheme?
    a. By application [ ]
    b. By nomination [ ]
    c. Other specify_____
8. How long have you been a smallholder under the TOPP smallholder scheme?
9. What is the size of your smallholding?
10. What is the state of ownership of the smallholdings?
    a. Personally owned
    b. Co-owned with TOPP managers
11. Do you have any other occupation apart from farming?
    a. Yes [ ]
    b. No [ ]
12. If yes what other occupations do you have?
13. Are you employed as a worker on the BOPP plantation?
    a. Yes [ ]
    b. No [ ]
14. Do you understand the criteria used to selected smallholders?
    a. Yes [ ]
    b. No [ ]
15. If yes, what criteria were used?_____

Section B: Effect of the scheme on the income status of smallholders;

16. Did you have your own personal farm before becoming a member of TOPP smallholder scheme?
    a. Yes [ ]
    b. No [ ]
17. If yes, what was the size of the farm?
18. How many times did you harvest within the year from your personal farm?
19. How many fresh fruit bunches did you harvest from your farm?
20. On the average how much income did you earn from that farm?
21. What is the current state of the farm?
    a. Still functional separately from my smallholding
    b. Converted it to smallholding under TOPP

c. Not functional

22. Since you joined the TOPP smallholder scheme, how many fresh fruit bunches do you averagely harvest from your smallholding?
23. How many times do you harvest within the year from your holdings?
24. How many fresh fruit bunches do you averagely harvest per harvest season, from your holding?
25. On the average how much income do you get from each harvest from your smallholding?
26. What percentage do you estimate your income from your smallholding to contribute to your household income?
27. To what extent do you agree that your income status has improved since you joined TOPP smallholder scheme?
    a. Undecided [ ]
    b. Strongly agree [ ]
    c. Agree [ ]
    d. Disagree [ ]
    e. Strongly disagree [ ]
28. To what extent would you agree that the income you earn from your smallholding is greater than other oil palm farmers who are not members of the scheme?
    a. Undecided [ ]
    b. Strongly agree [ ]
    c. Agree [ ]
    d. Disagree [ ]
    e. Strongly disagree [ ]

Section C: Contributions of the scheme to household food security, health, education and poverty reduction;

Health

29. Indicate the type of health facilities that are available in this community?
    a. Community health centre [ ]
    b. Clinic/Hospital [ ]
    c. Pharmacy/Drug shops [ ]
    d. Traditional healers [ ]
    e. Other specify_____
30. Have you encountered any health problems associated with oil palm farming or farming practices such as fertilizer/pesticide application on your smallholding?
    a. Yes [ ]
    b. No [ ]
31. If yes, what type of ailment can you identify as related to practices on your smallholding?
32. Where do you regularly seek health consultation in case of any ailment?
    A. hospital/clinic [ ]
    B. Community Health Centers [ ]
    C. traditional healers [ ]
    D. Pharmacy [ ]
    E. others specify_____
33. Why do you employ the selected health service in 12 above? Tick all that apply
    a. Cost efficient [ ]
    b. Safer [ ]

c. More reliable [ ]
d. More convenient [ ]
e. No other option [ ]
f. Others specify_____

34. Do you agree that you can have access to any type of medical consultation you seek?
    a. Yes [ ]
    b. No [ ]
35. If yes, to what extent would you agree that you membership in TOPP smallholder scheme accounts mainly for your access to health services?
36. Rate the contribution of your membership in the smallholder scheme to your access to health facilities and services
    a. Very high [ ]
    b. High [ ]
    c. Moderate [ ]
    d. Low [ ]
    e. Very low [ ]
37. In what way(s) do your membership in the smallholder scheme contribute to access to health services?
    a. Money for medical consultation [ ]
    b. Money for medicine [ ]
    c. Money for preventive care [ ]
    d. Others specify_____
38. To what extent would you agree that your access to health services has improved since you became part of the small holder scheme?

Education

39. What type of educational facilities do you have in this community? tick all that apply
    a. none [ ]
    b. primary school [ ]
    c. secondary school [ ]
    d. tertiary facilities [ ]
40. Do you have children of school going age?
    a. yes [ ]
    b. no [ ]
41. Are any of these children not enrolled in school?
    a. yes [ ]
    b. no [ ]
42. If yes explain why? Tick all that apply
    a. Personal decision not to send children to school [ ]
    b. Inadequate finances [ ]
    c. Recalcitrance of the child [ ]
    d. Poor conditions of schools [ ]
    e. Other specify
43. Do you employ your children as farm labour?
44. If yes, to what extent does it reduce their attendance to school or academic performance?
45. In what way(s) has being a member of the scheme helped in your child's schooling?

a. Money for tuition fees [ ]
b. Money school feeding [ ]
c. Money for other school expenses [ ]
d. Others specify_____

46. To what extent would you agree that your membership in the scheme has helped improve your child's access to education?
47. To what extent would you agree that you children attend better schools than the children of other oil palm farmers who are not members of the small holder schemes?
48. To what extent would you agree that your child can access better educational services now than when you weren't a member of the scheme?

Food security

49. To what extent would you agree that every member of your household had access to three square meals per day before you became a member of the scheme?
    a. Undecided [ ]
    b. Strongly agree [ ]
    c. Agree [ ]
    d. Disagree [ ]
    e. Strongly disagree [ ]

Indicate in the appropriate sections, the conditions of food security before and after you joined the scheme as they apply to your household

Preamble	Before joining the scheme		After joining the scheme	
	Yes	No	Yes	No
50. My family could have three square meals a day				
51. Sometimes some of my family members had to go a whole day without food				
52. Some of my household members had to eat lesser than they really wanted to				
53. My family had to substitute some foods because it wasn't financially possible to purchase those foods				

54. To what extent would you agree that your membership in the scheme has helped improve food security of your household?
    a. Undecided [ ]
    b. Strongly agree [ ]
    c. Agree [ ]
    d. Disagree [ ]
    e. Strongly disagree [ ]
55. To what extent would your household has better access to food than that of other oil palm farmers who are not members of the small holder schemes?
56. To what extent would you agree that your food security has improved now than when you weren't a member of the scheme?
    a. Undecided [ ]

b. Strongly agree [ ]
c. Agree [ ]
d. Disagree [ ]
e. Strongly disagree [ ]

Section D: Challenges faced by the smallholder oil palm farmers of the BOPP scheme

57. Which of the following can you identify as a causing problem for your participation in the smallholder scheme? Tick all that apply
    a. Unfavourable land tenure arrangements [ ]
    b. Land tenure disputes [ ]
    c. Low investment capital [ ]
    d. Poor access to credit from lending facilities [ ]
    e. Low price of oil palm on external markets [ ]
    f. Unfavourable pricing terms and purchasing terms of scheme managers [ ]
    g. Monopoly purchase by mills [ ]
    h. Inadequate technical assistance [ ]
    i. Other specify_____
58. Which of the listed challenges in question 59 above pose the greatest problem?_____
59. In what ways do the identified challenges affect your smallholding?
    a. Poor motivation to continue the scheme [ ]
    b. Low income than expected [ ]
    c. Unfair appropriation of profit by scheme managers [ ]
    d. Lower yield than expected [ ]
    e. Others specify_____
60. What specific challenges have you encountered with community members or other farmers?_____
61. What problems have you encountered with other scheme members?_____
62. Do you problems understanding the application methods advocated by scheme managers?
    a. Yes [ ]
    b. No [ ]
63. If yes, in which areas do you often have problems?
    a. Land preparation [ ]
    b. Fertilizer application [ ]
    c. Planting practices [ ]
    d. Crop management [ ]
    e. Harvesting and storage [ ]
    f. Other specify_____
64. Are there conflicting issues between your traditional methods of farm management and the management practices advocated by the scheme?
    a. Yes [ ]
    b. No [ ]
65. If yes, in what specific areas do you think the traditional methods work better?
    a. Land preparation [ ]
    b. Planting [ ]
    c. Crop management [ ]

d. Harvesting and storage [ ]
e. Other specify_____

66. How does this conflict of practices affect the management of your smallholding?_____

Section E: Roles of stakeholders in addressing the challenges identified

67. What do you think BOPP can do to resolve challenges with the following if any:
    a. Land tenure [ ]
    b. Conflict of ideals on farm practices [ ]
    c. Pricing problems [ ]
    d. Purchasing problems [ ]
    e. Poor understanding of applied techniques [ ]
    f. Inadequate technical assistance [ ]
    g. Other specify_____
68. Do you think the government has any role to play in the BOPP scheme?
    a. Yes [ ]
    b. No [ ]
69. If yes, what roles do you think the government can play in support of the scheme?_____
70. How can the government help resolve some of the challenges you have identified, for example with land tenure, pricing, purchasing, and technical assistance?_____
71. What other entities do you think have stake in BOPP smallholder scheme?
    a. Purchasing mills [ ]
    b. Community members [ ]
    c. Farmers' co-operatives [ ]
    d. Other specify_____
72. How can the identified stakeholders help resolve some identified challenges you experience under the scheme?
    a. Purchasing mills [ ]
    b. Community members [ ]
    c. Farmers' co-operatives [ ]
    d. Other specify_____

THANK YOU FOR YOUR COOPERATION

7.2: INTERVIEW GUIDE FOR SCHEME MANAGER

The interview guide examines the socio-economic impacts of Smallholder Oil Palm Farmers' Scheme on smallholder Oil Palm Farmers. Your response will contribute greatly towards meeting this objective and shall be used only for the purpose of this study. The confidentiality of your responses is assured.

1. How long had the BOPP smallholder scheme been operational?
   _____
   _____What are the objectives of the scheme?
   _____
   _____
   _____
2. How many farmers are currently on the scheme?
   _____
   _____
   _____
   _____
   __
3. What are the criteria for selecting farmers to join the scheme?
   _____
   _____
   _____
   __
4. How many managers are in charge of the scheme?
   _____
   _____
   _____
   __
5. What percentage of scheme members is employed in BOPP?
   _____
   _____
   _____
   __
6. What are common farming practices advocated by the smallholder scheme?
   _____
   _____
   _____
   _____
   __
7. What processes are farmers taken through in order to achieve the scheme's objectives?
   _____
   _____
   _____
   _____
   __
8. Does the scheme provide technical assistance to farmers?

_____
_____
_____
_____
__

9. If yes what type of technical assistance is offered?
_____
_____
_____
_____
__

10. What percentage of farmers has received technical assistance from the scheme?
_____
_____
_____
_____
__

11. What other forms of assistance is offered to farmers and what percentage of farmers has received such assistance?
_____
_____
_____
_____
__

12. What are the common challenges have been identified to confront the scheme?
_____
_____
_____
_____
__

13. What strategies has the scheme adopted to resolve these challenges?
_____
_____
_____
_____
__

14. In your view are these strategies effective enough to address states challenges?
_____
_____
_____
_____

15. If no, what other approaches may help farmers overcome challenges of the scheme?

THANK YOU FOR YOUR COOPERATION

7.3: TRENDS IN CROP (TONNES) AND INCOME OF BOPP SMALLHOLDER SCHEME FROM 1998 TO 2012 (1ST QUARTER)

Year	Min	Max	Mean	Median	Mode	Skewness	Net Income (GH¢000)
1998	116.00	311.00	200.83	206.00	236.00	1.019	Not available
1999	262.00	715.00	433.67	442.00	262.00	0.253	Not available
2000	510.00	1600.00	871.17	725.07	510.08	1.085	Not available
2001	861.13	2071.29	1410.00	1363.00	861.13	0.335	Not available
2002	952.87	2220.27	1499.13	1332.63	952.87	0.563	437.0
2003	1091.33	2898.81	1785.51	1787.83	1091.33	0.601	600.0
2004	859.00	1899.15	1428.90	1203.70	859.00	1.287	484.0
2005	906.00	2067.00	1428.90	14870.0	906.00	0.352	569.0
2006	1013.00	2213.00	1377.30	1341.50	1013.00	1.645	493.0
2007	620.93	2268.56	1527.50	1520.40	620.93	-0.75	601.0
2008	913.97	2152.96	1456.10	1540.50	913.97	0.017	917.0
2009	786.73	1694.90	1470.00	1110.50	786.73	0.971	1007.0
2010	786.73	1694.60	994.41	1101.84	712.00	0.323	995.0
2011	712.00	2046.00	1431.00	1462.60	1000.00	0.352	1576.0
2012	1248.00	2894.00	1821.20	1560.00	1250.00	1.599	410.0

Source: BOPP annual reports