

**THE EFFECT OF PINEAPPLE FARMING ON THE
LIVELIHOOD OF PINEAPPLE FARMERS IN THE GA
DISTRICTS**

**BY
ANGELINA ABBEY**

**THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY
OF GHANA, LEGON, IN PARTIAL FULFILLMENT OF THE
REQUIREMENT FOR THE AWARD OF MA DEVELOPMENT
STUDIES DEGREE.**

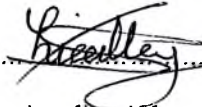
JULY 2005

'G 375295
SB 375. A61
blt c c.1

DECLARATION

I, Angelina Abbey, author of this dissertation do hereby declare that this study:

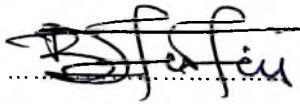
“The effect of pineapple farming on the livelihood of pineapple farmers in the Ga districts” was entirely done by me in the Institute of Statistical, Social and Economic Research, University of Ghana, Legon. This work has never been presented either in whole or in part for any other degree of this University or elsewhere except for the quoted references.



.....

Angelina Abbey
(Student)

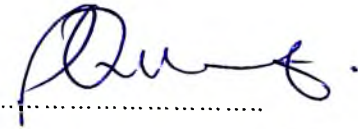
1) This dissertation has been submitted for examination with my approval as
supervisor.



.....

Dr. D.K. Twerefou
(Supervisor)

2) This dissertation has been submitted for examination with my approval as
supervisor.



.....

Dr. Peter Quartey
(Supervisor)

DEDICATION

To my beloved sister, *SUZY* with love and gratitude.

ACKNOWLEDGEMENT

I am grateful and most thankful to the Lord almighty for granting me the grace of life and the intuition to under take this course.

I also wish to express my utmost gratitude to my supervisors, *Dr. D.K. Twerefou* and *Dr. Peter Quartey* lecturers at the Department of Economics and the Institute of Statistical, Social and Economic research respectively, who in spite of their tight schedule took time off to provide constructive and useful criticisms and suggestions.

My sincere thanks also go to *Mr. John Nortey* of Ministry of Food and Agriculture, who helped to provide most of the data on food crops for the Greater Accra Region. I am much indebted to *Mr. Asiamah* and all the staff of the Ga Districts Agricultural Services, who helped in diverse ways during the administration of questionnaires.

I am also very much indebted to my colleague *Nana Kofi*, who despite his work load offered suggestions and the necessary encouragement that saw me through this work, God bless you.

Finally, I wish to acknowledge the help and inspirations I received from my family, especially from my Mother.

ABSTRACT

The decision by the government of Ghana to diversify the agricultural sector through the Medium Term Agricultural Development Programme (MTADP), led to the establishment of the World Bank Funded Agricultural Diversification Project in 1991. The project sought to identify some agricultural products for development and promotion of which pineapple was the most prominent because of its high yield and export value. Government and other organizations have since encouraged pineapple cultivation among farmers.

The aim of this research therefore is to ascertain whether pineapple farming has benefited farmers over the years. To achieve this objective, livelihood indicators were used to assess the impact of pineapple farming on farmers.

There is ample evidence that pineapple farming has been beneficial to farmers. The net revenue generated from farming pineapple far more outweighs that of farming the other crops. This has helped them improve their welfare and reduce poverty. It is therefore not surprising that more than half the percentage of respondents had increased their farm size by three to eight acres over the five year period.

Though pineapple farming has benefited farmers, more needs to be done in terms of access to loans, grants, technical training and improvements in logistics to enhance output. An organised market should be established to over see the trade in pineapple if farmers are to increase their revenue.

TABLE OF CONTENTS

	Page
Declaration.....	i
Dedication.....	ii
Acknowledgements.....	iii
Abstract.....	iv
Table of contents.....	v
List of tables.....	viii
List of figures.....	ix
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background.....	1
1.2 Statement of problem.....	4
1.3 Objectives of the study.....	6
1.4 Relevance of the study.....	6
1.5 Organisation of study.....	7
CHAPTER TWO:.....	8
PINAPPLE PRODUCTION IN GHANA: COST, CONSTRAINTS AND POLICY	
RESPONSES.....	8
2.1 Introduction.....	8
2.2 Pineapple cultivation in Ghana.....	8
2.3 The cost of pineapple production.....	11
2.4 Problems associated with pineapple cultivation in Ghana.....	13

CHAPTER THREE: METHODOLOGY.....	18
3.1 Introduction.....	18
3.2 Geographical area of study.....	18
3.3 Sources of data.....	19
3.4 Survey design.....	19
Selection of villages.....	19
Selection of respondents.....	20
Methods of data collection.....	21
Questionnaire design.....	21
3.5 Methods of data processing and analysis.....	22
3.5.1 Concept and indicators of livelihood.....	23
3.6 Limitations of the study.....	23
CHAPTER FOUR: FINDINGS AND DISCUSSION.....	25
4.1 Introduction.....	25
4.2 Distribution of respondents by sex.....	25
4.3 Educational background of respondents.....	26
4.4 Age group, marital status and number of dependents of respondents.....	26
4.5 Trends in the cultivation of pineapple, okro, maize and cassava.....	27
4.6 Why farmers are cultivating pineapple.....	31
4.7 Profitability of farming pineapple in relation to farming other crops.....	32
4.8 The effect of pineapple farming on the livelihood of farmers.....	38
4.9 Summary of livelihood indicators among pineapple farmers.....	47
4.10 Constraints to pineapple cultivation.....	48

CHAPTER FIVE: SUMMARY AND RECOMMENDATIONS.....51

5.1 Introduction.....51

5.2 Main Findings.....51

5.3 Recommendations.....53

REFERENCES.....56

APPENDICES.....59

Appendix A: Questionnaire for interviews..... 58

LIST OF TABLES

	Page
Table 2.1: Operational budget for the cultivation of pineapple.....	13
Table 3.1: Sampled Villages.....	20
Table 4.1: Distribution of respondents by sex.....	25
Table 4.2: Yield (Mt) and growth rate (%) of selected crops (1995-2004).....	28
Table 4.3: Crop area (Acres) and growth rate (%) from selected crops (2000-2002)..	29
Table 4.4: Frequency of respondents who increased their land size for pineapple farming.....	30
Table 4.5: Operational budget for the cultivation of Pineapple.....	33
Table 4.6: Operational budget for the cultivation of Okro.....	35
Table 4.7: Operational budget for the cultivation of Maize.....	36
Table 4.8: Operational budget for the cultivation of Cassava.....	37
Table 4.9: Gross margin for selected crops.....	38
Table 4.10: Age distribution and livelihood of respondents.....	43
Table 4.11: Sex and livelihood of respondents.....	45
Table 4.12: Educational background and livelihood of respondents.....	46

LIST OF FIGURES

	Page
Figure 4.1: Reasons for shifting to pineapple farming.....	31
Figure 4.2: Livelihood indicators for pineapple farmers.....	40
Figure 4.3: Constraints to pineapple farming.....	50

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

A large number of developing countries rely on primary agricultural commodity exports for their foreign exchange. The share of primary commodities in total exports of all developing countries was 60 percent in 1985 (Cuddington, 1988). Though this ratio has fallen from 80 percent in 1965, primary commodity exports continue to loom large in the export activity of low and middle income countries. However, in the past decades, production of fresh fruits and vegetables for export has increased in a number of sub-Saharan African countries. These new commodities are usually referred to as nontraditional export crops, emphasizing the relative recentness of export in comparison with the traditional export crops such as cocoa, coffee and cotton (Takane, 2002).

Ghana is mainly an agricultural country since agricultural activities constitute the main use to which Ghana's land resources are put, and agriculture is the major occupation of about 47 percent of the economically active age group (Seini, 2002). The country covers an area of approximately 239 million square kilometers of which agricultural land forms about 57 percent of the total land area (Seini, 2002). Domestic agriculture contributes very significantly to the external performance of the economy as it serves as a major source of government revenue, mainly through duties paid on exports of agricultural commodities, particularly cocoa. The first half of the 1980's experienced the agricultural sector contributing about 55 percent to Ghana's Gross Domestic product (GDP).

This however declined to about 42 percent in the early parts of the 1990's. The downward trend continued until the 2000s when the trend in the growth rate of the sector reversed upward. The agricultural growth rate in 2003 was 6.1 percent, the highest since 1985 and exceeded the budget target by 1.6 percentage points. Agriculture grew faster than both industry (5.1%) and service (4.7%) and given its weight in the economy, it made a big contribution to Gross Domestic Product. Agricultural growth increased from 4.7 percent in 2002 to 5.2 percent in 2003. At constant 1993 prices, agriculture's contribution to GDP was estimated at 39.2 percent and remained the highest among the major sectors. It contributed nearly \$1.06 billion to total foreign exchange earnings in 2003 (ISSER, 2003).

Agricultures' contribution to GDP has mainly come from the export of cocoa until the latter part of the 1980's when the government of Ghana started promoting the export of non-traditional commodities of which agricultural commodities such as raw food crops, seafood and processed commodities were the priorities. The agricultural commodities contributed about 67 percent to non-traditional export earnings of the country between the periods 1986 to 1989 (Seini, 2002).

The production of vegetables and tropical fruits, which is a non-traditional export, is expanding in Ghana. Exports of these fruits more than doubled from 4.5 million tones in 1995 to 8.97 million tones in 1996, representing an increase of 118 percent. This increase is mainly due to the export of fresh pineapple, which ranks first as Ghana's most important non-traditional horticultural export product. Pineapple exports contribute around 24 percent of the total horticultural exports (GEPC, 2002). It is estimated that

pineapple crop area in 1997 was about 2,289 hectares. Pineapple exports from Ghana increased from 15.319 tons in 1994 to 46.319 tons in 2002 contributing over 80 percent on average to foreign exchange earned from the exports of horticultural products. The value of Ghanaian pineapple export was 13.3 million US dollars in 2001 and increased to 15.5 million US dollars in 2002. About 50 percent of the total export volume is exported by four large companies namely Prudent farms which exported 3402 tons, Farmapine farms which exported 6255 tons, Koranco farms which exported 4147tons and Jei River farms which also exported 8403 tons of pineapple (Trienekens, 2002).

Pineapple production was introduced in Ghana in the 17th century or earlier. Samsam, a village in the Greater Accra Region was where pineapple was cultivated during this period and has remained one of the leading pineapple producing areas in the country (Pinto, 1990). This period was characterized by rapid development of agriculture through the Basel Missions and governments. (La Anyane, 1963). With time however, pineapple production spread to other towns and villages within the Greater Accra Region and eventually to other regions of the country with the Eastern, Central and Greater Accra regions of Ghana being prominent in the cultivation of pineapple. The Northern, Upper East and Upper West regions cultivate very little if any.

Both small-scale and large-scale farmers undertake pineapple cultivation. However, of late most large-scale cultivations are dwindling in the Greater Accra and Eastern Regions due to export marketing problems.

1.2 PROBLEM STATEMENT

The government of Ghana, having recognized the over dependence of the economy on cocoa as the major source of foreign exchange, in its Medium Term Agricultural Development Programme (MTADP), made it a policy to diversify the agricultural sector. This led to the establishment in 1991, of the World Bank Funded Agricultural Diversification project. Some agricultural products mainly Cashew, Mango, Pawpaw, Pineapple were identified for development and promotion under this programme and has since gained prominence among peasant farmers (MOFA, 2000).

Pineapple was among the fruits, which yielded good results (Simmons, 1976). The establishment of a cannery at Nsawam in 1940 stimulated commercial production of pineapple in the Eastern Region of Ghana. Production of substandard pineapple for export prompted the colonial government to streamline the production of pineapple and this has continued up to date (Osei, 1992). Pineapple production for local consumption and export has since become the sole occupation of some individuals and villages in Ghana. This however does not suggest in the least that there are no problems associated with the production of pineapple.

Among the factors that affect pineapple production are: High lending rate and inaccessibility to institutional credit particularly, among small scale farmers in the industry, high cost of production, high cost of labour, land tenure problems, problems of soil fertility, diseases, agronomic difficulties, theft, bush fires and diseased planting material. Pineapple farmers are also faced with the problem of the depreciation of the

cedi. This has led to increases in domestic prices of inputs, which are all imported. Pests and diseases of pineapple namely, *Dysmicoccus*, *brevipes*, rodents and birds, root rot and heart rot caused by the fungus *phytophthora* sp and *ceratocystic paradox* are also important problems affecting pineapple cultivation in Ghana. These pests and diseases can be controlled by agro-chemical, which are available on the market but at a high price because they are imported. According to TechnoServe (2000), farmers run at a loss of ₵212 per kilogram of fresh fruit pineapple sold locally as against a gain of ₵68 per kilogram for export.

In spite of these obvious and substantial problems associated with pineapple farming, farmers are still being encouraged by both governmental and non governmental organizations like the Ghana Export Promotion Council, TechnoServe Ghana etc to continue cultivating pineapple. Farmers who were into the farming of other crops have moved in to fully cultivate pineapple or dedicate a substantial amount of their farm land to pineapple farming basically because of its export potential. Government has also been encouraging investments in the area of pineapple processing. Though pineapple farming has been identified as playing a central role in terms of foreign exchange earnings of the country, many of the researches that have been conducted in the field of pineapple farming have been centered on issues and problems associated with the farming, harvesting, marketing and processing of pineapple with the aim of helping to increase yield and subsequently increase the foreign exchange earnings of the nation without actually looking at the farmer who is the core source of those export revenues.

There is therefore the need to ascertain whether pineapple farming has affected farmers' livelihood. There is also the need to ascertain whether there has been a shift from the cultivation of other cash crops to the cultivation of pineapple and determine the factors responsible for any shift that might be established. It is also important to investigate the extent to which the shift has benefited pineapple farmers in terms of their livelihood by looking at their expenditure and income pattern. Thus, the study seeks to address these issues by ascertaining the effect of pineapple farming on the livelihood of the farmers.

1.3 OBJECTIVES OF THE STUDY

The main objective of the study is to investigate the effect of pineapple farming on the livelihoods of farmers in the Ga Districts

The specific objectives are to:

- ❖ Ascertain whether there has been a shift from the cultivation of other crops towards the cultivation of pineapple
- ❖ If there has been a shift towards pineapple cultivation, find out what is responsible for the shift
- ❖ Determine whether pineapple farming is more profitable than other non-traditional crops
- ❖ Ascertain the effect of pineapple farming on the livelihood of farmers
- ❖ Identify the problems associated with pineapple farming and make policy recommendations

1.4 RELEVANCE OF THE STUDY

This study will assess the impact of pineapple farming on the livelihood of farmers and add to the limited literature on Non-traditional export. It will also serve as a resource

material for policy makers. The study will also be of great importance to international agencies and financial institutions supporting the production, processing and export of pineapple products in Ghana. The study will also assist the Ga districts to access vividly the impact of pineapple farming on the lives of its farmers and identified the ways and means by which problems associated with pineapple cultivation can be alleviated. Non governmental organizations and financial institutions working to improve the livelihood of rural farmers will also benefit from this study by gaining insight into the expenditure and income pattern of pineapple farmers in the district.

Finally this research will serve as a reference material for the general public and provide additional empirical literature to students and other researchers who are researching into similar areas. It will also serve as a benchmark for future studies in the area of pineapple farming.

1.5 ORGANIZATION OF THE STUDY

The study is structured into five chapters. Chapter one introduces the study. It provides the background to the study, objectives of the study, relevance of the study and the organization of the study. Chapter two discusses in detail existing literature on pineapple farming in Ghana, problems associated with pineapple farming and other issues associated with pineapple farming. Chapter three outlines the methodology employed to accomplish the objectives of the study. The fourth chapter presents the main findings of the study and the final chapter provides concluding remarks and policy implications.

CHAPTER TWO

PINEAPPLE PRODUCTION IN GHANA: COST, CONSTRAINTS AND POLICY RESPONSES.

2.1 INTRODUCTION

Although pineapple was introduced into the country in the 17th century or even earlier, the nation wide cultivation of pineapple can be traced to the second half of the 19th century. This period was characterized by the rapid development of agriculture through the Basel Missions and governments. The adaptation of the Structural Adjustment Programme also facilitated the process by encouraging most farmers to move into the cultivation of exportable crops other than cocoa, which was the major foreign exchange earner at the time. (La Anyane, 1963).

2.2 PINEAPPLE CULTIVATION IN GHANA

The Pineapple crop (*Ananas comosus* var. *Sativus*) is a tropical crop and grows in areas of average rainfall between 1,000mm and 1,800mm per annum. Two main varieties are of significance because of their commercial importance. These are smooth cayenne, with firm fruit and low sugar content and sugar loaf, with high sugar and juicy content. The crop thrives well in a temperature range of 25^oc to 32^oc and a wide range of soil types, but well drained sandy loam with p^H of 4.5-6 are preferred. The majority of pineapple plantations is rain fed and requires about 14 months to mature (MOFA, 2000).

Studies carried out in pineapple farming by (MOFA, 2002) indicate that most of the known pineapple farms are located in the southern part of the country namely the Greater Accra, Central and Eastern Regions of Ghana around Nsawam, Aburi and Kasoa. These

areas have the ideal climatic and environmental conditions for pineapple cultivation and are strategically located, enabling easy movement of these perishable produce from their sources to the Kotoka International Airport and the sea port in Tema. Pineapple is also cultivated in the transitional savanna belt in Brong-Ahafo, Ashanti, Volta and Western Regions.

There are three categories of farms. The first category is made up of Private Owned Export Farms. These farms are integrated production and export companies which have not less than 500 hectares of pineapple farms. An example is the Gold Coast Exotic Produce Limited. These larger plantations have direct contact with their customers in Europe and other western countries and have their own trucks and their own shaded pack houses.

The second category of farms comprise Organised Smallholders; of which Farmapine Ghana Limited (FGL) which is the largest producer cooperative. FGL is a company set up in 1999 under an Agricultural Diversification Program jointly sponsored by the government of Ghana and the International Development Association (IDA) for the promotion of the export of agricultural products and to cater for the technical, marketing and financial needs of the members of a conglomerate of five pineapple growing co-operatives. It has however extended its technical assistance to selected non co-operative farmers who are considered industrious.

The third category of farms is classified as Non-Organised smallholders. This category of farmers normally produces for the local market and for larger farmers. Ghana has hundreds of small pineapple farmers cultivating between 1 to 10 acres of land. They have limited access to mechanical equipment and rely on market availability. They buy their own inputs and sell to any willing buyer. However, if they supply on more regular basis to a larger farmer who acts as an exporter, we call them out-growers. Out-growers are often supplied with seeds and in return sell their crop to the exporter. They sometimes receive other inputs or cash in advance but in general no written contract is undertaken between the farmer and the prospective exporter (Trienekens, 2004).

Pineapple production in Ghana is dominated by non-organized small scale farmers most of whom cultivate between 0.4 and 4 hectares of land with an average of about 2 hectares. Pineapple lands are largely farmed under tenancy arrangement through leasehold or hiring. Rents are paid in the form of fixed charges for the use of the land irrespective of the yields and total returns from the farm. Communal lands under pineapple cultivation are few and are largely traditional farms cultivated for the domestic market (Obeng, 1992).

Pineapple production is highly labour intensive. Labour is needed for land preparation, planting, weeding, fertilizer, spraying (pest/disease control and fruiting or flower induction), fetching water (especially for dipping) forcing, degreening and harvesting. There are two main sources of labour; the household labour and hired labour. Hired labour is more common especially with farm sizes above one hectare (Obeng, 1992).

Capital items in pineapple production include fertilizers and chemicals for controlling weeds, pests; forcing, suckers, equipment, warehouse, tractors and vehicles, borrowed funds, etc. Capital is hardly ever abundant among medium and small holders. Hence, the limiting factor to production is agro chemicals, especially fertilizer. Due to this, most small farmers depend on the big time exporters to finance their operations. Unlike small holders, large and medium holders are better able to bear the cost of their operation single handedly. Credits to small holders, when available, are issued on short and medium-term basis, and the amount is limited because they are generally not credit worthy. Borrowing from the informal financial sector, especially from moneylenders, has also not been popular due to exorbitant interest rates charged, often as high as 50%. Hence, access to capital is the most limiting factor to production as access to loans, grants and other sources of financing continue to elude most pineapple farmers particularly small scale farmers because of their inability to offer collateral to formal credit institutions.

2.3 THE COST OF PINEAPPLE PRODUCTION

Pineapple production is labour intensive and the high level of labour requirements makes the cost of pineapple production expensive. Income from pineapple production has an uneven flow since it is seasonally produced and varies from year to year depending on price, size of crop, the general demand situation, etc. Generally, pineapple farming for export is deemed a profitable venture especially where the farmer is self-sufficient in planting material (suckers) and markets the surplus (Obeng, 1994).

The cost of pineapple production depends on the method of cultivation and the size of holding and averaged around ₡2,000,000 (cedis) per hectare per season. Small scale farmers with less capital items such as warehouses, tractors and vehicles have little administrative cost and incur about ₡1.7 million (cedis), while medium-scale holders (about 20 hectares) and large holders (about 100 hectares) incur cost of production of about ₡ 2.7 million (cedis) and ₡2.0 million (cedis) per hectare per season respectively in 1994 (Obeng, 1994).

The average cost of pineapple production increased to ₡8.5 million (cedis) per acre in 2000, with a gross revenue of about 10.8 million per acre and net revenue of about 2.3 million cedis per acre per season (Technoserve 2000).

Data from the Horticulture Department of the Ministry of Food and Agriculture as presented in table 2.1 indicates a rather drastic increase in both the cost and revenue generated from pineapple cultivation. The estimated cost of farming a hectare of pineapple in 2002 was around ₡29,487,000 (cedis) with a gross revenue of about ₡62,850,000. It must however be noted that about 47 percent of the total revenue is generated from the sale of planting materials i.e. suckers, (MOFA, 2002).

Table 2.1: Operational Budget for the Cultivation of Pineapple /Ha/Yr.

ACTIVITY / INPUT	COST (¢)
Land rent	250,000
Land Preparation	1,500,000
Suckers	6,500,000
Fertilizer	2,842,000
Pesticide	3,075,000
Weedicides	1,2000,000
Forcing chemical	120,000
Labour	10,825,000
Total Estimated Cost	29,487,000
Total Estimated Revenue	62,850,000
Net Income	33,363,000

Source: (MOFA, 2003)

Yields of pineapple crops vary from region to region. According to MOFA (2002) plant population per acre varied among pineapple farm holders in the various regions and this variation was observed to be between 27,500-35,000 pieces per hectare.

2.4 PROBLEMS ASSOCIATED WITH PINEAPPLE CULTIVATION

Notwithstanding the potential of pineapple as a major non-traditional export commodity, its cultivation, harvesting and marketing is constrained by a number of problems. Obeng (1994) ranked the major problems and constraints in the production of pineapple in a

descending order as lack of credit, high cost of production, high cost of labour, land tenure problems, low output price, problem of soil fertility and diseases and other problems such as agronomic difficulties, bush fires, theft and diseased planting materials.

According to Obeng (1990), the credit problem is two fold, high lending rate and inaccessibility to institutional credit. Pineapple cultivation is both labour and capital intensive and therefore requires capital injection. However, very few farmers if any are able to access long term loans from financial institutions because they are usually not credit-worthy since they can not meet collateral requirements.

The depreciation of the cedi has also led to astronomical increases in domestic prices of inputs, which are virtually imported. TechnoServe estimates show that farmers run at a loss of ₵ 212 per Kilogram of fresh fruit pineapple sold locally as against a gain of ₵ 68 per Kilogram for export (Amoako, 1996).

Boateng (1999) also noted in his study that poor organization and procurement of production inputs like fungicide and pesticide, fertilizer –urea, sulphate of potash, Ammonium and calcium sulphate are among the major problems that face pineapple farmers. Small-scale farmers are not organized into pineapple cooperatives, which are essential for managing exports and assessing credits, inputs and transportation. Due to these problems yields are averagely 50 tonnes per hectare on the better-organized larger plantations, but could be further improved by at least 20% with strong technical support for cultivation. Yields of about 82 tonnes per hectare could be obtained with consistent

use of fertilizer and chemicals, easier access to inputs and better access to extension advice are instituted. Also, poor road network in the production areas, inadequate extension services and limited research base for the industry are among the major problems facing pineapple farmers.

Amoako (1996) assessed the effect of long term institutional finance on non-traditional Agricultural Exports production and stated that marketing of the product is the essence of commercial production. He noted that in dealing with agricultural commodities that are perishable, there is the need for products to be sold in time to gain the full benefit of production. He also sited cases of exported products not being paid for by exporters, and smaller volumes of commodity not accepted, as being common in pineapple farming.

A study carried out by Yeboah (2000) on the Profitability and Risk Analysis of Ghana's Pineapple Exports indicated that production and export of pineapple is a profitable business particularly to the exporter who buys from the out-grower and therefore do not bare the risks involved in farming pineapple. The study however noted that there are no crop insurance programs or options markets available for exporters and recommended that exporters could form cooperatives to present a unified front to importers or explore agricultural insurance options. He suggested that to encourage agricultural diversification in general and also to boost pineapple exports, government should provide some form of insurance for exporters to minimize their exposure to low prices on the European market. He also stated that access to loans, grants and other sources of financing continue to elude exporters and again suggested that government and the Sea-Freight Pineapple Exporters

of Ghana (SPEG) should liaise with the banks and financial institutions to establish some form of export finance scheme to help exporters. According to him, governmental agencies like the Business Assistance Fund (BAF) and Export Development and Investment Fund (EDIF) should include pineapple and other horticultural products in their programs.

Obeng (1994) identified limited access to credit facilities, limited markets, inadequacy of airfreight space, cumbersome documentation procedures, infrastructural constraints, and poor product quality as the major problems affecting the pineapple industry.

Boateng, (1999) evaluated the importance of non-traditional crops in Ghana's exports. He went on further to classify government policies relating to general export promotion as monetary and non-monetary explaining that monetary policies were made up of export bonus scheme, duty draw back and income tax relief whereas non-monetary incentives included the replacement of import license in 1973, the bonded ware housing facility, establishment of the trade fair centre, and organization of missions. During the period, export procedures were simplified and the Ministry of Agriculture gave incentives in the form of improve extension services and subsidies on inputs such as fertilizer. Producers of crops such as ginger, pineapple and cassava also benefited from this package.

In a gist, literature reviewed has shown many interesting but important facts about pineapple production in Ghana. What has been done so far and what needs to be done to promote pineapple cultivation in the country has been reviewed. If foreign earnings from non-traditional crop export should increase, then the agricultural sector as a whole and pineapple cultivation in particular should be given all the necessary help it deserves from all stakeholders.

The findings of this study will therefore serve as a knowledge base for stakeholders for the formulation of policies in pineapple development.

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

This chapter looks at the methods and approaches used in gathering data, selecting the study area and respondents. It includes how the data has been analyzed to achieve the various objectives.

3.2 GEOGRAPHICAL AREA OF STUDY

The study was carried out in the Ga Districts of the Greater Accra Region. The district is made up of the Ga West and the Ga East districts and is the second largest among the five districts in terms of size and population, and the second largest producer of pineapple in Ghana. It covers a land area of approximately 859sqkm with over 360 settlements including Amasaman, which is the districts capital. The Ga districts shares common boundaries with the Tema Municipal Area to the East, the Akuapim South District to the west and to the south by the Gulf of Guinea and the Accra Metropolitan Area. It lies within the costal savannah agro-ecological zone and has a rainfall pattern which is bi-modal with an annual mean varying between 790mm on the coast to about 127mm in the extreme North. The annual average temperature ranges between 25.1°C in February and 28.4°C in March. February and April are the hottest months. (Ga District Assembly, 2004)

The population of the district is estimated at 548,001 with females constituting 49.8 percent of the total population and males constituting 50.2 percent of the total population. There are three main economic activities in the district; these are agriculture, industry and commerce. The major agricultural activities are crop production, fisheries and livestock.

Vegetables are also grown in the district and among the wide range of vegetables produced are tomatoes, pepper, beans and okro. The district is also noted for the production of food crops such as cassava and maize. Fruits such as pawpaw, mango and cashew are also produced. The suitability of the vegetation and the soil types greatly enhance the large-scale production of pineapple for exports, as such pineapple farms are located extensively in the district particularly around Amasaman and Pokuase with large commercial farms in areas like Samsam, Lwei Obom, Machi and lots of small scale farmers who act as out growers for the exporters.

3.3 SOURCES OF DATA

To achieve the objectives of the study, both primary and secondary data were employed. One hundred and twenty (120) pineapple farmers were interviewed and information on their agricultural inputs, production and marketing activities collected through semi-structured questionnaires. Informal discussions with key informants such as the Head of Pineapple Growers Association and the Head of Horticultural unit, MOFA on their views and experience in pineapple farming were also considered.

3.4 SURVEY DESIGN

SELECTION OF VILLAGES

A total of five (5) villages were selected from the Ga Districts in the Greater Accra Region. These are Mayera/Adusa, Osorodompe, Odumase, Otiakrom and Samsam. These villages were selected from the list of localities identified in a survey report on selected non traditional crops by the Ministry of Food and Agriculture as the main pineapple producing localities in the Ga districts (MOFA, 2000). These villages also serve as major

pineapple buying centers for market men and women, food processors and exporters. The names of the ten villages were written on pieces of papers and folded and 50 percent of them selected randomly by using “draws of the hat” procedure. Table 3.1 provides the list of the villages.

TABLE 3.1: Sampled Villages

Villages	Population	Sample Size
Mayera/Adusa	469	33
Osorodompe	184	13
Odumase	129	9
Otiakrom	386	27
Samsam	543	38
Total	1,711	120

Source: Field survey, 2005.

SELLECTION OF RESPONDENTS

The study began with a pre-testing of ten questionnaires administered to ten resident farmers of Samsam, one of the prominent pineapple farming communities in the Ga west districts.

The administration of the questionnaire started in the later part of May, 2005. A total of 120 questionnaires were administered. The decision to select 120 respondents was informed by two main factors namely, time and money. Respondents were selected from the 5 pineapple farming communities listed in table 3.1, taking into consideration the population size of each village. A total of 7 percent of the population of each village was

therefore selected to reflect the population size of the village. The selected respondents were farmers who were cultivating other cash crops and had moved to farming pineapple or are farming pineapple along side their main crops. Officials at the District Agricultural Extension unit were very instrumental in helping to locate these farmers.

METHODS OF DATA COLLECTION

The questionnaire was semi- structured and was made up of open ended and closed ended questions. The questions covered production, harvesting, and marketing information on pineapple farming which were relevant in addressing the research objectives. An Agricultural extension officer was extensively interviewed before and after the designing and administration of the questionnaire to provide insight into the activities of pineapple farming.

Secondary data were gathered from academic publications and reports relevant to pineapple farming. Data was also collected from the relevant Ministries and institutions such as the Department of Horticulture of the Ministry of Food and Agriculture (MOFA), the Ghana Export Promotion Council (GEPC), the Agricultural Extension Services Office at Pokuase. Data relating to pineapple farming was also assessed through the internet.

QUESTIONNAIRE DESIGN

One set of questionnaire was designed and administered to pineapple farmers in the Ga Districts. It was semi structured with both open and close ended questions and made up of 48 questions structured into three main sections. The first two sections required

respondents to provide some personal information and information on the inputs and the land they use for farming. The last section required respondents to provide information on productivity of the crops they farm. See appendix A for details. The questionnaire was first pre-tested and later refined before the actual administration began.

3.5 METHODS OF DATA PROCESSING AND ANALYSIS

Raw data collected from respondents were coded and entered into the computer using the SPSS Software. The following methods of analysis were used to address the various objectives set in chapter one of the paper.

- Trend analysis based on the yield and crop area of selected crops over a period of ten and five years respectively was used to determine whether farmers have shifted from cultivating other crops to the cultivation of pineapple.
- To ascertain the reasons why farmers have moved on to pineapple farming, frequencies were run from reasons given by respondents and used to draw a pie chart to evaluate the magnitude of the various reasons given.
- Profitability was used to determine the benefit of pineapple farming to farmers, with revenue, cost and gross margin serving as the indicators of profitability.
- Percentages and pie charts were also used to illustrate issues associated with pineapple farming.
- A before and after analysis was employed to assess the impact of pineapple farming on the livelihood of farmers using livelihood indicators such as social, financial, physical and human capital.

3.5.1 CONCEPT AND INDICATORS OF LIVELIHOOD

Livelihood is a broad concept which comprises the capabilities, assets (including both material and social resources) and activities required for a means of living (Carney1997). The Livelihood frame work is a three fold structure comprising capital assets, vulnerability context and transforming structures and processes.

The main indicators under capital assets are natural capital, social capital, physical capital, human capital and financial capital. These are the different types of assets from which individuals draw to build or achieve their livelihoods. In the vulnerability context, livelihood is measured by the ability to withstand shocks emanating from changes in the trends in nature, economy, culture, politics and technology. Another measure of livelihood is how government structures and policies affect the extent to which individuals effectively access assets.

3.6 LIMITATIONS OF THE STUDY

The study is limited to pineapple farmers who had farmed other crops before entering into pineapple farming and pineapple farmers who are farming pineapple alongside other food crops. This is to allow for a before and after analysis and to help in determining whether or not there has been a substantial number of farmers moving from farming other crops to farming pineapple.

The sample size was limited to 120 respondents because of the spread of the five pineapple farming communities. Farmers found it difficult to provide data on revenue

from the sale of farm produce due to the fact that most farmers, particularly small scale farmers do not keep written records on their farming activities. As such information given was mostly estimates and therefore had to be supplemented with information from the Ministry of Food and Agriculture.

CHAPTER FOUR

FINDINGS AND DISCUSSION

4.1 INTRODUCTION

This section analyzes the survey responses. The chapter comprises eight sub sections. Section two to four describes the characteristics of the respondents, namely, gender composition, educational background and marital status. Section five describes the trends in pineapple production while the sixth section ascertains why people go into pineapple farming. The last two sections evaluate how profitable pineapple farming is and also investigates its impact on livelihood.

4.2 DISTRIBUTION OF RESPONDENTS BY SEX.

TABLE 4.1: Distributions of Respondents by Sex

Sex	Frequency	Percentages
Males	83	69.2
Females	37	30.8
Total	120	100.0

Source: Author's Survey, 2005

Table 4.1 shows the distribution of the respondents by sex. A sample of 120 respondents made up of 83 males representing 69.2 percent of the respondents and 37 females representing 30.8 percent were interviewed. The male dominance underpins the fact that more men are into pineapple farming than women. Even though women are known to be more active in farming than men in the district, when it comes to pineapple farming men

are more involved than women. Some respondents who were interviewed were of the view that pineapple farming is capital intensive and most women do not have much access to capital and will rather cultivate other less capital-intensive crops.

4.3 EDUCATIONAL BACKGROUND OF RESPONDENTS

This section attempts to establish the relationship between education and pineapple cultivation. About 36.5 percent of respondents had primary or middle school level education with 13.5 percent having Junior Secondary level education. Whereas those with Senior Secondary level of education are 12 percent, those with vocational or technical education are 1.9 percent. Only 17.3 percent of respondents had no formal education. This statistics shows that most of the farmers either have low level of education or no education at all. However, pineapple farming is very delicate and requires knowledge and skills in its cultivation to ensure maximum returns. It is therefore not surprising that a substantial number of pineapple farmers had to acquire some form of training or skills, be it formal or informal after they had gotten into pineapple cultivation.

4.4 AGE GROUP, MARITAL STATUS AND NUMBER OF DEPENDENTS OF RESPONDENTS.

The age categorization of pineapple farmers indicates that majority of respondents were between ages 30-49 with 21.5 percent of them belonging to the age group of 50-69. About 63.5 percent of respondents were married with 21.1 percent of them being either separated, widowed or divorced. Only 13.5 percent of them had never married. Of these respondents, 48.9 percent had 4 to 15 dependents with 51 percent of them having only

1-3 dependents. It is worth noting that, the notion that they might be using these large number of dependents on their farms must however be ruled out in the case of pineapple farmers, as majority of them use hired labour.

4.5 TRENDS IN THE CULTIVATION OF PINEAPPLE, OKRO, MAIZE AND CASSAVA.

As stated in the literature review, there is a strong assumption that the volume of pineapple production is increasing and a significant number of farmers have either shifted completely from farming other crops to cultivating pineapple or are farming pineapple as their major crop and intercropping it with small quantities of other crops.

In establishing whether there has been a shift from other crop farming to pineapple farming, two approaches were adopted. First, the trends in crop yield for pineapple farming and other food crops, namely, maize, cassava and okro were examined and their growth rates calculated over a ten year period using secondary data. Table 4.3 presents an analysis of the trend in crop yield of various crops by farmers in the Ga Districts over a ten year period.

Table 4.2: Yield (Mt) and growth rate (%) of selected crops (1995 – 2004)

	Pineapple		Maize		Cassava		Okro	
Year	Yield	Growth rate	Yield	Growth rate	Yield	Growth rate	Yield	Growth rate
1995	15,764		13,800		8,070		1,225	
1996	27,603	75.10	16,000	15.94	2,550	-68.4	1,307	6.69
1997	25,125	-8.98	17,717	10.73	3,634	42.51	1,307	0
1998	21,941	-12.67	15,294	-13.68	2,453	-32.5	1,688	29.15
1999	33,440	52.41	17,745	16.03	2,610	6.4	1,620	-4.03
2000	28,512	-14.74	16,909	-4.71	2,658	1.84	1,575	-2.78
2001	34,933	22.52	18,600	10	2,757	3.72	1,654	5.02
2002	46,391	32.80	15,475	-16.8	1,440	-47.77	463	-72.01
2003	45,145	-2.69	18,570	20	1,010	-29.86	440	-4.97
2004	48,215	6.80	20,780	11.9	1,057	4.65	463	5.23
Average	32,706.9	16.7	17,089	5.5	2,823.9	-13.3	1,174.2	-4.2

Source: Statistic Research and Information Directorate of the Min. of Agriculture, 2005.

From the table, pineapple is the most important crop. It shows up to be the crop with the highest output over the ten year period. From an output of 15,764 metric tonnes in 1995, pineapple production shot up to about 48,215 metric tonnes in 2004. Whereas the production of cassava and okro have fluctuated over the ten year period from approximately 8,070 and 1,225 metric tonnes in 1995 to 1,057 and 463 metric tonnes in 2004 respectively, maize production has grown consistently but at a slower pace from 13,800mt in 1995 to 20,780mt in 2004.

Analysis of the performance of these crops based upon their growth rate portrays a similar trend. The average growth rate for pineapple output from 1995 to 2004 was 16.7 percent whereas that for maize grew by 5.5 percent. Cassava and okro as expected from their yield over the ten year period had a negative growth rate of -13.3 percent and -4.2 percent respectively.

For the second part of the trend analysis, the crop area and growth rate for the various crops were assessed, and averages generated over a five year period.

Table 4.3: Crop Area (Acres) and Growth Rate (%) of selected crops by respondents (2000 – 2004)

Year	Maize		Cassava		Okro		Pineapple	
	Crop Area	Growth rate	Crop Area	Growth rate	Crop Area	Growth rate	Crop Area	Growth rate
2000	386		220		84		820	
2001	421	9.1	393	78.6	123	46.4	1,012	23.4
2002	513	21.9	262	-33.3	98	-20.3	1,123	11
2003	470	-8.4	281	7.3	81	-17.3	1,282	14.2
2004	440	-6.4	300	6.8	73	-9.9	1,390	8.4
Average	446	4.1	291.2	14.9	91	-0.3	1,125.4	14.3

Source: From Author's Survey, 2005.

Table 4.3 presents the crop area allocated to various crops by respondents in the Ga Districts over a five year period. There has been a reallocation of land from other cash crops to pineapple farming. Absolute figures indicates that land for other crops in the district have gone down as in the case of okro, or taken an upward and downward trend intermittently as in the case of cassava and maize, whereas land for pineapple production has increased consistently over the five year period from 820 acres in 2000 to 1,390 in 2004. Land for the cultivation of maize, cassava and okro increased on the whole between 2000 and 2001. However after 2001, land size for okro production decreased consistently from 123 acres in 2001 to 73 acres in 2004. Whiles land available for cassava cultivation fluctuated over the years; land available for maize cultivation increased in 2002 and started fluctuating from 2003.

The growth rate for land available to the cultivation of the various crops for the same period under analysis however tells a different story. With the exception of okro, all the crops under study registered a positive growth rate with cassava registering the highest positive growth rate of 14.9 percent on the average from 2000 to 2004. Pineapple follows directly in succession with a growth rate of 14.3 over the period. Maize had the least positive growth rate of 4.1 percent from 2000 to 2004.

Table 4.4 indicates the number of respondents who had increased their land size over the five year period.

Table 4.4: Frequency of respondents who increased their land size for pineapple farming

Acreage	Frequency	Percent
0-3	28	25.2
3.01-5	46	41.4
5.01-8	28	25.2
8 and above	9	8.2
Total	111	100.0

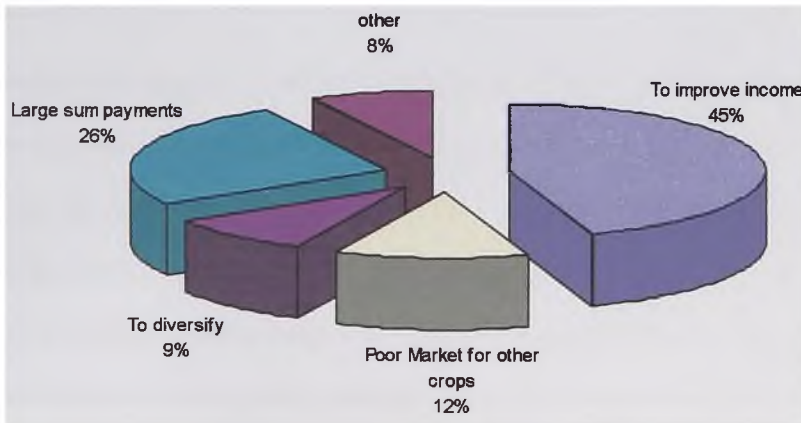
Source: Author's Survey, 2005.

Out of the 120 respondents interviewed, only 111 responded to this question. From this number, 25.2 percent had increased their crop area for pineapple between 0 to 3 acres over the period. 41.4 percent of respondents also increased their pineapple farm size by 3.01 to 5 acres between 2000 and 2004. Another 25 percent of respondents had increased their pineapple farm size between 5.01 to 8 acres with only 8.2 percent of respondents increasing their farm size by more than 8 acres over the period.

4.6 WHY FARMERS ARE CULTIVATING PINEAPPLE.

Studies conducted by the Ministry of Food and Agriculture projected a marginal annual increase of 2-3 percent in pineapple output. Earlier findings from this study have also confirmed this by showing a gradual shift towards pineapple cultivation. Almost 79.6 percent of respondents were into the cultivation of other crops before moving into pineapple farming. While 88 percent of these respondents are still cultivating other crops alongside pineapple, most of them do so on subsistence basis. This is particularly so with those who inter crop pineapple with cassava and maize. It is therefore relevant to find answers to the question as to why farmers are shifting to pineapple cultivation and then proceed to assess whether this shift will benefit the farmers involved in terms of profitability.

Figure 4.1: Reasons for shifting to pineapple farming.



Source: Author's Survey, 2004.

Out of the 120 respondents targeted, 45 percent moved into pineapple farming because of the need to improve upon their income. Almost 12 percent of respondents moved into pineapple farming because they were having problems with finding market for their previous produce. Majority who could not find market for their produce were okro farmers with a negligible number being tomatoes and garden eggs farmers. Another 9 percent of respondents attributed the shift to their desire to diversify into new crops to reduce risk. It was also observed that a considerable number of farmers (26 percent) went into pineapple farming because of its export value; some had the opportunity to farm pineapple as out-growers for exporters. Apparently the revenue they were getting from other crops was basically coming in bits and pieces and did not allow for savings. A number of respondents, about 8 percent, attributed their shift to a variety of reasons such as adhering to advice from friends etc.

4.7 PROFITABILITY OF FARMING PINEAPPLE IN RELATION TO FARMING OTHER CROPS.

To analyze this objective, profitability was assessed in terms of the cost and revenue involved in cultivating the various crops being farmed by respondents. It is necessary to compare the cost and revenues that farmers were operating before they moved to pineapple farming and after they had gotten into pineapple farming. Data on revenue and cost of production before pineapple farming were however difficult to get from farmers, as such secondary data on the crop budget for each crop was used to allow for uniformity and correct for inflation since they are all in year 2004.

Table 4.5: Operational Budget for the Cultivation of Pineapple /Ha/Yr

INPUT/ACTIVITY	COST (¢)
Land rent	250,000
Land Preparation	1,500,000
Suckers	6,500,000
Fertilizer	2,842,000
Pesticide	3,075,000
Weedicides	1,200,000
Forcing chemical	120,000
Labour	10,825,000
Total Estimated Cost	29,487,000

Source: Ministry of Food and Agriculture (2004)

REVENUE:

(A) FOR PINEAPPLE FRUITS

Average yield / ha = 65 ton	= 65,000kg
Pre post harvest losses of 10%	= 6,500
Total Marketable Yield	= 58,500kg
70% Yield for export @ 1000/kg	
Revenue = 40,950kg x 1000	= 40,950,000
30% of fruit for the local market @ 300	
Revenue = 17,750kg x 300	= 5,325,000
Total Revenue (A)	= 46,275,000

(B) FOR THE SUCKERS (B)

3Suckers/plant x 65,000plant = 195,000

Allow for 15% losses = 195,000-29,250 = 165,750

Cost of a sucker is ₺100.

Revenue (B) = ₺100 x 165,750 = ₺16,575,000

Total Revenue (A+B) = ₺62,850,000

Net Income = ₺62,850,000-₺29,487,000

=₺33,363,000

Source: Ministry of Food and Agriculture (2004)

Table 4.6: Operational Budget for the Cultivation of Okro /Ha/Yr

ACTIVITY / INPUT	COST (¢)
Land rent	250,000
Land Preparation	1,250,000
*Seeds (export)	1,200,000
Fertilizer & manure	2,050,000
Pesticide	1,712,000
Labour	5,520,000
Total Estimated Cost	22,782,000

Source: Ministry of Food and Agriculture.*Prices of seeds for local varieties is 110,000/kg (2004)

REVENUE

Export varieties

Average fruit yield/ha = 10 ton = 10,000kg

70% for export i.e 7,000kg

Packaging in 6kg boxes = 7000kg/6kg = 1167

Farm gate cost of 6kg boxes = ¢35,000

Revenue from export = ¢35,000 x 1167

= ¢40,845,000

Net Income = ¢40,845,000 - 22,782,000

= ¢18,063,000

Source: Ministry of Food and Agriculture (2004)

Table 4.7: Operational Budget for the Cultivation of Maize /Ha/Yr

ITEM /ACTIVITY	COST (¢)
Land rent	250,000
Labour input	4,714,668
Fertilizer	3133,104
Improved seed	908,420
Tools & Equipment	245,865
Total Estimated Cost	9,252,057

Source: Ministry of Food and Agriculture (2004)

REVENUE

Average yield / ha (100kg max. bag) = 74.1

Price (cedis)/ unit of produce = 250,000

Revenue = 74.1 x 250,000

= 18,525,000

Net income = 18,525,000 – 9,252,057

= **¢9,272,943**

Source: Ministry of Food and Agriculture (2004)

Table 4.8: Operational Budget for the Cultivation of Cassava /Ha/Yr

ITEM /ACTIVITY	COST (¢)
Land rent	250,000
Labour input	2,190,789
Cassava sticks, bundles	1,987,202
Tools & Equipment	252,042
Total Estimated Cost	4,430,283

Source: Ministry of food and Agriculture (2004)

REVENUE

Average yield / ha (mt)	= 14.826
Price (cedis)/ unit of produce	= 500,000
Revenue	= 14.826 x 500,000
Gross Revenue	= 7,413,000
Total income	= 7,413,000 – 4,430,283
	= ¢2,982,717

Source: Ministry of Food and Agriculture (2004)

Tables 4.5, 4.6, 4.7, and 4.8 presents the estimated cost and revenue derived from farming Pineapple, Okro, Maize and Cassava respectively. From this table it could be seen that farmers turned to have more profit when they farm pineapple in 2004 than when they farm okro or maize, with cassava generating the least revenue. It is not enough to view profitability as net revenue. Hence a third indicator (Gross Margin) was derived

from cost and revenue and used as a measure of profitability. Gross margin is defined as the ratio of the total cost of producing a particular crop to the revenue generated from that crop multiplied by hundred. The lower the gross margin the more profitable the crop is and vice versa.

TABLE 4.9: Gross Margin for Selected Crops

CROP	COST OF PRODUCTION	REVENUE	GROSS MARGIN (%)
Cassava	4,430,283	7,413,000	59.76%
Maize	9,252,057	18,525,000	49.94%
Okro	22,782,000	40,845,000	55.78%
Pineapple	29,487,000	62,850,000	46.92%

Source: Ministry of Food and Agriculture, (2004).

Pineapple shows up to be the most profitable crop for farmers in 2004 with the least gross margin of 46.92 percent. This is closely followed by Maize which also had a gross margin of 49.94 percent and okro which had a gross margin of 55.78 percent. Cassava turns out to be the least profitable crop with a gross margin as high as 59.76 percent.

4.8 THE EFFECT OF PINEAPPLE FARMING ON THE LIVELIHOOD OF FARMERS

The livelihoods approach seeks to gain an accurate and realistic understanding of people's strengths (Assets and capital endowments) and how they endeavor to convert these into positive livelihood outcomes. The approach is founded on the belief that people

require a range of assets to achieve positive livelihood outcomes; no single category of assets on its own is sufficient to yield all the many and varied livelihood outcomes that people seek. This is particularly true for poor people whose access to any given category of assets tends to be very limited. As a result they seek ways of nurturing and combining what assets they do have in innovative ways to ensure survival.

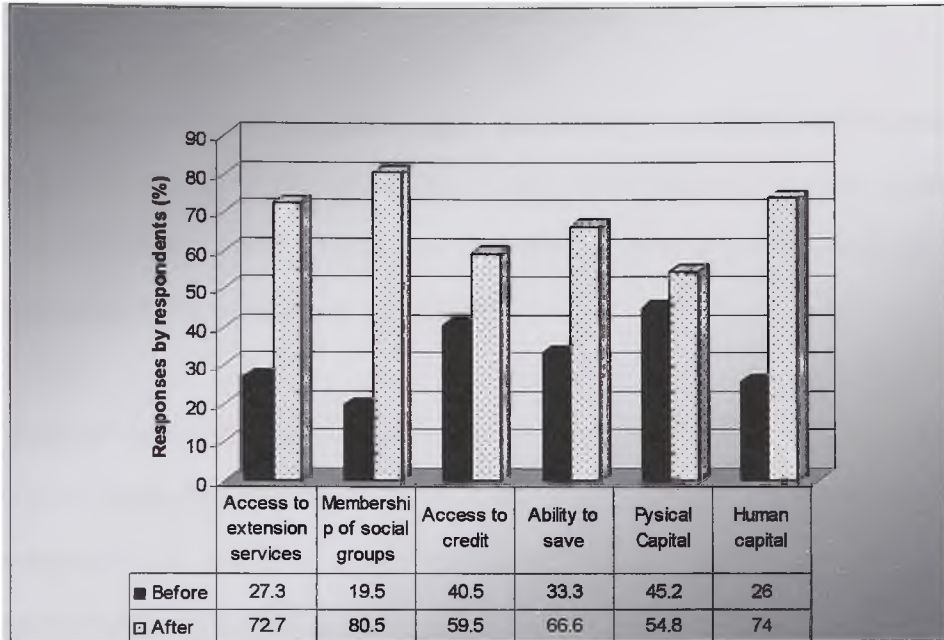
The livelihood framework is a three fold structure and identifies five core asset categories or types of capital upon which livelihoods are built. Increasing access, which can take the form of ownership or the right to use these assets, is a primary concern. Although the term “capital” is used, not all the assets are capital stocks in the strict economic sense of the term (in which capital is the product of investment, which yields a flow of benefits over time). The five capitals are the best thought of as livelihood building blocks.

For the purpose of this study however, livelihood is defined in terms of capital assets only. In particular the variables or indicators to measure livelihood in this study are social capital, financial capital, physical capital and human capital. The definitions for these variables are stated below.

- (1) **Social Capital:** This is measured by individual’s access to extension services and membership of social groups like cooperative society.
- (2) **Financial Capital:** Measured by access to credit facilities and ability to save
- (3) **Physical Capital:** Defined as access to and ownership of production equipments

(4) **Human Capital:** Measured by the ability to hire labour and skills and knowledge from ones field of endeavor or chosen career.

Figure 4.2: Livelihood indicators for pineapple farmers



Source: Author’s survey, 2005.

Access to extension services and membership of social groups are the indicators used to measure the social effect of pineapple cultivation on farmers in the district. About 27 percent of respondents previously had access to extension services and this number increased substantially to 72.7 percent when they moved into pineapple cultivation. This is as a result of the special services being rendered by the agricultural extension unit of the district to selected crop farmers of which pineapple farmers constitute a substantial number. Training on improved farming practices is available to every farmer irrespective

of the crop being farmed, but pineapple farmers are more likely to access these services because pineapple cultivation is delicate and require certain care that if not given affects output greatly. This factor may have contributed significantly to the variation in access to extension service before and after entering into pineapple cultivation.

Again positive responses to membership of social groups were higher after respondents entered into pineapple cultivation. This supports higher responses given to access to extension services after pineapple cultivation, since cooperatives are likely to be the first point of call of agricultural extension officers.

Access to credit facilities improved slightly with pineapple cultivation. This improvement was not significant but can be attributed to the fact that most pineapple farmers serve as out-growers for exporters and are sometimes assisted with financial and certain agricultural inputs by their respective buyers. This assistance however does not always work in favour of the farmers as buyers eventually buy the produce on credit and refuse to fulfill purchasing agreements made. A number of farmers had to take up casual work on the farms of other farmers when their own farms need less attention so as to save money to pay labourers who will eventually come to work on their farms.

Most farmers who responded to having access to credit facilities however admitted that a large proportion of the credits they accessed came from the informal sector. Farmers belonging to farmer cooperatives however stated that they had been approached by governmental agencies on countless occasions with the hope of helping them to access

loans, but this had not always yielded the expected results. They were of the view that the few instances in which they had been able to access the loans, it had been so insignificant in relation to the cost of farming.

Savings however rose significantly with pineapple farming. This goes to buttress the findings made earlier that pineapple farming is more profitable, as such farmers are able to save more of their income.

Physical capital improved significantly with pineapple farming and is as a result of the intensity of labour involved in pineapple cultivation. Less expensive production equipment had been purchased by farmers whereas expensive ones were rented. Most medium scale farmers however had to purchase cars and the likes to transport their produce since it cost them more to hire such services on frequent basis.

Being a sophisticated crop, pineapple production calls for more attention to details and uniformity of inputs application. Uniformity in input application is very crucial as variations adversely affect harvest levels and reduce export quality and quantity. As such most farmers had to upgrade their skills and knowledge in farming to meet the high demands of pineapple cultivation. This skills acquisition is mostly informal though and explains the rise in the human capital of respondents after they had gotten into pineapple cultivation.

Table 4.10: Age distribution and Livelihood of respondents

Age Group	Social Capital		Access to Credit		Ability to Save		Physical Capital		Human Capital	
	Before	After	Before	After	Before	After	Before	After	Before	After
19-39	33.3	43.1	36.9	39.3	26.5	50.0	42.9	28.8	44.1	24.0
40-59	41.7	56.9	52.6	60.7	67.6	36.8	46.9	55.9	55.9	65.0
60-69	25.0	0.0	10.5	0.0	5.9	13.2	10.2	15.3	0.0	11.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Author's Survey, 2005.

Table 4.10 shows the age distribution of pineapple farmers in relation to their capital assets before and after they had gotten into pineapple farming. Majority of respondents fall within the age group of 40-59 as they form about 49.6 percent of total respondents. Out of this number, 41.7 percent had access to social capital before getting into pineapple farming. This figure increased substantially with pineapple farming to 56.9 percent. Farmers' ability to access credit did not change much with pineapple farming. About 46.9 and 55.9 percent of farmers in this category had access to physical capital and human capital respectively before entering into pineapple farming. These figures however increased to 55.9 percent and 60.0 percent respectively with pineapple cultivation.

Only 36.8 percent of respondents in this category are able to save some portion of their income upon entering into pineapple farming. This is particularly so because farmers are still expanding their farm size and as such reinvest most of their earnings. Majority of respondents in this category are either married with children or are divorced with children and other dependents. It is therefore not surprising that not all respondents in this category are able to save some of their income. They do however have a high access to

social capital and physical capital since most of them have larger farms than the other age groups and therefore need more labour and knowledge in managing their farm affairs.

Respondents in the age category of 60-69 constitute just 7.7 percent of the total number of respondents. All respondents in this category currently save a portion of their income and have access to physical capital with some having their own cars and other farm machinery whereas only 5.9 percent saved a portion of their income and 10.2 percent had access to physical capital previously. All respondents in this category have access to human capital which normally comes in the form of hired labour with most of them having permanent workers. None of them currently have access to credit or belongs to any social group. This was not the case previously as 25 percent of them were members of social groups and 10.5 percent had access to credit before entering into pineapple farming.

It came to light that most of the respondents in this category did not join any social group upon entering into pineapple farming because they felt they had enough experience from years of farming and therefore do not see any benefit that they could possibly derive from social groups. This however does not ensure the transfer of social capital as these older farmers do not get to share their knowledge and experience with younger farmers. More than half the number of respondents in this category however had been members of one social group or the other in the past and had been into pineapple farming for at least 12 years.

Respondents in the age category of 19-39 form 42.7 percent of total number of respondents. They currently have 28.8 percent physical capital and 24 percent of human capital. Members in this category have less acres of land to farm and therefore needs less human and physical capital. They however have a marginally higher percentage of social capital (43.1%) since they more often than not lack knowledge in pineapple production activities and therefore are more likely to seek help from cooperatives and agricultural extension service providers.

Table 4.11: Sex and Livelihood of respondents

Sex	Social Capital		Access to Credit		Ability to Save		Physical Capital		Human Capital	
	Before	After	Before	After	Before	After	Before	After	Before	After
Male	75.5	55.4	47.4	42.9	61.8	49.1	71.4	78.0	83.3	84.3
Female	25.5	44.6	52.6	57.1	38.2	50.9	28.6	22.0	16.7	15.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Author's Survey, 2005.

Females constituted 30.2 percent of the total number of respondents. About 25.5 percent of females had access to social capital before entering into pineapple farming and 44.6 percent after they got into pineapple farming. This high response by females to having access to social capital after entering into pineapple farming is very significant and underpins the fact that women use their access to social capital to compensate for their lack of other assets. For example, women form shared labour groups which compensates for their limited access to human capital. The high level of social capital of women therefore adds substantially to their stock of human capital. Also their association to these social groups increased their rate of savings from 38.2 percent before getting into

pineapple farming to 50.9 percent, since membership of a group often entails obligations of making fixed contributions regularly which are often given out as loans to needy members. The increase in access to credit from 52.6 percent before pineapple farming to 57.1 percent after getting into pineapple farming among women, though marginal is also due to the fact that the few available credit facilities mostly target women as women are perceived to be marginalized in society. With the exception of one respondent who had about twenty acres of pineapple farms, most women farm smaller acres than men and there by need less physical and human capital.

Men scored higher in terms of having access to physical and human capital. This is in relation to the large sizes of pineapple farms that belongs to men and calls for more labourers and farm implements. About 49.1 percent of men are able to save because they farm larger areas and therefore get more revenue than their women counterparts.

Table 4.12: Educational background and Livelihood of Respondents (%)

Level of education	Social Capital		Access to Credit		Ability to Save		Physical Capital		Human Capital	
	Before	After	Before	After	Before	After	Before	After	Before	After
Basic Education (Primary-JSS)	54.2	63.1	36.8	46.4	52.9	47.1	38.7	57.6	41.7	44.3
Secondary	8.3	3.1	21.1	7.1	8.9	16.2	32.7	8.5	12.5	14.3
Vocational/ Technical	0.0	0.0	0.0	3.6	2.9	2.9	4.1	3.4	0.0	2.9
Higher	8.3	4.6	15.8	14.3	20.6	19.1	8.2	8.5	20.8	7.1
None	29.2	29.2	26.3	28.6	14.7	14.7	16.3	22.0	25.0	31.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Author's Survey, 2005.

Table 4.13 seeks to establish the relationship between the educational background and livelihood of respondents. The Table indicates high percentages of positive responses to social, physical, and human capital and the ability to save among respondents with basic education and no education who form about 67.5 percent of the total number of respondents. This is expected as people with little or no education and experience in pineapple cultivation have to acquire some form of skill training either through the various social groups of which they are members or have to seek for the services of agricultural extension workers.

Social capital is however non existing or minimal among respondents with vocational or higher education, this constrain their ability to form shared work groups. Almost all respondents with vocational or technical training however have access to human capital and physical capital, and save a portion of their income regularly. This category of respondents however constitutes only 32.5 percent of total respondents.

4.9 SUMMARY OF LIVELIHOOD INDICATORS AMONG PINEAPPLE FARMERS.

Social capital showed up to be high among women with more than 90 percent of them responding to having access to extension services and being members of cooperatives. The age group of 40-59 also turned up with a high level of social capital, 56.6 percent of members in this age group had access to social capital. Respondents with little or no

education had a high percentage of social capital of about 92.3 percent. Respondents with at least secondary school education however recorded a social capital of 7.7 percent.

Financial capital was also defined by the access to credit and the ability to save. It turned out that women had more access to credit facility than men but men saved more than women. Respondents in the age category of 60-69 also saved more but had no access to credit. Access to credit and the ability to save did not vary so much in relation to the educational background of respondents.

Physical capital was however high among male respondents (80.9%) and less among female respondents. Physical capital was also high among respondents within the age group of 40-59. Respondents within the age group of 60-69 also recorded a high level of physical capital.

Human capital was also high among respondents between the age group of 40-40 and among males. Females also recorded a low level of physical capital. Respondents between the age group of 60 – 69 also recorded a high level of physical capital even though they constituted only 7.8 percent of total respondents.

4.10 CONSTRAINTS TO PINEAPPLE CULTIVATION.

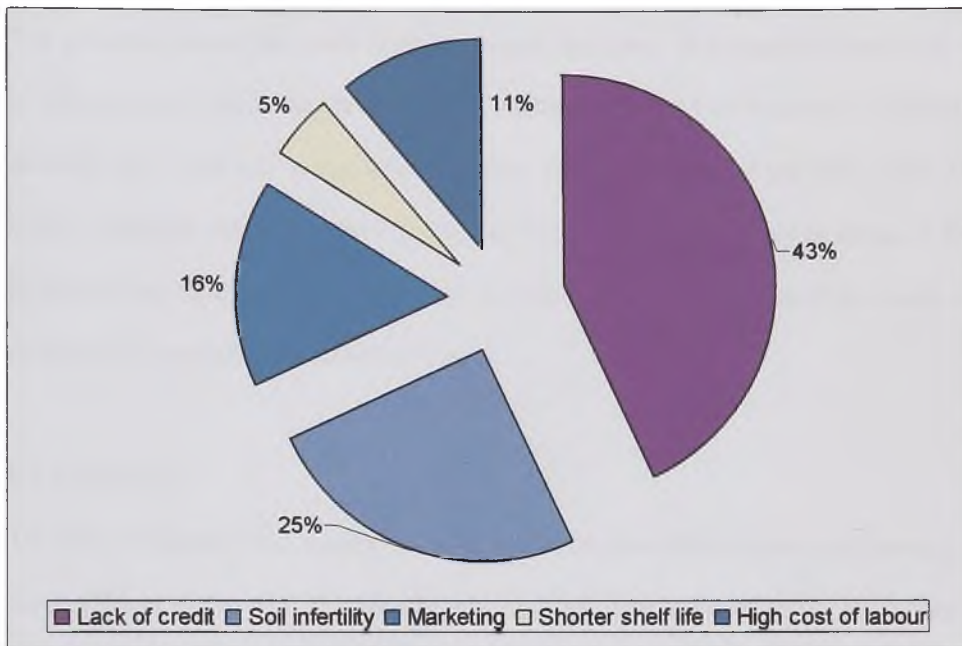
Problems that are directly linked to pineapple cultivation affect small-scale farmers the most. The effect of inadequate capital on farming and farming outputs is very significant. Agricultural inputs such as weedicides, pesticides, suckers etc are very expensive. These

result in an inadequate application of inputs which affects yield greatly. About 43 percent of respondents asserted that they were having problems with financing their farming activities. A significant number of respondents also complained about the high cost of labour.

Another 5 percent of respondents commented that they were having problems with land acquisition. Land owners prefer to lease out their land to pineapple farmers basically because pineapple farmers lease land for longer periods and pay higher prices. Hence, although land is readily available they are expensive. Farmers therefore had to farm on the same stretch of land for so long a period that the land loses its fertility.

Results from the study indicate that 16 percent of respondents are having problems with marketing their produce. Farmers are not happy with their relationship with exporters as they are of the view that exporters don't always adhere to purchasing agreements and therefore default in payment after they had purchased the produce on credit. Buyers sometimes spray fruits to induce ripening and leave the fruits to rot on the farms when they are unable to make the necessary arrangements with their foreign partners to export the fruits. Fruits that are rejected by exporters are also bought at unreasonably low prices by local buyers which reduce the expected revenue from the fruits.

Fig 4.3: Constraints to pineapple farming



Source: Author's Survey, 2005.

Pineapple fruits are also highly perishable which creates a major problem for farmers. Farmers also lack knowledge in fruit processing. Almost 11 percent of respondents cited shorter shelf life of fruits as a major problem they encounter. They therefore do not see the point in expanding their farming activities because they are of the view that increasing output might mean decreasing income if the market is flooded with pineapple.

CHAPTER FIVE

SUMMARY AND RECOMMENDATIONS

5.1 INTRODUCTION

The principal aim of the study is to investigate the effect of pineapple farming on the livelihood of farmers in the Ga Districts. A background review of literature on pineapple farming had begun this study. The objectives and justification of the study were also stated. Pineapple farming in the Ga districts and its effect on farmers in terms of their livelihood has been examined. This final chapter presents the findings of the study and recommendations based on these findings.

5.2 FINDINGS

The main objective of the research work is to ascertain the effect of pineapple farming on the livelihood of farmers. Specifically, the research aims at investigating the extent to which pineapple farming has benefited farmers and helped improve livelihood. The specific objectives of the study include:

- To investigate whether there has been a shift towards pineapple cultivation in the district.
- To ascertain the reason for the shift towards pineapple cultivation if any.
- To determine whether pineapple farming is more profitable than other non-traditional crops
- To ascertain the impact of pineapple farming on the lives of farmers
- To identify the problems associated with pineapple farming and make recommendations.

From the data collected, it is evident that pineapple farming has had a positive effect on the livelihood of farmers. There has been a gradual shift towards the cultivation of pineapple in the district. A study of the crop area cultivated by farmers over a five year period indicates that land allocated to the farming of other crops namely; cassava, okro, and maize had decreased over the years whereas land available to pineapple farming had increased consistently over the same period. At least 66.2 percent of respondent increased their farm size for the cultivation of pineapple between 3-8 acres over the five year period.

In examining why farmers are shifting to pineapple farming, it came to light that most farmers were having problems with marketing crops they were cultivating earlier like okro, cassava and maize and therefore wanted to make use of the export market available for pineapple. Majority of farmers (45%) however got into pineapple farming because they wanted to improve on their income. About 9 percent of respondents went into pineapple farming because they wanted to diversify to reduce the risk involved in farming a single crop. Less than 1 percent of respondents could not assign any tangible reason for going into pineapple farming.

Pineapple farming also turned out to be more profitable than other crops cultivated in the district. Analysis shows that pineapple farmers earn more net revenue than the farmers who cultivate other crops.

The analysis on livelihood indicates that the wellbeing of pineapple farmers generally improved with pineapple farming. Of significant improvement were their social and

human capitals which increased from 27.3 percent and 26 percent before respondents became pineapple farmers to 72.7 percent and 74 percent respectively after they became pineapple farmers. Respondents' ability to save also increased from 33.3 percent to 66.6 percent after they got into pineapple farming. Much cannot be said on their ability to access credit and their physical capital as the differences in these indicators before and after were not so significant.

In spite of all these benefits that came with pineapple farming, farmers still have a number of problems that affect their activities. Most of these farmers lack access to credit facilities; have problems with their buyers and believe that pineapple farming is labour intensive and the cost of labour too high for them.

5.3 RECOMMENDATIONS

- Since problems associated with pineapple cultivation are mainly encountered by small scale farmers who are unable to sustain weed, pest and disease control measures due to their weak financial positions, it is paramount for governmental organizations working to alleviate poverty among farmers, to work with financial institutions in instituting measures that will increase farmers' access to financial services by overcoming the barriers associated with farmer's lack of collateral. Support in the form of financial assistance should be given to farmers who have invested in education thereby enabling them to put their knowledge to productive use. This will serve as a form of motivation and encourage even a higher percentage of farmers to seek for education and training.

- Farmers should be encouraged to form cooperatives. These cooperatives should be assisted and empowered to bargain for the sale of the produce of their members. Older farmers who have gained experience from farming should be encouraged to join these cooperatives to ensure the transfer of knowledge among farmers.
- New technologies should be exploited to assist farmers in storing their produce. Small scale industries should be encouraged to invest in pineapple processing to serve as a readily available market for pineapple. Members of farmer cooperatives should also be trained in processing fresh pineapples before sales to add value to their produce.
- Government should provide farmers with subsidized fertilizer and seeds to increase pineapple production. Where this measure has already been taken, precautions should be in place to ensure that the inputs are channeled to the farmers who need them.
- Reform of extension services programmes to assist women in particular and encourage people to be willing to invest in their own human capital by attending training sessions should be embarked upon. Modern intensive farming techniques, knowledge about how to market goods and appropriate quality standards should be shared during such training sessions. The agricultural extension unit should also be equipped with logistics such as vehicles to facilitate easy movement from one farming community to another to improve upon the services they render to farmers.

- Crop insurance programs and alternative markets should be explored and made accessible to exporters. Exporters could also form cooperatives to present a unified front to importers and access loans to boost up their business.

REFERENCES

1. A News Letter of the Federation of Association of Ghanaian Exporters (1997), ISSN 0855-2398. Vol. 3, No.3, P3.
2. A News Letter of the Federation of Association of Ghanaian Exporters (1998), ISSN 0855-2398. Vol. 3, No.4, P20.
3. A News Letter of the Federation of Association of Ghanaian Exporters (1995), ISSN 0855-2398. Vol. 2, No.2, P18.
4. Abdul G. M and Ahmed T. T. (1999), *Livelihood in the dry lands of East Africa*, Horn of Africa Regional Workshop on Agricultural Policy.
5. Amoako G. (1996), *Effect of long term institutional finance on non-traditional Agricultural Exports production*.
6. Boateng O. G. (1999), *Contribution of pineapple as non-traditional Export Commodity to the growth of Ghana's Economy*
7. Carney D. (1998), *Implementing the sustainable rural livelihood approach*. Paper presented to DFID Natural Resource Advisors Conference, London.
8. Cuddington J.T. (1998), *Long Run Trends in 26 Primary Commodity Prices*.
9. Department for International Development (1999), *Sustainable livelihoods guidance sheets*
10. Future Harvest Centers, CGIAR (2005), News feature, <http://www.futureharvest.org>.
11. Ga District Assembly Monthly Report (October 2004).
12. Ghana Export Promotion Council (1996), *Non traditional Export development (MTP-NTE)*. Medium term plan.

13. Haizel K. A. (2002), *Pineapple in Ghana*, Legon Extension Bulletin. No. 12, Crop Science Division, University of Ghana,
14. Institute of Statistical, Social and Economic Research (2003), *State of the Ghanaian Economy*.
15. La Anyane S. (1963), *Ghana's Agriculture, its Economic Development from early times to the middle of the twentieth century*.
16. Ministry of Food and Agriculture (1990), *Ghana Medium Term Agricultural Development Programme, an Agenda for Sustained Agricultural Growth and Development (1991-2000)*.
17. Ministry Of Food And Agriculture (2000), *Policy Planning, Monitoring And Evaluation Directorate Survey On Selected Non -Traditional Crops In Ghana..*
18. Ministry of food and Agriculture (2002), *Survey on selected non-traditional crops in Ghana..*
19. Obeng I. S. (1990), *The Impact of Structural Adjustment Program on Ghana's Horticultural Industry : The Case of Pineapple Production in the Nsawam District*.
20. Obeng I. S. (1994), *Effect of domestic policies on production and export of non-traditional Agricultural commodities*.
21. Osei. I. (1992), *Current trends in non-traditional Exports: A case study of yam*.
22. Owusu-Asante. V. (1994), *Prospects in divergence to non-traditional Agricultural Export Commodities in Ghana's Economy*.
23. Pinto M.E.R. (1990) *Export Development of pineapple*. Project Report for UNCTAD/GATT, Geneva.

24. Seini. A. W. (2002), *Agricultural Growth and Competitiveness under Policy Reforms in Ghana*. Technical Publication No. 61.
25. Simmons J. (1976), *Cocoa production, Economic and Botanical Perspectives*, U.S.A.
26. Statistical Research and Information Directory of MOFA (2004), *Data on yield and crop area of selected food crop*.
27. Statistical Research and Information Directory of MOFA (2004), *Facts and Figures*.
28. Takane T. (2002), *Smallholders and non-traditional exports under economic liberalization: The case of pineapple in Ghana*.
29. The Horticulture Development Unit, Directorate of Crop Services of MOFA (2004), *Production Guide for Pineapple*.
30. Trienekens J. H (2004), *Innovation through International Supply Chain Development*
31. Zachary G.P (2003), *World Policy Journal*, Article: volume XXI, No. 2.

QUESTIONNAIRE

Research Topic: The effect of pineapple farming on the livelihood of pineapple farmers in the Ga districts.

Participating in this research work is voluntary. All information provided by you will be considered completely confidential. Your name will therefore not appear in any report, publication or presentation resulting from this study. Thank you for your cooperation and support.

SECTION A - PERSONAL INFORMATION

1. Sex: (1) Male [] (2) Female []
2. Age.....
3. Marital status (1) Single [] (2) Divorced []
(3) Married [] (4) Co Habitating []
(5) Separated [] (6) Widowed []
4. How many dependants do you have? (1) 1 - 3 [] (2) 4 - 7 []
(3) 8 - 11 [] (4) 12 - 15 []
5. What is your level of education? (1) Primary [] (2) J.S.S []
(3) S.S.S [] (4) Vocational/Technical []
(5) Tertiary [] (6) Other [] (7) None []
6. Have you been able to improve upon your level of education since you entered into pineapple farming? Yes [] No []
7. For how long have you been into pineapple farming? (1) 1 - 5yrs []
(2) 6 - 10yrs [] (3) 11 - 15yrs [] (4) 16 - 20yrs []
8. Have you cultivated other crops prior to pineapple farming? Yes [] No []
9. If yes what crops were you farming then? (1) Cassava [] (2) Maize []
(3) Okro [] (4) Garden eggs [] (5) Pepper [] (6) Other []
10. What were your reason(s) for changing from those crop(s) to pineapple farming?
(1) To improve my income [] (2) Poor market [] (3).Other [], specify
.....

.....
.....
11. Did you enter into pineapple cultivation to improve your income?

Yes [] No []

12. Are you cultivating other crops along side pineapple farming? Yes [] No []

13. If yes what are these crops? (1) Cassava [] (2) Maize [] (3) Okro []
(4) Garden eggs [] (5) Pepper [] (6) Other []

14. What are your reason(s) for farming these crops alongside pineapple farming?.....
.....
.....
.....

15. Are you a member of any co-operative society? Yes [] No []

16. If yes, what are the aims of the co-operative.....
.....
.....

17. What are some of the benefits you've had from the co-operative?
.....
.....
.....

18. Prior to being a pineapple farmer were you benefiting from any co-operative society?

Yes [] No []

19. If yes what were some of the benefits?
.....
.....

20. What was your average income per harvest prior to becoming a pineapple farmer?
.....

21. What was your average income per harvest after becoming a pineapple farmer.....
.....

SECTION B – INFORMATION ON LAND ACQUISITION AND INPUTS

22. How many acres did you cultivate for the following crop in the following years

	2000.	2001	2002	2003	2004
1. Cassava	[]	[]	[]	[]	[]
2. Maize	[]	[]	[]	[]	[]
3. Pineapple	[]	[]	[]	[]	[]
4. Okro	[]	[]	[]	[]	[]

23. How much did the crop area for the following crops increase in the following years

	2000.	2001	2002	2003	2004
1. Cassava	[]	[]	[]	[]	[]
2. Maize	[]	[]	[]	[]	[]
3. Pineapple	[]	[]	[]	[]	[]
4. Okro	[]	[]	[]	[]	[]

23. How much did the crop area for the following crops decreased in the following years

	2000.	2001	2002	2003	2004
1. Cassava	[]	[]	[]	[]	[]
2. Maize	[]	[]	[]	[]	[]
3. Pineapple	[]	[]	[]	[]	[]
4. Okro	[]	[]	[]	[]	[]

24. Required labour for specific operations in pineapple farming

<u>Operation</u>	<u>Units of Labour per Acre</u>	<u>Number of days</u>	<u>Total Payment</u>
1. Land Preparation	[]	[]	[]
2. Fertilization	[]	[]	[]
3. Weeding	[]	[]	[]
4. Planting	[]	[]	[]
5. Harvesting	[]	[]	[]
6. Forcing	[]	[]	[]
7. Transporting produce	[]	[]	[]

25. What are the total quantities used, number of times used, and cost of other inputs per acre in pineapple farming?

<u>Input</u>	<u>Total quantity used per acre</u>	<u>No. of times</u>	<u>Cost per kg</u>
1. Fertilizer	[]	[][]	[]
2. Insecticide	[]	[][]	[]
3. Weedicide	[]	[][]	[]
4. Chemical for forcing	[]	[][]	[]
5. Sucker	[]	[][]	[]
6. Chemical for de-greening	[]	[][]	[]
7. Tractor service	[]	[][]	[]
8. Technical advice	[]	[][]	[]
9. Others (specify)	[]	[][]	[]
10. De-crowning	[]	[][]	[]

26. Required labor for specific operations in the cultivation of other crops prior to pineapple farming.

<u>Operation</u>	<u>Units of Labor per acre</u>	<u>Number of days</u>	<u>Total Payment</u>
1. Land Preparation	[]	[]	[]
2. Fertilization	[]	[]	[]
3. Weeding	[]	[]	[]
4. Planting	[]	[]	[]
5. Harvesting	[]	[]	[]
6. Transporting produce	[]	[]	[]

27. What are the total quantity used, number of times and cost of inputs per acre operation in other crops you cultivated prior to pineapple farming?

<u>Input</u>	<u>Total quantity used</u>	<u>No. of times</u>	<u>Cost per kg</u>
1. Fertilizer	[]	[]	[]
2. Insecticide	[]	[]	[]
3. Weedicide	[]	[]	[]
4. Tractor service	[]	[]	[]
5. Technical advice	[]	[]	[]

6. Others (specify) [] [] []

SECTION C – INFORMATION ON PRODUCTIVITY

- 28. What is your average yield of pineapple per acre?
- 29. What is your average yield of other cash crop per acre?
- 30. Quantity per acre of pineapple sold to exporters.....Price per kg.....
- 31. Quantity per acre of other crops sold to exportersPrice per kg.....
- 32. Quantity per acre of pineapple sold on the local market.....Price per kg.....
- 33. Quantity per acre of other crops sold on the local market.....Price per kg...
- 34. Quantity per acre of pineapple unsold... ..
- 35. Quantity per acre of other crops unsold prior to pineapple farming.....
- 36. Do you have access to extension officers? Yes [] No []
- 37. Do you have access to credit facilities? Yes [] No []
- 38. Have you been able to acquire any personal asset(s), which you could not have acquired prior to becoming a pineapple farmer? Yes [] No []
- 39. If yes what are these asset(s)?
.....
.....
.....
- 40. Have there been any improvement in the following areas of your life since you entered into pineapple farming?
 - 1. Accommodation/Shelter []
 - 2. Food security []
 - 3. Means of transport []
 - 4. Home use appliances []
 - 5. Ability to afford health care services []
- 41. What was your expenditure per month prior to pineapple farming?
- 42. What is your expenditure level now?
- 43. Have you been able to acquire new equipments for your pineapple farming? if yes please name them.....

-
.....
44. Give two or three areas of your life style that has changed since you entered into pineapple farming.
.....
.....
45. What proportion of your income do you save per harvest since you entered into pineapple farming?
.....
46. What proportion of your income do you save per harvest prior to entering into pineapple farming?
47. Any difficulties associated with pineapple farming? If yes what are they?
-
.....
.....
48. Any difficulties associated with the farming of other crops? If yes what are they?
.....
.....
.....
.....
.....
.....
.....
.....
.....

Thank You.