

Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Economics



Bachelor Thesis

**Economic Analysis of Agriculture and Food Security in
Africa: The case of Ghana**

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE
Department of Economics
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BACHELOR THESIS ASSIGNMENT
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Thesis title

Economic Analysis of Agriculture and Food Security in Africa: The Case Study of Ghana

Objectives of thesis

Bachelor thesis is aimed at the economic analysis of agriculture with regard to its position in the national economy of Ghana, food security and poverty solution in the country in the frame of the African situation as such, using Ghana as a benchmark. The particular aims are:

- To analyze the importance of agriculture in the national economy of Ghana
- To indicate the contribution of agriculture in the GDP.
- To define and analyse 3 main factors affecting the volume of agricultural production.
- To analyze the issue of food security and its major problem in Ghana.

Part of the thesis will be also a field research in the selected regions of Ghana

The final outcome are some recommendations and proposals for increasing of agricultural production and therefore increasing the level of food security.

Methodology

- Collecting data from the Ghana Statistical Service, academic journals, publications and the internet.
- Quantitative and qualitative analysis of the collected data.
- Structured questionnaires illustrating the situation in agriculture, food supply and poverty in 2 selected communities in Ghana: One in the Northern region and one in the Southern region. 25 questions will be formulated and 100 papers will be distributed in each community.
- Time series model.
- Least square and regression model.
- SWOT analysis

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Recommended information sources

Mwaniki A, Achieving Food security in Africa: Challenges and Issues
KidaneW. et al. Food security and agricultural development in Sub-Saharan Africa, Rome, 2006
The World food Program, (2009) Comprehensive Food Security and Vulnerability Analysis (CFSVA)
Ministry of Food and Agriculture (MOFA) Ghana (2002), The Food and Agriculture Sector Development Policy
<http://www.wfp.org/food-security>
<http://www.fao.org/publications/sofi/en/> The state of the food security in the world in 2012

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Declaration

I hereby acknowledge that I have worked on this Bachelor thesis titled “Economic Analysis of Agriculture and Food Security in Africa: The case study of Ghana “by myself and all used resources are included in the Reference and Appendix section.

In Prague on

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Solomon Boafo

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Dedication

This thesis is wholeheartedly dedicated to the Almighty God for His preservation, provision, sustenance, guidance, protection and knowledge.

**Ekonomická analýza zemědělství a potravinovou bezpečnost v Africe:
Případová studie Ghany**

**Economic Analysis of Agriculture and Food Security in Africa:
The case of Ghana.**

Souhrn

Tato bakalářská práce má za cíl popsat důležitou roli zemědělství a zajišťování potravin v ekonomice v Ghaně. První část práce představuje předmět práce a ekonomického zázemí Ghany. Druhá část se zaměřuje na hlavní cíle / cílů a použitou metodiku. Zatřetí, a to prostřednictvím komplexního přehledu literatury, jsou zvýrazněny otázky bezpečnosti potravin a zemědělství v Ghaně, jejich zlepšení, předchozí a současné posouzení, reforem a možných řešeních. Čtvrtý oddíl analyzuje vládní politiky, zemědělský sektor HDP (%) a její přínos pro hospodářství, vybrané plodiny a současnou situaci bezpečnosti potravin a zemědělství v Ghaně. To také zahrnuje diskusi a výsledky dvou vybraných obcí v severní a jižní Ghaně. V pátém oddílu, je práce dokončena a doporučení jsou uvedeny.

Klíčová slova: ekonomika, analýza, zemědělství, bezpečnost potravin, Afrika, Ghana

Summary

This bachelor thesis aims at describing the important role of agriculture and food security in Ghana's economy. The first part of the thesis introduces the subject of the thesis and the economic background of Ghana. The second section outlines the main aims/objectives and the methodology used. Thirdly, through a comprehensive literature review, issues of food security and agriculture in Ghana, their enhancement, the previous and present assessments, reforms and possible solutions are highlighted. Section four analyses the government policies, agricultural sector by GDP (%) and its contribution to the economy, selected crops and the current situation of food security and agriculture in Ghana. It also includes the discussion and results of two selected communities in northern and southern Ghana. In the fifth section, the thesis is concluded and recommendations are given.

Keywords: economy, analysis, agriculture, food security, Africa, Ghana

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1. Introduction

As accounted by the American psychologist, Abraham Maslow, in Maslow's Hierarchy of Needs, food is one of the basic necessities of life that needs to be accomplished before any other need can be met. However, for ages, food security has been a burden not only on the shoulders of "Mama Africa" but the entire world at large. Both developed countries and undeveloped countries see this "demon" as a great challenge which is holding back the economic development of their nations. However, the severity of food security in developed countries and undeveloped countries are different.

The difference lies between the sizes of the population affected.¹ Although efforts have been made by head of states to put this food security under control if not completely eradicate it, there is no single bullet for this task. Among the key goals of the eight Millennium Development Goals (MDGs) which were endorsed by nearly 190 countries of the United Nations at the September 2000 UN Summit, there is halving global poverty and hunger. This was an attempt to encourage the International community to join in the campaign of food security particularly in Africa where 34 of the world's 50 Least Developed Countries (LDCs) are.² Agriculture is the backbone of Ghana. It employs more than half of the population on a formal and informal basis and accounts for almost half of the GDP earnings. Cocoa and timber are the major sources of foreign exchange in Ghana. Ghanaian families depend largely on subsistence agriculture to make ends meet and to feed their household. This study will address the intensity of food security in African using Ghana as a benchmark.

Ghana has a land area of 92,100 sq miles (238,537 sq km) .It is a sub -Saharan country in West Africa. According to Ghana Statistic Service the population of in Ghana in 2010 census is currently 24,658,283. Which women are 12,633,978 and men stands at 12,024,845. Accra is the capital town .On the 6th of March 1957 Ghana gained independence. The system of governance is multiparty democracy. The current president is H.E John Dramani Mahama. The ruling party now is National Democratic Congress (NDC). There are more than 36 languages but the official language is English. Other local languages include Akan, Ga, Ewe, Dagbani, and Hausa. Christianity, Muslims and traditionalist are the main religion.

¹ Angela Mwaniki, Achieving Food security in Africa: Challenges and Issues

² KidaneW. et al. Food security and agricultural development in Sub-Saharan Africa, Rome, 2006

1.1 Background of Ghana and its Economy

Access to food and food security is one of the most important basic needs for every human being. Agriculture is vital in the economy of most countries.³ The country needs agriculture very much in the economy since it contributes to almost 40% of the GDP of the countries worth. Ghana as any other developing country has gone through several stages of economic growth. The country continues to grow in its economic and political systems. It has one of the highest Gross Domestic Product (GDP) per capita in Africa. It has roughly twice the per capita output of the poorer countries in West Africa. This is due to the fact that the country is well endowed with many and rich natural resources and its gradually developing in agriculture. Cocoa, timber and gold production are major sources of foreign exchange.

The economy continues to depend on subsistence agriculture, which accounts for 40% of GDP and employs 60-70% of the work force⁴. Ghana is a country which has its focus on agriculture and food security.⁵ Timber, Cocoa, are some of the agricultural commodities at the heart of Ghana's economy. Only Cocoa accounts for around two-thirds of the total value of Ghana's agricultural.

The cocoa crop is one of Ghana's three celebrated traditional exports. Pineapples, shea-nuts, refined sugar have increased in their export value this time as well as bananas, palm oil ,cashews, coffee coconuts and other. Mangos constitute a new crop to Ghana's export commodities. Very soon the mangoes are expected to become the non- traditional export arena, and are expected to become an important "non-traditional" export. In addition to cash crops, Ghanaian farmers grow food for their own people, mostly cassava, maize, yams, plantain, millet, rice, and various fruits and vegetables for local consumption. Low productivity on these farms is endemic, however, because, among other reasons, high-yielding, state-certified hybrid seed is rarely used; irrigation is remarkably underused; and poor storage facilities and infrastructure contribute to high rates of post-harvest loss. Although Ghana has a domestic poultry industry, it suffers greatly, its farmers contend, from foreign imports of poultry meat costing far less.

³ <http://www.ghana.gov.gh/index.php/about-ghana/ghana-at-a-glance>(cit.Dec.27.2012)

⁴ Family of the world, <http://www.familiesoftheworld.com/teacherguide/ghanaguide.pdf>, [Cit. Dec. 27,2012]

⁵ <http://egateg.usaid.gov/sites/default/files/Ghana.pdf>(CIT.) (cit. Dec.28.2012)

2.Thesis Objective and methodology

This study will address the intensity of agriculture and food security in Africa using Ghana as a benchmark. The aim of the entire thesis will be

- ❖ To analyze the importance of agriculture in Ghana's economy.
- ❖ To indicate agriculture contribution in the GDP.
- ❖ To indicate 3 main factors affecting the yield of agriculture production
- ❖ To analyze the issue of food security and its major problem in Ghana

2.1 Hypothesis

- ❖ The increase in government spending by 30% on infrastructure and storage facilities will result in 2 times improved situation in food security.
- ❖ The involvement of Government, giving more incentives, loans, fertilizers will boost agriculture production in Ghana by 30-40% . .

2.2 Methodology

Aside the usage of the literature reviews, both qualitative methods and quantitative was used in this research. Structured questionnaire were used. These questions were used in two communities. The illustration took place in Bosome Freho in the Ashanti region whilst the second illustration took part in Bole in the Northern region. Twenty five (25) formulated and 200 questionnaires were distributed in total, 100 in each small community or village. The answers to these questions will be analyzed. Ghana Statistical Service data were used in this research. Academic, journal, publication, internet.

The Ordinary Least Square Method in this case was used; different models are used to see the trend of food security and agriculture development in Ghana and Africa as a whole. The project indicators will be production, Area Harvested, Yield, consumption and prices .All these indicators are used to find the inter-relationship between the factors. Meanwhile during the research, the data of the most valuable cash Commodity (cocoa) was used to test the dynamic time series models to analyze cocoa production and it yield in Ghana. Projections were based on the assumption of normal weather conditions, and a continuation of the past trends in yields, planted areas, and production growth. The time series model and the Ordinary Least Square Method are used

3.Literature Review

3.1 Agriculture and food security in Ghana.

Agriculture has got numerous definitions but have same or similar meanings. From oxford dictionary agriculture is defined as⁶ “the science or practice of farming including cultivation of the soil for growing of crops and rearing of animals to provide food, wool and other products”. For more elaboration,⁷“agriculture can also be defined as the growing of both plants and animals for human needs or economic gains”.⁸“However, it’s admitted that no definition can be exacting for everybody and for all purpose”.

Food security –definition: Food security definition has been a debate over the past years. “Two common definitions come from United States Department of Agriculture (USDA), and UN’s Food and Agriculture Organization” (FAO)

“Food security exists when all people, at all times, have the physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preference for active and healthy life”⁸ (FAO).

The definition given on other hand, states that “Food security for a household means access by all members at all time to enough food for an active, healthy life.

Food security includes at a minimum, (USDA):

(1) The ready availability of nutritionally adequate and safe foods

(2) An assured ability to acquire acceptable foods in socially acceptable ways (that is, without resorting to emergency food supplies, scavenging, stealing, or other coping strategies).”(USDA)

The importance of food security in Ghana’s Economy

- ❖ It reduces importation of agriculture goods.
- ❖ It crates buffer for more food to rely on.
- ❖ It eradicates hunger.
- ❖ It improves food situation of insecurity.
- ❖ It helps in Poverty alleviation.
- ❖ It increases farmer production.
- ❖ It creates employment

⁶ Source:oxford dictionary.com.(cit 8.9.12)

⁷ source(Abellanos and H.M.Pava.1987.Intoduction to Crop Science. Central Mindanao University,

⁸ Mususan, Bukidnon: Publications office.p.235,(cit.8.9.12)

3.2 Influence of agriculture on Ghana's Economy.

There are many influences on agriculture in Ghana's economy both in the positive ways and the negative way. In this research, the basic influences are outlined.

Positive Influence:

- ❖ Agriculture provides the main source of food, income and employment to the rural population.
- ❖ It contributes 35-40% of gross domestic product (GDP) of Ghana's economy.
- ❖ Forty three percentages (43%) of Ghana's export consists of agricultural commodities.
- ❖ Agriculture and land use is the basics of achieving food security and poverty alleviation.

Labor problems should also be taken into consideration when advertising for intensive farming practice in Ghana. Agriculture gives employment to the youth and also helps in poverty reduction. It helps to reduce rural-urban migration as well.

Negative Influence of agriculture on Ghana's Economy

- ❖ It increases the importation of agriculture goods which can lead to balance of payment deficit.
 - ❖ It also increases the cost living in the country since every commodity is imported.
 - ❖ It increases rural-urban migration
 - ❖ It also deepens the gap of poverty alleviation.
- It affect the GDP since agriculture still dominates Ghana's economy contributing more than 30% of total GDP, and the
- ❖ Urbanization process remains slow since about 60% of the population still live in rural areas (Breisinger et al. 2008).

3.3 Food security and Agriculture enhancement

The World Food Summit of 1996 defined food security as *“when all the people at all times have access to sufficient, safe, nutritious food to main a healthy and active life”* (Khor, 2008).

The first national food security survey in Ghana which was entitled Comprehensive Food Security and Vulnerability Analysis (CFSVA) was held in 2008 to 2009 by the

World Food Program. The statistics showed that about 1.2 million inhabitants representing 5 percent of the population of Ghana suffer from food insecurity. The problem worsens as you move towards the Northern part of the country. Three regions in the northern part of Ghana including Upper West region, Upper East region and Northern region accounts for 453 000 people who are strongly affected by food insecurity. The reasons for the severe food insecurity in these areas are that these areas are the poorest and have the unfavorable weather conditions such are floods and drought.

Table 1: Months of Household Food Insecurity in Upper West, Upper East and Northern Regions of Ghana

Crop	Months of Harvest	Upper		Upper East			Northern		
		Months of stock Depletion	Months of food Insecurity	Months of Harvest	Months of stock Depletion	Months of food Insecurity	Months of Harvest	Months of stock Depletion	Months of food Insecurity
Sorghum	October	June	4	August	February	6	November	June	5
Maize	October	June	5	October	April	6	September	June	3
Millet	September	April	4	July/Nov	January	6	November	June	5
Rice	October	June	5	November	April	7	October	May	5
Yam	October	May	6	N/A	N/A	N/A	September	June	4
Groundnut			4	October	April	6	September	April	5
Cowpea	October	June	5	October	March	7	October	May	5
Soybean	September	April		N/A	N/A	N/A	November	April	7

Source: Quaye 2008

However, Ghana has good agricultural policies which has been the pivot behind the country to prevent Ghana's complete vulnerability to food insecurity. In 2012, it was estimated that the world food insecurity was about 870 million people representing 12.5% of the world population under-nourished from 2010 to 2012, out of which 234 million were from sub-Saharan Africa. Year after year Ghana is improving its agricultural sector.

There have been some massive developments in agriculture in the last decade. The rapid growth in the agricultural sector holds the key to reduction of hunger and malnourishment in developing countries including Ghana. According to Mr. Ahwoi, the minister for Food and Agriculture, in 2007, agriculture contributed 5,322 million cedis representing 29.1 per cent of the 2007 GDP of 19,913 million cedis at 2006 prices; but in 2011 agricultural contribution increased by 22.2 per cent over 2007 figure to 6,507 million cedis or 25.6 per cent of the 2011 GDP of 27,742 million Ghana cedis at the same 2006 prices.

The country realizes that the most effective way of improving agriculture is by supporting the small scale farmers to tackle the issues of farmer livelihood and food security was the strategy of using farmers' groups or farmer-based organizations (FBOs) to organize all aspects of agricultural value chain. The government of Ghana in collaboration with other countries mainly the United States have helped to train and assisted 1,242 FBOs's in Ghana conveying the sum to 66,400 farmers. The training equips the farmers with skills in both technical and business development.

The sole aim for this program is to increase the income of farmers, boost the GDP of the Ghana thus increasing productivity. The Food and Agriculture Organization (FAO) also believes that the surest way of dealing with food security is by forming cooperatives that will assist the small scale farmers. The Director-General of the FAO, Dr. Jose Graziano da Silva, in a message read by Mr. Musa Saihou Mbenga, FAO-Ghana Country Representative, mentioned that if cooperatives provide their members with machinery and better assistance or services they will be able to work to eradicate hunger .

The World Food Program (WFP) has helped to provide 42 000 metric tons of food which worth 22.2 million US dollars from food suppliers for use in WFP-Ghana program as well as other WFP offices in West Africa. For years now Ghana has doubled its effects in agricultural enhancement by making agriculture not only the career of the aged, illiterates and school dropouts but also educated people and scholars also go into farming.

3.4 Previous and present assessment of Agriculture and Food Security.

The dream of Ghana is to become a self-sufficient country in the domain of food security. Past governments have contributed their own quota for this initiative but more is yet to be done. Although agriculture remains the back bone of Ghana, the country depends heavily on imports of food. The table below shows food insecurity in all the ten gireons in Ghana in 2009.

Table 2: **Food security in Ghana**

Regions	Food Insecurity		No. of Pec	% pop
	No. of pec	% pop.		
Western Rural	12 000	1	93 000	6
Central Rural	39 000	3	56 000	5
Greater Accra Rural	7 000	1	14 000	3
Volta Rural	44 000	3	88 000	7
Eastern Rural	58 000	4	116 000	8
Eastern Reural	162 000	7	218 000	10
Ashanti Rural	47 000	3	152 000	11
Brong Ahafo Rural	152 000	10	275 000	17
Upper East Rural	126 000	15	163 000	20
Upper West Rural	175 000	34	69 000	13
Urban (Accra)	69 000	2	158 000	4
Urban (other)	297 00	4	572 000	8
Total	1 200 000	5	2 007 000	9

Source: CFSVA, 2009

From the table, it can be deduced that over 2 million Ghanaians were vulnerable to food insecurity in 2009. Food insecurity has a direct connection with poverty. Poverty level in Ghana is on the rise although government is doing everything to overcome the poverty situation. Many Ghanaians fall as victims to both poverty and food insecurity. The two go side by side and it is difficult to get separate one from the other.

Once an individual is caught between the two, it is extremely difficult to disentangle them. It takes the intervention of others. Information from the Ghana Health Service indicates that 55% of child mortality is called by malnutrition.

3.5 Agriculture activities in the Northern and the Southern Ghana.

Basically, agricultural production in the South of Ghana is more productive than that in the North. The reasons as already discussed in the previous chapter include poverty and unfavorable climatic conditions. Interestingly, the Northern region is predominately noted for agricultural production. In fact the farmers that practice agriculture are mostly from the northern region. The Northern region of Ghana which comprises of Upper West region, Upper East region and Northern regions cover about 40% of Ghana land area. Although urbanization and rural developments have led to the reduction of poverty significantly in the south, the northern region of Ghana lack these instruments.

According to a 2011 World Bank report, one out of every three Ghanaian cannot afford the basic necessities of life. This means 30 per cent of Ghanaians are poor, in spite of several years of rapid economic development in the country. Farmers in the northern region of Ghana account for the highest percentage of people who are classified as poor. Due to poverty, the farmers are not able to buy the necessary materials needed for high productions.

The popularly crops that are cultivated in the northern region of Ghana include yam, maize, sorghum, groundnut and millet whereas the livestock farmers also rear animals like goat, poultry, cattle, guinea fowl and sheep. Farmers in the northern region are highly vulnerable as they have limited source of income. This problem coupled with unfavorable climate condition does not make it easy for farmers to grow crops to their full capacity. The soil in the northern region is very dried as the sunshine there is very hot. Nevertheless, farmers in the northern part of Ghana have little irrigation materials in comparison to the south.

Poverty in the northern region has been the cause of all these predicaments. Parents are not able to send their kids to school to learn the new systems of farming because of lack of money. On the contrary, with the presence of infrastructure, insurance and public services, the south is able to over many challenges and thereby increasing productivity. To this end agricultural disparity between the North and the South, the Lead Economist of World Bank, Sebastian Dessus warns that "any poverty alleviation strategy for Ghana must put poverty in Northern Ghana at centre stage, and acknowledge its specific causes in the design of possible interventions". (www.todaygh.com, cited 28-01-12)

3.6 Causes of food Insecurity in Ghana

The main causes of malnutrition or food insecurity are prices of food, incomes and accessibility of food. The unstable inflation rates in Ghana causes prices of goods and services to increase making it difficult for ordinary Ghanaian citizens to afford agricultural products in Ghana. Interestingly, the prices of goods do not increase with a level of incomes. As salary workers continue to earn the same income it becomes impossible to cope with the ever increasing prices of food. With this situation, it becomes practically impossible for workers to afford a three square meal in a day. For people who have no jobs, it takes a miracle for them to afford a two square meals in a day.

Also, natural occurrences like floods and drought causes food insecurity. Throughout the history of Ghana, floods and droughts have destroyed many large fields of cultivated land at crucial times during past cropping seasons, leaving the farming population in the region with reduced harvests to sustain them throughout the year, and a damaged asset base that takes a long time to replenish. Among these last catastrophes, the drought that occurred in 1984 remains paramount. During that time, fame placed the entire country in a devastating state. A great part of the country had to ask for aid to overcome the fame.

In addition to the above-mentioned causes of food insecurity, lack of education and a high dependency on agricultural livelihood activities as primary income sources has as well been identified as being associated to the lack of food security in the country.

3.7 Reform/Possible solutions to agriculture and food insecurity in Ghana.

Obviously, the answer to food insecurity is to put measures in place to produce more food. With that being done, there is no problem. Nevertheless, the problem of food insecurity in Ghana does not lie only the inadequately production of food in commercial quantities but rather the ability to store the food for future use. In other words, Ghana does not have many problems in food production. The problem is establishing storage facilities

for the produced food. For decades, all efforts of government and private entrepreneurs to do away with food security has been geared towards producing more food ignoring the simple solution of building storage facilities as it is being done by developed countries.

In Ghana, one can only get fresh seasonal food example mango, maize etc. at only the time when it is in season. Why cannot we enjoy seasonal foods throughout the year? The answer to this question is the solution of food insecurity in Ghana. According to Ms. Sherry Ayittey, the former Minister of Environment, Science and Technology, Ghana loses about \$ 360000 annually due to inadequate post-harvest management particularly of perished produce. About 20-50 % of fruits, vegetables, roots, tubers and about 20-30% of cereals and legumes are lost annually because lack of storage facilities.

This problem is the main reason behind Ghana's food insecurity. The money that goes waste can be invested into food processing and storage. In school, there are various courses on food science from the elementary level to the highest educational level however; the government refuses to tape the knowledge of these professionals and experts on food preservation and processing.

3.8 Selected Crops, vegetation, soil and climate in Ghana.

Agriculture is the backbone of Ghana. It accounts for 35-40% of GDP and employs 56% of the total labor force. Ghana exports most of its crops to other countries for foreign exchange. Most of the cash crops are exported in the raw state. Over the years the government of Ghana has put forward some policies to ensure that value is added to cash crops before its exports. Some of the cash crops in Ghana in include cocoa beans, cotton, pineapple, palm oil, citrus fruits, coconut, cashew nuts, fresh vegetables, tomatoes and tobacco. For the purposes of the above subtopic, the two most important cash crops are discussed.



Source:<http://www.gipcghana.com/page.php?page=207§ion=32&typ=1&subs=209>
(cit.13.01.20013)

3.8.1 Cocoa Production

Cocoa grows well in regions along the equator. To be precise cocoa is produced in a belt between 10 degrees north and 10 degrees south.⁹The climate around the equator is very favorable for cocoa plantation. Hence, the largest producers of cocoa are Cote D'Ivoire, Ghana and Indonesia. Cocoa plants like shade. The natural environment of cocoa is areas where there are rainfall and adequate temperature. These conditions are accounts high growth and productivity. Cocoa is not specific for any particular type of soil. It can grow well in different types of soil. For this reason cocoa is grown in all parts of Ghana. However, the soil should contain some level of nutrients to a depth of 1.5m.

The roots of the cocoa plant do not need a lot of water therefore the soil should have a high drainage system such that the surplus water can drain away. The soil cannot also be too dried. Soil for growing cocoa is always moist or has some content of water. With agriculture being the driving force of Ghana's economy, agriculture employs more than half of the labor force. The proportion of the working population aged 15 years and above engaged in agriculture as their main job has increased from 78.3% in 2000 to 90.5% in 2008.¹⁰ Nevertheless, the number is decreasing in the last decade. Many people are diverging into industrial activities and manufacturing which id contrary to the normal norm. Economic active person above the age of 15 years are considered as part of the labor force and hence can engage in agriculture.

Table 3: COCOA PRODUCTION, YIELD AND AREA HARVESTED

YEAR	Area Harvested (ha)	Yield (kg/Ha)	Production
1990/91	707	379	268
1991/92	721	384	277
1992/93	711	398	283
1993/94	694	391	231
1994/95	843	412	346
1995/96	1025	394	403
1996/97	1062	342	363
1997/1998	1220	300	366

Source: FAOSTAT Database, 2000

⁹<http://www.icco.org/about-cocoa/growing-cocoa.html>

¹⁰ http://mofa.gov.gh/site/?page_id=5428

The model is Ordinary Least square method. This model is use to analyze a trend of production in a given period.

Model 1: OLS, using observations 1991-1998 (T = 8)

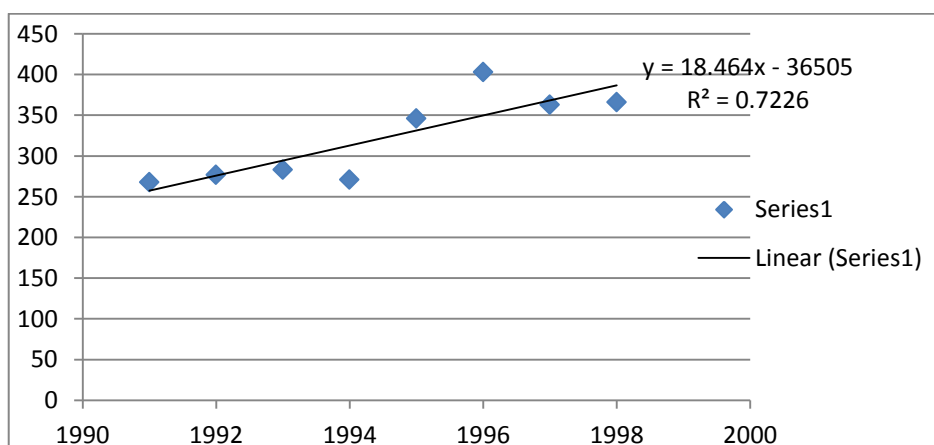
Dependent variable: area Model 1: OLS, using observations 1991-1998 (T = 8)

Dependent variable: prod

Coefficient	std. error	t-ratio	p-value	
const	-405.360	43.8003	-9.255	0.0002 ***
yield	1.07014	0.0866966	12.34	6.18e-05 ***
land	0.373994	0.0156846	23.84	2.42e-06 ***
Mean dependent var	322.1250	S.D. dependent var	53.20697	
Sum squared resid	152.9000	S.E. of regression	5.529918	
R-squared	0.992284	Adjusted R-squared	0.989198	
F(2, 5)	321.5170	P-value(F)	5.23e-06	
Log-likelihood	-23.15288	Akaike criterion	52.30576	
Schwarz criterion	52.54408	Hannan-Quinn	50.69835	
rho	-0.186836	Durbin-Watson	1.981126	

Comparing the p-value with 1, it's greater than 1 and so one can say the model is non-stationary when the production is taken as Dependent Variable.

Figure 1. Trend Analysis graph of cocoa



Source: own graph

Assumption: Looking at the trend analyses Graph, one can witness that the production goes up from 1991 when the area Harvested is increasing and other factors like policies, insecticides are taken care off.

3.8.2 Crops and livestock

The table below shows the annual production figures for the major crops produced in the district.

TABLE 4: ANNUAL PRODUCTION -FIGURES FOR SELECTED CROPS

Production Estimates - 2007			Production Estimates - 2008			Production Estimates - 2009			
Crop	Area (HA)	Yield(MT/HA)	Production	Area (HA)	Yield(MT/HA)	Production	Area (HA)	Yield(MT/HA)	Production
Maize	2500	2.56	6400	2700	2.59	7000	5400	1.55	8400
Millet	5600	1.57	8800	4200	1.7	7200	14500	0.62	8960
Sorghum	5600	1.37	7700	4100	1.5	6200	16300	0.48	7840
Rice	1600	0.75	1200	1600	1.56	2500	1600	1.5	2400
Cowpea	1200	1.16	1400	1000	1.3	1300	2500	0.48	1200
Grouchnut	2600	0.52	1360	2300	0.56	1600	1600	0.8	1280
Soya beans	2370	1.26	3000	2330	1.2	2800	2350	1.4	3300

Source: http://mofa.gov.gh/site/?page_id=5428

The table above shows the main food crops that are grown in Ghana including other root food crops like yam and cassava. The government of Ghana continues to motivate farmers to increase production. The main problems that have limited crop production in Ghana ranges from shortages of production inputs, difficulties in transporting produce to market, and competition from imported foods that were underpriced because of the vastly overvalued cedi.¹¹

Table 5: LIVESTOCK POPULATION

Type of livestock	2008	2009	2010
Cattle	25231	29411	30021
Sheep	2448	29415	30298
Goats	2178	25990	26900
Pigs	16958	6819	6819
Poultry	111064	194510	140649

Source: http://mofa.gov.gh/site/?page_id=5428

The table above shows the statistics of the major livestock production in Ghana from 2008 to 2010. Livestock production in Ghana suffers a number of problems. Although the commercial production of livestock has increased significantly over the last decades, the supply of livestock production is far behind the demand. Ghana depends largely on meat

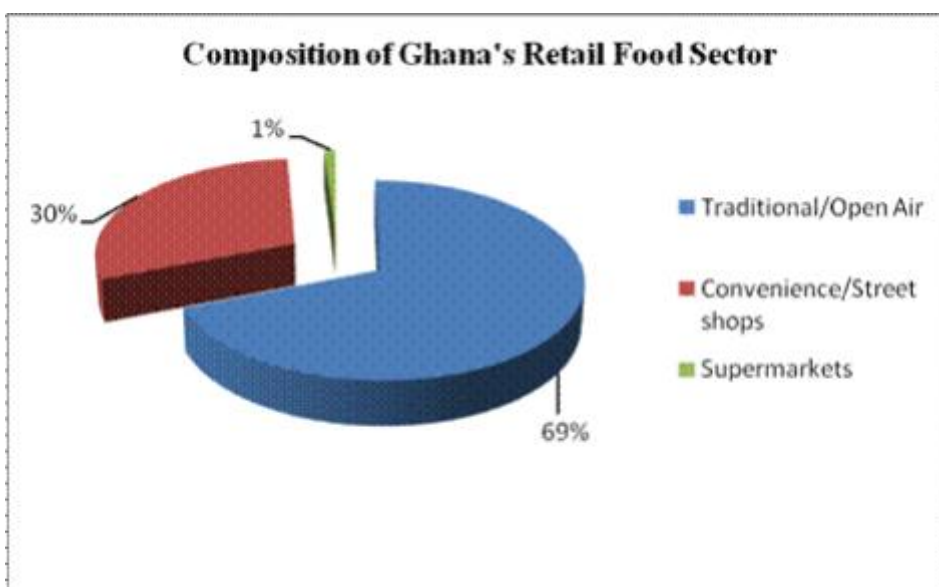
¹¹ <http://countrystudies.us/ghana/80.htm>

importation in order to meet up with its ever growing demand for meat. Ghana is a net importer of poultry, beef and pork.

3.9 Marketing and Packaging

Ghana is a net importer agricultural food although the country puts a lot of interest on agriculture. In 2011, Ghana imported about \$ 1 billion dollars of agricultural food. Ghana imports and export food mainly from the United States. Locally, agricultural producers sell their produce mostly in retail shops. The most common retail shops in Ghana are the traditional open market way of trading about amounts to 69% of the retail sector. The others consist of super markets, grocery/convenient shops which also accounts for 30%.

Figure 2:



Source: http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Ghana%20Exporter%20Guide%202012_Accra_Ghana_11-2-2012.pdf

One of the weak areas of Ghana is packaging. Internationally, due to the fact that most of Ghanaian products are exported in the raw form, the companies that export them do not pay a lot of attention to the packaging. However, there are improvements taking place all the time. Foods sold in the super markets are mostly imported hence they get packaged before arriving to Ghana. Locally, plastic rubbers and papers are used by traders to pack food for consumers. Most careless consumers throw the plastic rubbers around to make the country dirty. Recycling plants are scarce in Ghana and waste management control still remains a major problem till today.

4. Analytical part

Government policies/strategies to support agriculture.

There are no main categories of policies that are intended to address the food insecurity in Ghana. These include Emergency Food Security instruments and Traditional Food Security Policy.

The most recent example of the Emergency Food Security instrument happened during the global recession. In 2007, the nutritional need of Ghana's population was heavily affected due to the global recession.

This coupled with the high prices of oil pushed the country down on a full swing. Lots of people couldn't afford a three square meal in a day. In reaction, the government announced a \$ 1 billion intervention package to mitigate the effects of the crises on the Ghanaian people.¹²

The focus of the intervention package was:

*“The removal of import duties on rice, yellow corn and wheat
Input subsidies for fertilizers and tractor services for farmers in the northern regions
Removal of taxes on crude oil and further subsidy on the pre-mix fuel used by
fishermen”¹³ (www.slideshare.net)*

The traditional Food security policies are policies that should be achieved because they are in conjunction with some documentations/laws that have to be achieved. An example is the desire in achieving the Millennium Development Goals (MDG) by 2015.

The MDG dictates that Ghana in partnership with donors has to ensure that the country achieves food security by 2015.

¹² <http://www.slideshare.net/nkono4u/food-security-in-africa-an-assessment-food-security-policies-in-ghana>

¹³ <http://www.slideshare.net/nkono4u/food-security-in-africa-an-assessment-food-security-policies-in-ghana>

Data Presentation and Analysis

4.1.1 Agricultural subsectors by GDP (%)

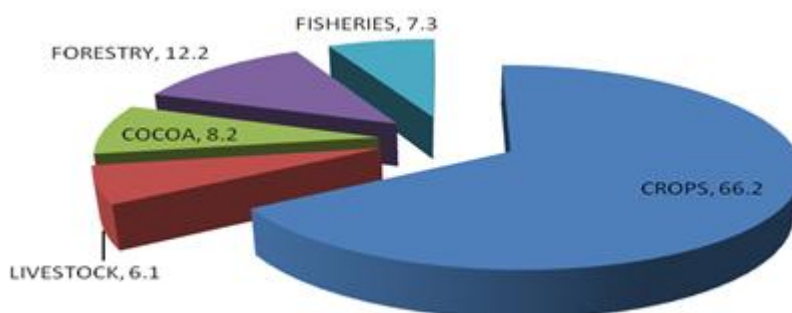
GDP can be defined as the total market value of all the final goods and services

Produced in the area of a country. The growth of an economy can be determined by a measure of the GDP, and also GDP is used for measuring the standard of living an economy at a specified period of time usually one year.

The chart below shows the various sectors of agriculture contribution product of agriculture in Ghana. This is due to the fact that there are a lot of peasant farmers or small scale farmers that grows crop for their domestic use products to contribution of GDP in the economy of Ghana. On the chart, crop production shows 66.2% as the largest and also for business. Second on the list is Forestry which also contributes about 12.2% of the GDP .It's not surprising that forestry is second on the survey chart of the national population and census in the year 2000 since the country gains a lot from timber and also the tick tree which in Ghana is use as electricity pole. Cocoa is third on the list with 8.2% followed by Fisheries with 7.2 %,Whiles livestock products have the least percentage in this representation as 6.1%.

The figure below shows¹⁴ the contribution of agriculture by GDP

Figure 3. AGICULTURAL SUBSECTORS BY GDP (%)



Source: Ghana Statistical Service, Accra

This figure shows clearly that crops have the largest (%) and largest contribution to the GDP.

¹⁴ Source: Ghana Statistical Service, Accra .2010 .PP5

This figure shows clearly that crops have the largest (%) and largest contribution to the GDP.

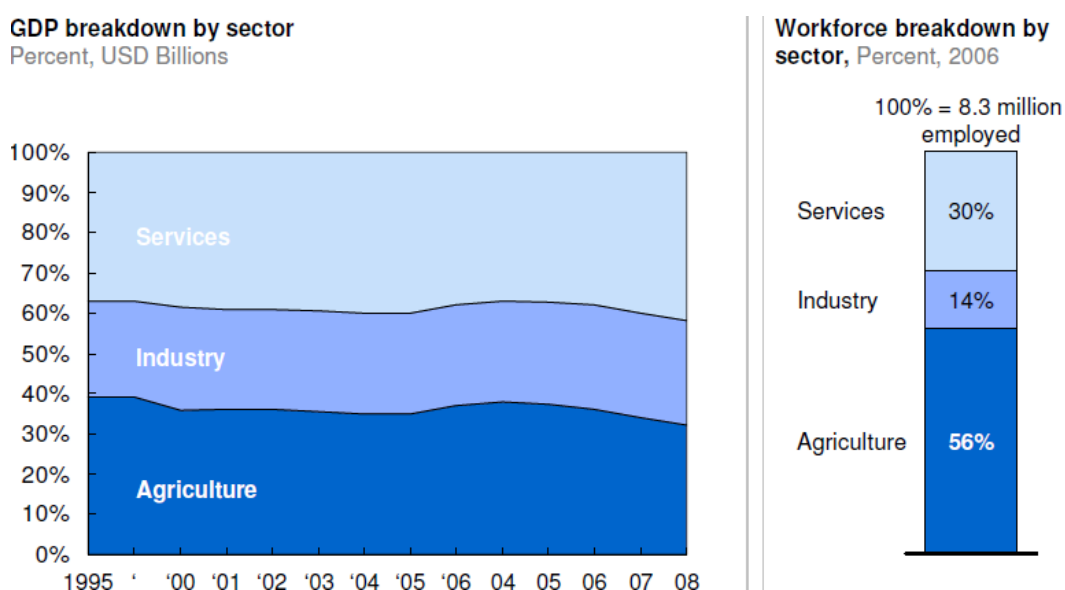
(i)GDP BREAKDOWN BY SECTOR (%)

The GDP breakdown by sector includes all sectors.¹⁵ ”The agricultural sector (including fishing, forestry, cocoa production, crop, and livestock production) is a key component of Ghana’s economic activity. Its share

of GDP has decreased slightly in the previous decades to around 36%, but nonetheless agriculture is still a major component of the economy, generating a

Value of close to US\$6bn. Two-thirds of agricultural production comes from food Crops and livestock”. (areed.org)

Figures 4. GDP BREAK DOWN BY SECTOR



SOURCE: WDI, CIA Fact book, Ministry of Finance and Economic Planning of Ghana

“Two-thirds of agricultural production comes from food crops and livestock. Fishing, forestry/logging, and cocoa production account for the remaining third”¹⁶.

With strong fluctuations in world market prices, the contribution of cocoa varies between 9-12% of trend, agriculture still provides over 56% of employment, in farming and herding” agricultural GDP and represents the fastest growing sub-sector. Agriculture is not only a main contributor to Ghana’s GDP; it is also the biggest sector in terms of job creation.

¹⁵ www.areed.org/country/ghana/overview.pdf

¹⁶ www.areed.org/country/ghana/overview.pdf

4.1.2 Facts and figures of selected crops

This table below shows year of production, agriculture product production and food production per capita.

Table 7. Indices of Agriculture and Food Production 1989-91=100mt

Years of production	Agriculture Production	Agriculture Per Capita	Food production	Food production Per Capita
1990	82.4	82.5	82.3	82.4
1992	118.4	115.0	118.3	114.8
1992	117.2	110.3	116.8	109.8
1993	126.2	115.1	125.3	114.2
1994	120.4	106.5	120.0	106.1
1995	136.5	117.2	136.1	116.9
1996	139.6	116.5	138.7	115.8
1997	138.9	112.8	137.6	111.7
1998	145.3	114.9	144.0	113.0
1999	145.3	111.9	144.0	110.9

Source: FAO Quarterly Bulletin of Statistics, Vol.11 No. 3, Rome.2006

Table 8: Index of Production of Selected Food Crops (1984-86=100) (Mt)

Crop	1992	1993	1994	1995	1996	1997	1998	1999
Cassava	170	179	180	198	213	210	215	234
Yam	300	350	219	273	293	310	348	418
Plantain	88	108	121	134	149	147	156	167
Cocoyam	76	78	73	94	98	97	99	108
Maize	144	189	185	203	198	196	200	199
Sorghum	159	201	199	221	217	204	218	185
Millet	108	161	137	170	157	117	132	130
Paddy Rice	176	209	216	295	287	263	375	278

Source: Ministry of Agriculture (1999) Agriculture in Ghana. Facts and Figures, SRID, Newton publication, Vol 22 No.6, Accra.-1999.

In Table 7., there is the index of production of selected food crops from 1992 to 1999. From 1992-1999 you see the figures of production raised up to 1999 showing the upward trend of production of cassava from 170mt -234mt.

Yam on the other hand shows the upward trend from 1992-1993 where it declined from 350mt -219 with gradual recover till 1999 this may be due to the fact that yam farming entire depend on small-scale farmer and therefore there are several constraints that impact negatively on increased production and productivity. The small-holder farms are dispersed and this makes the provision of support, services expensive and therefore in such year's low yields are experienced.

Plantain maize and paddy rice showed upward trend from 1992-1996 whilst sorghum, millet was up and down trend.

Table 9. Production of Industrial Crops (Mt)

	Cocoa	Coffee	Seed Cotton	Tobacco	Oil Palm
1990	293352	4872	11160	1160	470430
1991	242817	2710	14250	1740	508780
1992	312122	370	17460	1725	544970
1993	254652	4116	23350	2230	572990
1994	309406	6330	26290	1700	418380
1995	403000	6330	34640	2000	478980
1996	322490	2880	40250	2020	481910
1997	409360	8370	45670	2390	523350

Source: Ministry of Agriculture (1999) Agriculture in Ghana. Facts and Figures, SRID, Newton publication, Vol 22 No.6, Accra.-1999

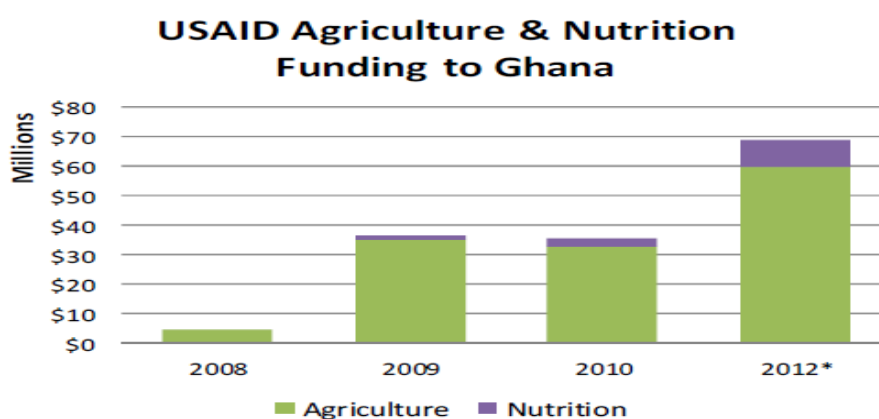
Table 3 also shows the production of selected industrial crops and how it faired in production from 1990 -1997 in metric tonnes.

Currently the production of cocoa is on the upward trend whilst the rest on the decline path due to the price of cocoa currently farmers and farming companies invest more into it for more. Governments also have laid out better policies for growing cocoa, hence the increase in production.

4.1.3 Current situation in Agriculture and food security in Ghana's Economy

There is a lot of impressive growth in Ghana's agriculture and food security due to the fact that the government of Ghana is investing a lot of money into agriculture. Ghana has made an African success story since the GDP has grown between 4-8% reducing poverty rate and also reducing food insecurity. Ghana has the aim to reach the first Millennium Development Goal to cut poverty by the end of 2015. In spite of that, Ghana is part of the U.S government's initiative on hunger and food security. The U.S government has made a commitment of about \$ 3.5 billion to support countries that have made moves and policies to address the root cause of poverty, hunger, and under-nutrition. This programme is led by the United States Agency for International Development (USAID). The programme is named FEED THE FUTURE. The programme assists vulnerable children, women, families, and mostly agriculture, especially the small scale farmers. This programme has its aim to increase agriculture productivity, reduce or drive poverty away, and increase economic growth. In Ghana, there are ten regions in all, but there are two main regions: the northern region and the southern region. The southern part of the country is well developed and still has a reduced poverty rate than that of the northern part. Secondly, they want to avoid the risk of widening the gap of poverty between the northern region and southern region. The programme Feed the Future by USAID has decided to target the northern part of the country.

Figure 5.

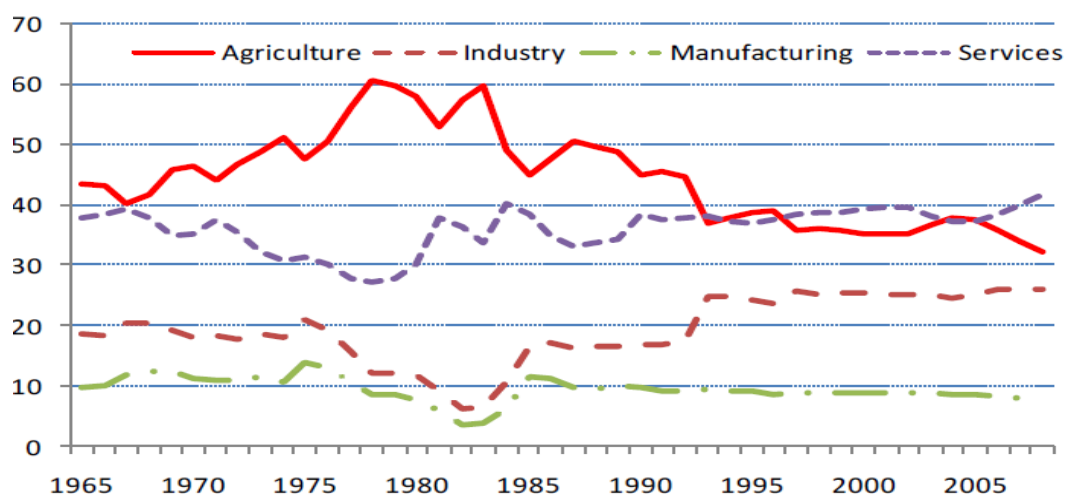


Source: www.feedthefuture.gov

4.1.4 Structure of Agriculture in Ghana's Economy

Agriculture has been the backbone of Ghana's economy in the entire post independence history (McKay and Aryeetey, 2004). The agricultural sector (including fishing, forestry, cocoa production, crop, and Livestock production) is a key component of Ghana's economic activity. Bad policies and political failure had made per capita GDP growth declining until 1980's. The most affected sector is the non-agriculture sector. This is due to the fact that it was not intervened by government. Smallholders for subsistence purpose of production. The figure above presents the GDP shares of agriculture, industry, manufacturing and services between 1965-2008. The figure shows from the end of 1980. During this year (1980) both economic growth rate and agriculture growth rate is negative. It was less negative than other sectors of the economy. GDP rate rose up during this period. After a few years the peak at 60% in a few years around the late 1970's and the early 80's growth started to take shape to pick up. Growth started to pick up and everything turned to positive immediately after 1983. The non-agricultural sector will need more time to recover since it declined more in the previous period. Agriculture turned positively but falls back to its level in 1960s after the independence. The GDP contribution of agriculture has been 40% even in the late 90s and was still above 35% after 2007. Between 2007 and 2008 it was still above 40%.

Figure 6. SECTORSHARE OF GDP (1965-2008)



Source: World Bank (2009)

4.2 Discussion and Results of two communities in Northern and Southern Ghana

4.2.1 Bosome Freho

During the research I did two illustration from two communities in Ghana. Bosome Freho is one of the village the research took place. The district capital is Bekwai. The administration headquarters is Asiwa. It's cited in the rural forest at the south eastern part of Ashanti Region. The village is surrounded by water bodies like Lake Bosomtwe. It's land area of 24,389 square Kilometer of the Asante region. It represents about 2.7% of the total land size in the region.

Observation:

During the research, both the young and the old were interviewed. 35 women and 65 men between the ages of 16-60 answered the questionnaire. 30 people on the interview list were married, 12 divorce, 10 widowed, 37 were single whilst 11 were on a date. On the level of education, people who attended the basic school and did not continue again were about 36, senior high 12, tertiary 2 and technical school were 4. This statistic shows that a lot of the people living in that community are not much educated. Most in mates there at least 75 people out of 100 were farmers and 25 people were on other jobs. This again indicates that the community is a farming community. Income from the farming activity look small when u do them in small scale farming but at least it left them off the hook of food insecurity. Most farming practices involve the traditional labor-intensive type characterized by the use of the hoe and cutlass. However, the initial cultivation of the land (ploughing) is highly dependent on mechanization. There are 8 tractors and 10 bullock services available to farmers. Approximately 65% of farmers use cutlass and holes in the village. The rest of the farming population use animal traction. Based on the interview, main crops cultivated by households are Cocoa as cash crop and Cereals, Legumes, Roots Tubers, Vegetables, and fruits are also planted on the sides of their farms to feed households for year round. Most of the people in the community shop once and twice a month indicate that they have stored in enough food for the coming weeks. Storage is one of the biggest problems of this community farmer since there are no proper cellos in the village. The condition of the soil is very good since it can be use to plant different crops. Cocoa is the most planted crop followed by maize in the village, Oil palm and cassava can be relied on for industrial crop since the soil has good potential to support it. The farmers in the village farm on small lands. Very few farm in large quantities. Labor and

expenditure are not really much since they farm on small scale and most farmers do the farming with their nuclear family or their extended family. The future is good for Agriculture in the community. This is because environmental resources such as fertile soils, water bodies, and adequate vegetation for soil organic matter build up, natural rains coupled with human resources exist in the community.

4.2.2 Bole Community

Observation in Bole Community

The Bole community is located at the extreme western part of the northern region of Ghana. The community is bordered to the North by Sawla / Tuna Kalba District, to the West by the Republic of Ivory Coast, to the East by West Gonja District and to the South by Wenchi and Kintampo Districts of Brong-Ahafo Region. (MOFA)

The Bole community covers an area of about 4800 km² which is 6.8% of the total landmark of the northern region. It has a population of about 87,656 (Projection based on 2000 population census) and a growth rate is about 3.1% per annum. The population is sparse with a density of about 14 per a km².

The District capital is the only urban centre in the district. Other semi – urban centres include Bamboi, Maluwe, Tinga, and Banda-Nkwanta. The households are predominantly headed by male. Agriculture in the district covers food crops (rice, maize, millet, sorghum groundnuts, cowpea, Bambara bean, yam, and cassava), cash crops (cashew, shea, mango, and dawadawa), livestock (cattle, sheep, goats, pigs, guinea fowl, local and exotic fowls), fisheries and bee keeping.

The education level of the community was accessed during the interview 40 out of 100 people, 11 people finished high school, 3 finished tertiary and 48 were dropouts. The information given above suggests that the illiteracy in the community is quite high. Most people in the community have family size around 4-6 in the each household 85 people interviewed are farmers.

The community contributes a lot to the country's GDP and its food security since most of the household farms store for later consumption. Rice, shea, cowpea, cashew, mango and dawadawa contributes to the GDP. Land in the community is owned by natives. The average farm size per holder is about 0.8 hectare. Land is used for crops / livestock farming, tree planting (afforestation), game /forest reserves (Wildlife), road and building construction.

5. Conclusion and recommendation

Agricultural growth is seen as a critical source of generating income to Ghana and as such has played very important role in Ghana's economy. Achieving massive reaping of agriculture in Ghana's economy means there should be a comprehensive long term policies that will be supported by the government, private investors, international donors and international development partners. Many factors can be contributed to the laid down policies the government has, as at now for impressive performance in the agriculture sector to eliminate or reduce poverty.

The following factors are some suggestions and conclusion made:

Land Preparation: Governments should invest in lands and also create farm lands for investors and other citizens who have keen interest in agriculture.

Production: The government of Ghana should create production hubs and increase mechanization. The Ministry of Agriculture should also support improvement of technologies in the farming systems.

Education: Basically the concept of farming in our country is looked down upon since about 60-70% of the youth thinks agriculture is meant for the dropouts, uneducated and the villagers. These and other ideas are in the minds of people. Nevertheless, the farmers themselves need a lot of workshop training to help them build up their knowledge in modern agriculture to improve productivity. Agriculture senior high and universities should be built to improve the skills of the citizens who have the interest in agriculture. Farmers and extension officers should be trained. Policies and strategies from agriculture think tanks should be taken serious. Improving farmers' access to better knowledge, inputs, and farming practices requires increasing farmer productivity, or the "supply side".

Agriculture in the Media: The media in Ghana is broad now and there are a lot of programs that can be outlined in the media sector to gradually educate the people on the basics of agriculture. During this era of technology, it will be so interesting to use the social media to advertise or talk to the citizens about the importance of agriculture in their daily lives. In our daily activities we touch bags, pencils, desks, fabrics etc. All these items are basically the products of agriculture. The social media can create a relationship

between the farmers and their consumers. In our society radio station are all over the country, massive and nice events can be created in way that will be so interesting and marketable.

Modernization and Industrialization: Modernization is a process of development in human life through technologies, ideas; policies etc. Agriculture production in recent times is full of modernization and recent policies. The country needs brain tanks in agriculture in various sectors in agriculture, which will think and develop the agriculture sector now in recent times for major productivity. In this process the country will have a follow up development in its social, institutional, human and physical management. Ghana must hold serious policy and industrialization workshop to bring on board countries which will help increase and maintain our industries. These industries will add value to our raw materials hence increasing the incomes from the agriculture sector. The country loses a lot of money when raw materials are exported and finished in different developed countries and back to Ghana. These are all factors contributes to the reduction of revenues in our agriculture yield.

Rural -Urban Migration: The government of Ghana should many diversified policies in place for the citizen that stays in the remote areas to avoid rural –urban migration. Farmers in the deep rural areas must enjoy some privileges like free health, free education to their wards .Ninety percent (90 %) of the people in the rural areas should enjoy scholarship grant through their district and also all scholarship attained should be used in the district. Decentralization should be a key priority to the government. Hospitals, shopping malls, Schools and entertainment centers should provide in each district. District chief -executives should have massive plans to lobby for their communities improve the living of their citizens.

Storage and transportation: The government of Ghana should build silos and haulages to keep food for future use to prevent food insecurity. Reserve infrastructure, cold rooms etc should be built for the storage of seeds and food stuffs.

Demand, Packaging and Market: The government must create new demand for agriculture product. The tool for increasing demand is to discourage importation of food items that can be found on the local market. The enforcement of standards processing, packaging. Large Scale farming and Industrialization should be improved in Ghana. The country needs long time to be able to access and analyze the short to long run implications with policies agreed upon. The concern now should be how to maximize production

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7.Appendix

COMMUNITY SURVEY OF FOOD SECURITY AND AGRICULTURE ANALYSIS 2012 (QUESTIONNAIRE)

1. What is your gender?
 - a. Male
 - b. Female
 - c. Other(specify)

2. Which group of age are you part of?
 - a. 16-20
 - b. 21-39
 - c. 40-59
 - d. 60 and above
 - e. Other

3. Which village do you come from?
 - a. Bonsu
 - b. Tafo
 - c. Nandom
 - d. Sumburungu yoyo
 - e. Other (specify)

4. What is your marital status?
 - a. Divorce
 - b. Widowed
 - c. Married
 - d. Single
 - e. other

6. What is your educational status?
 - a. Basic school
 - b. High school
 - c. University
 - d. others (please name it)

7. What is your family size?

- a. No kid
 - b. 1
 - c. 2-4
 - d. 5-10
 - e. Other (specify)
8. What do you do for a living?
- f. Farming
 - g. Tailor
 - h. Seamstress
 - i. Trader
 - j. Other
9. How much do you earn after the end of the harvesting season in Ghana Cedis?
- k. 100-500
 - l. 501-1000
 - m. 1001-2000
 - n. 2001-5000
 - o. other (specify)
10. How often do you go to the market to buy food stuff for the month?
- a. Once
 - b. twice
 - c. trice
 - d. four times
 - e. other(specify)
11. How many acres is your farm land in Acres?
- a. 1-5
 - b. 6-10
 - c. 11-20
 - d. 21-50
 - e. other(specify)
12. What agriculture crops do you plant here in large quantities?
- a. Cocoa
 - b. Maize
 - c. Soya beans
 - d. Rice
 - e. Other (specify)
13. Which staple crop is the second most planted?
- a. Soy
 - b. Maize
 - c. Yam
 - d. Shea-nut
 - e. Other (specify)
14. What type of farming are you into?
- a. crop farming

- b. animal farming
- c. fish farming
- d. other (specify)

15. How many bags do you cultivate after farming season?

- a. 5-10
- b. 10-20
- c. 20-50
- d. 50-100

16. How did you acquire the land?

- a. Family land
- b. Rent
- c. Borrowed
- d. Government farm land for lease
- e. Other(specify)

17. How many acres of land is under your cultivation?

- a. 2-5
- b. 6-10
- c. 11-20
- d. 21-50
- e. Other (specify)

18. How many people in the community work on your farm?

- a. 1-2
- b. 3-5
- c. 6-10
- d. 11-20
- e. Other (specify)

19. How many family members work on your farm?

- a. 1-2
- b. 3-5
- c. 6-10
- d. 11-20
- e. Other (specify)

20. How many hours do you work on your farm daily?

- a. 1-5
- b. 6-8
- c. 9-11
- d. 12-15
- e. Other

21. How much do you spend on your workers daily?

- a. 10 -30
- b. 40-60

- c. 70-80
- d. 90-120
- e. Other

22. How many farm animals do you hire or use on your farm land?

- a. None
- b. 1-2
- c. 3-5
- d. 6-10
- e. Other

23. What tools do you normally use on your farm land?

- a. cutlass
- b. hoe
- c. Tractor
- d. Cheshire tractor
- e. Other

24. How much do you borrow for farming?

- a. 10-100
- b. 101-200
- c. 201-300
- d. 301-500

25. What is the interest on the money borrowed?

- a. 3%
- b. 5%
- c. 10-15%
- d. None
- e. other (specify)

RESULT SHEET OF CORRESPONDENCE

Name of community Bosome Freho

Number of people interviewed 100

1. Age and Gender

Age group	female	male
16 -20	38	
21 -39	42	
40 -59	20	
and above		

2. Marital Status

Divorce	12
Widow	10
Married	30
single	37
Other(specify)-d	11

3. Educational Level

Basic school	36
Senior high	12
Tertiary	2
Technical school	4
Other-(drop out)	46

4. Family size

No children	23
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1-3	43
4-6	21
7-10	13

5. Occupation

Farmers	Tailors	Seamstress	traders	Other- teacher	Un-employed

6. Income Level

100-500	9
501-1000	42
1001-2000	43
2001-5000	6
Other(specify)	-

7. Food Security status

once	45
twice	50
trice	3
Four times	1

8. Land

family land	54
rented/hired land	21
borrowed	10
government farm land	10
own land	5

9. Most planted crop

Cocoa	70
Palm oil	10

tuber	40
Maize	60
Other(specify)	10

This representation happened because most of the farmers plant two or more crops.

10. Number of Acres

1-5	68
6-10	12
11-20	18
21-50	2
51 and above	-

11. Labor

1-2	55
3-5	25
6-10	18
11-20	2
Other(specify)	-

12. Expenditure on the farm

10-100	30
101-300	30
301-500	20
501-1000	18
1001-2000	2

13. Loans

Loans from Banks	4
Government Loans	60
Self finance	20

Group loans	15
Other-Family loan	1

RESULT SHEET OF CORRESPONDENCE

Name of community Bole

Number of people interviewed 100

1. Age and Gender

Age group	female	male
-20		
-39		
-59		
and above		

2. Marital Status

Divorce	7
Widow	12
Married	37
single	30
Other(specify)- dating	13

3. Educational Level

Basic school	40
Senior high	11
Tertiary	3
Technical school	-
Other-(drop out)	48

No children	5
1-3	35
4-6	50
7-10	10

Other (specify)	-
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4. Family size

5. Occupation

Farmers	Tailors	Seamstresses	Traders	Other-teacher	Un-employed
5					0

6. Income Level

100-500	7
501-1000	43
1001-2000	43
2001-5000	7
Other(specify)	-

7. Food Security status in a month

once	46
twice	51
trice	3
Four times	1

8. Land

Family land	
Rented/hired land	
Borrowed	

Government farm land	
own land	

9. Most planted crop

Cocoa	-
Rice	56
tuber	40
Maize	45
Other(specify)	45

This representation happened because most of the farmers plant two or more crops.

10. Number of Acres

1-5	67
6-10	10
11-20	20
21-50	3
51 and above	-

11. Labor

1-2	50
3-5	32
6-10	13
11-20	5
Other(specify)	

12. Expenditure on the farm

10-100	68
101-300	20
301-500	7
501-1000	5
1001-2000	

13. Loans

Loans from Banks	-
Government Loans	-
Self finance	85
Group loans	6
Other(specify)-Family loan	9

RESULT SHEET OF CORRESPONDENCE

Name of community Bole

Number of people interviewed 100

1. Age and Gender

Age group	female	male
1-20		
21-39		
40-59		
60 and above		

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No children	5
1-3	35
4-6	50
7-10	10

Farmers	Tailors	Seamstress	traders	Other-teacher	Un-employed
5					10
Other (specify)	-				

5. Occupation

6. Income Level

100-500	7
501-1000	43
1001-2000	43
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Other(specify)	-

7. Food Security status in a month

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borrowed	
government farm land	
own land	

9. Most planted crop

Cocoa	-
Rice	56
tuber	40
Maize	45
Other(specify)	45

This representation happened because most of the farmers plant two or more crops.

10. Number of Acres

1-5	67
6-10	10
11-20	20
21-50	3
51 and above	-

11. Labor

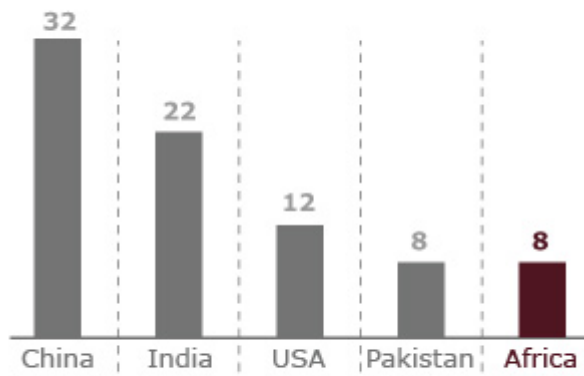
1-2	50
3-5	32
6-10	13
11-20	5
Other(specify)	

12. Expenditure on the farm

10-100	68
101-300	20
301-500	7
501-1000	5
1001-2000	

13. Loans

Loans from Banks	-
Government Loans	-
Self-finance	85
Group loans	6
Other(specify)-Family loan	9



Selected cotton producers, share in world market (%), 2008-09



Vegetation zones of Africa with CmiA growing areas

