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Identify and Assess the Challenges of Cotton Production in the Tolon District of the Northern Region, Ghana

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Abstract This paper presents a study to identify and assess the challenges of cotton production in the Tolon District of the Northern Region. This is an applied research study of a descriptive-surveying kind .The objectives of this research is to; assess the level of Capacity building that cotton farmers have received to boost production during the past decade (2002 – 2012), assess the quality of inputs given to cotton companies, to identify and assess farmers concerns over the system of recovery of inputs cost to farmers in the Tolon District within the period, and to determine whether prices paid for seed cotton over the years afford farmers a surplus income. Cotton production in Ghana started in 1968 under the control of the Cotton Development Board of the Ministry of Agriculture and performed its function effectively until 1977 when production began to fall due to declining producer prices relative to food crops. Indications are that Ghana achieved high level of production before other neighboring countries in West Africa who started production before her. About 75.0% of the farmers are from the ages of 36 years and above. About 55.0% of the cotton farmers in the district do not have any formal education. The mean dependency ratio of the farmers stands at 8.1. It was found that more than 80% of the famers cultivate only 1-2 units of land. All the respondents receive inputs from the company but none is by the Government. The analysis showed that none of the farmers received any extension service form the Ministry of Agriculture or from any government source. The incomes of the farmers are quite low, mostly below GH□ 1000.00 per annum. They generally depend on the household for labour on their farms. Delay delivery, poor quality pesticides and erratic rain fall are the major challenges facing cotton production in the Tolon District of the Northern Region of Ghana.

Keywords Identify, Assess, Challenges, Cotton Production, Northern Region

1. Introduction

Cotton is a major cash crop cultivated in most parts of the globe including Ghana. It is a soft, stable Fiber shrub native to tropical and sub-tropical regions around the world including the Americas, India and Africa. The cultivation of cotton started seven thousand years ago, in the Indus Valley, a place inhabited today by north-western India and eastern Pakistan.

According to the International Cotton Advisory Committee (2010), the largest producers of cotton in 2009 were China and India with annual production of about 34 million and 24 million bales respectively. The textile industries in these two countries consume up to 80% of what they produce. The increasing importance of this crop is because of its worldwide usefulness especially in the Textile industry, its contribution to gross domestic product of various countries, the income it provides for households engaged in the production of the crop, and the uses and potential uses to which its seeds can be put. It is estimated that US textile mills presently consume about 7.6 million bales of cotton a year. Eventually, about 57% of it is converted into apparel, more than a third into home furnishing and the remainder into industrial products (ICAC, 2002).

According to the United States Department of Agriculture (2008), cotton seed oil ranked fifth in production among vegetable oils in the 2007/08 crop season with a bit less than 4% of world volumes. Cotton seed hulls have also been used to provide roughage in animal feed. The remains of the seed after the oil has been extracted can also be use as flour for livestock feed. Whereas these usages refer to animal consumption, research is being conducted to develop new uses for cotton seed derivatives in human diet. Major achievements in this direction include development of gossypol extraction techniques (gossypol is a toxic compound found in the cotton plant, mainly concentrated in the cotton seed), development of "glandless" cotton varieties (where the plant is genetically bred to produce gossypol-free cotton seed). After the oil has been extracted from the cotton seed, the residue (i.e. cotton seed meal) is high in proteins

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(about 40%). It is usually marketed for animal feed, although it can have other usages (ICAC, 2002).

Despite the numerous uses that the crop can be put into, and its importance to incomes and lively hoods of cotton farmers, several challenges confront its production worldwide. According to the International Cotton Advisory Committee (2010), global cotton production was expected to be 27.4 million tons in 2011/12-a rise of 12%. However, in comparison, increase in production is relatively small considering the doubling of prices experienced in 2010/11. Even though cotton production will increase more than the demand in 2011/12, high prices and competition from chemical fibers are expected to limit growth in mill use to 3% Limited resources (including land, seeds, water, and equipment) and competition from food crops are preventing cotton production from rising further in 2011/12.

Cotton production in Ghana started in 1968 under the control of the cotton development board of the ministry of agriculture and performed its function effectively until 1977 when production began to fall due to declining producer prices relative to food crops. Indications are that Ghana achieved a high level of production before other neighboring countries in West Africa (Mali, Burkina Faso, Benin, Togo and La Cote d'Ivoire) had done so. Successes achieved in these countries in terms of production continue to serve as benchmarks for Ghana. For instance, while Ghana only managed to produce 36,000 metric tons of seed cotton in 2006/7, Burkina Faso produced a colossal 700,000 metric tons. The fortunes of Ghana Cotton Company limited (GCCL) had drastically declined over the years due to both internal and external factors before there was an increase in operations in 2011.

Trend of events in the cotton industry since 1968 appears as follows; the government of Ghana in 1968 established the Cotton Development Board (CDB) with the mandate to stimulate the production of cotton, ensure adequate supply of raw materials to local textile industries and undertake research on improved cotton varieties. The CDB performed its functions effectively with increasing production until 1977 when Production began to fall due to declining producer prices relative to food crops. The CDB was privatized and reconstituted into the Ghana Cotton Company Limited (GCCL) in 1985 with 30% of its shares taken by government. The government zoned the operational area later in its operations among several cotton producing firms including Nulux Plantations, Intercontinental Farms Limited, Plantations Development and Ghana Cotton Company Limited. It is however important to mention that most of these companies ceased operation due to several difficulties ranging from sourcing funds from financial institutions to finance their operations, to difficulties of recovering loans from farmers because of poor performance.

2. Literature Review

Global Cotton Production

Literature on global cotton shows that cotton production has assumed a high level of importance by most countries in the world considering its current and potential value as well as the general uses of lint and seed of the crop (ICAC, 2002). It is because this that the crop is grown in most countries around the world and performs much better in the Northern Hemisphere and gaining significance in terms of land use after food and soya beans. Liberalization of world trade has been welcomed by producers of cotton worldwide and is manifested in how heavily cotton is traded by way of exports between countries across the globe. Statistics show that cotton is grown in more than 80 countries in the world, on about 2% of the world's arable land, and over one hundred (100) countries are engaged in the export or import of cotton (ICAC, 2002).

According to United States Department of Agriculture (2007), world production of cotton has been highest at 120,000,000 bales in 2004/6 and slightly below that in 2007. The major producers of cotton in the world are U.S, China, India and Pakistan and contributes approximately 2/3 of the world's cotton production (ibid, 2007).

Cotton production worldwide is also noted for the several numbers of family units who are engaged in the production of the crop and the employment opportunity that it generally offers. Several family units are engaged directly in cotton production. Labour hired on farms, labour working in ancillary services such as transportation, ginning, bailing and storage. It also provides employment for several people in allied industries such as agricultural inputs, machinery and equipment, cotton seed crushing and textile manufacturing. It is estimated that over 300 million people are engaged in the production of the crop including labour in ancillary services (ICAC, 2002).

Cotton cultivation contributes to food security and improved life expectancy in rural areas of developing countries in Asia, Latin America and Africa. This is a drive towards committing the world towards eradicating hunger. The Food and Agricultural Organization of the United Nations (FAO) champions this course and the establishment of the committee on world food security (CFS) in 1974 was to further enhance achievement of world food security policies.

Cotton plays an important role in industrial development. With the world industrial revolution, the cotton industry has experienced much investment in terms of machinery and improved techniques in textile production as well as increased capacity for industrial usage. Much of cotton use has gone into the making of apparels and home furnishing. It is estimated that about 56% of all fibres used for apparels and home furnishing are from cotton. It is generally recognized that most consumers prefer cotton-personal care items to those containing synthetic fibers (USDA, 2007). World textile fiber consumption in 1998 was approximately 45 million tons and cotton represented approximately 20 million of the total consumption (ICAC, 2007). Evidently, the rapidly evolving techniques of textile production together with development in the world of politics, economics and population combine to give an overall pattern of world

consumption and usage (Taylor, 1999).

Global Challenges of Cotton Production

Though the cotton crop assumes a lot of usefulness and importance worldwide, there strive to attain greater scale of cotton production. This is not without difficulty and hindrance. Challenges faced by some notable cotton producing countries in the world are discussed below. Such countries include China, United States of America, India and Pakistan. To start with China, cotton cultivation remains highly fragmented with most of its cotton farms being very small and the quality of fibre remaining far from favorable. According to the International Cotton Advisory Committee (2007), over the last one decade, the area under cotton cultivation in china has remained around 5.0 million hectares. It was estimated at 5.6 million hectares in 2004. The number of cotton farmer families, however, exceeded 4 million. Thus, each such family was having on an average just 1.4 hectares of land for cultivating cotton. Such small farms have got two impacts on cotton cultivation in that country. Management of small fields were fine and with the result the yield in China was about 1.5 times that of the world average. The maximum yield achieved by its farmers sometimes was as high as 2,050 kg per hectare (ICAC, 2002).

It is however noted that though most of its cotton farms are very small and the quality of its cotton remains unfavorable, as many as 100 varieties of cotton are being grown in the country (ICAC, 2002). Some areas may be growing 10 varieties in the same year. Likewise, some individual farmers may be growing two or three varieties at the same time on their tiny farms. The net outcome of this is that it is hard to guarantee consistency of yield because of diverse modes of cultivation, different intrinsic qualities of cotton and difficulties in procuring and processing cotton by variety (ibid, 2002).

Each year, cotton growers in Chain account for more than 25 percent of worldwide insecticide usage, and 12 percent of all pesticide usages. The crop requires seven times more fertilizer than insecticides, and the runoff from all these chemicals pollutes the rivers and lakes, leeches into the groundwater, and leads to China' abnormally high water pollution. Farmers in China are using more than six times the quantity of pesticides and fertilizers than growers in sub-Saharan Africa (FAO, 2010).

Cotton also is a remarkably water-intensive crop. Eco Fashion World estimates that to grow enough cotton for a single t-shirt requires 2,700 liters of water. The expansion of cotton farming is leading to increase desertification in areas of the world. In China, cotton farming is increasing the size of the Taklimakan Desert because an unsustainable amount of water is being diverted to grow the crop.

Challenges in cotton production in Pakistan range from several factors highlighted below: High temperature at flowering stage, late wheat harvesting and resulting in decline of area under the crop, Soil and water Problems, Weather adversaries, Pest attack, improper production technology in major cotton growing areas of Punjab and Sindh. There are many social as well as economic problems facing cotton production including; Illiterate farming community, High cost of inputs, Small landholdings, Less adoptability of innovations by the farmers, Lack of Guidance to farmers among others (Khuda, et al., 2005).

Regarding India, the spiraling cotton prices and the precarious cotton scenario in the country are threatening the survival of the domestic industry. According to Indian Agricultural Ministry (2009), cotton production in 2010-2011 was expected to reach 335 bales. The Government estimated domestic consumption at 266 bales with export ceiling of 55 bales.

The seasonal nature of cotton production confronts its production in Chain as well. Irrigation cotton production is practiced in two folds during the year and covers about 20% and 7% to total land area, rain fed cotton production overs about 65% to total area, while rice fallow sown in the year covers 8% of total land area (ICAC, 2007).

The use of poor quality inputs like seeds and pesticides results in low productivity of cotton. This increases the cost of cultivation. Multiplicity of cotton varieties/hybrids leading to rampant mixing is another major problem. Some of the other deficiencies in the cotton sector are Poor fiber attributes of most varieties, rapid deterioration of fiber quality of hybrids with successive pickings, tardy transfer of Agricultural technologies to the farmers' fields and poor infrastructure at market yards and high trash content in cotton (4-7 percent). Wide range of contaminates in cotton numbering over 25 types despite being handpicked from the farm (ICA, 2007).

Cotton Production in Sub-Saharan Africa

According to Baffes (2004), African cotton is almost exclusively grown by smallholder farmers, using sustainable growing methods with harmony between agriculture, the natural environment and human beings. About 8% of the cotton traded in the world market is harvested in Sub-Saharan Africa. Dorward et al (1998) explain that Africa cotton is almost exclusively grown by smallholder farmers, and there are only very few large plantations. The production of cotton in sub-Saharan Africa is characterized by subsistence agriculture and peasant in nature. They further add that reliance on inconsistent weather, low level of mechanization, use of family labour, are some of the common attributes of Sub-Saharan African cotton production.

According to the Food and Agriculture Organization of the United Nations (FAO, 2002), the restrictions imposed by so-called “traditional” techniques on the household labour force are among the main causes for the persistence of subsistence economies in tropical and sub-tropical Africa and in a large part of Mediterranean Africa. This explains why a greater proportion of the total contribution of Sub-Saharan African cotton production to world cotton is accounted for by smallholder cotton farmers (Beets, 1998). The cotton plants love warmth, the need about 200 days of sunshine in the season to flourish and bear fruit. For that

alone, it does well in the dry or humid savannahs of Africa. The climate, with its high average temperatures and alternation between dry and wet seasons favours the growing of this natural fibre crop (ICAC, 2007).

In Africa, cotton growth is alternated with other crops such as the basic food crops like maize, soy or groundnuts. These reduce leaching of soils and the occurrence of pests. Cotton is often a complementary cash crop and is grown for sale, alongside the foods grown in subsistence farming and thus plays an important part in securing their food supplies (Sabo, et al., 2009).

Artificial irrigation, as often used in large plantations, is practically not used in Africa. The smallholder farmers' work with rain-fed cultivation, in other words natural rainfall has to be enough for watering the crops. The wet and dry phases in the African growing areas are helpful to meet the needs of the cotton plant. In its growth phases, cotton is highly sensitive to excess moisture, in the first germination and growth phase, the cotton plant needs wet soils, but in the maturing phase the quality of the fibres may be damaged if conditions are too wet. The available rain water has to be used efficiently, specifically in the dry areas of Africa. That requires a balanced use of fertilizer or mulching. The soil between the cotton plants is covered with organic material such as leaves to reduce loss of moisture by evaporation (ICAC, 2007).

Harvesting is mainly by hand and this takes much longer, but it also gives major benefits compared with machine harvesting. The machine makes one pass through the cotton field, taking not only the cotton bowl, but everything in the field. Human pickers work in a much more careful and environmentally sound way. The hand pickers take only completely mature fibre bolls. Hand-picked cotton is also cleaner, because the machines take considerable quantities of soil, leaves, and twigs, with them (Organic Cotton, 2010). Pests have been a border on cotton production in Sub-Saharan Africa and cotton farmers have resorted to the use of the chemicals without much training and concern of the effects of the chemicals.

According to Pesticide Action Network UK (PAN UK, 2013), Cotton grown in the Ethiopian Rift Valley where farmers rely heavily on synthetic Pesticides to control pests, have little or no training in pesticide use and tend to use the chemicals excessively and inappropriately. This has caused numerous problems such as pesticide poisoning, water and Soil pollution, Livestock deaths and loss of biodiversity. It has also contributed to pest resistance which has driven farmers to increase their pesticide use? This strategy is unsustainable, not just in terms of health and environmental impacts, but also in terms of livelihood. One approach for reduction of pesticides used, particularly in sustainable concepts such as Cotton made in Africa, is integrated Pest control. One method used is "Threshold praying", that is, not using "Preventive Spraying" but spraying only if certain damage thresholds are exceeded. That is if the pest or Pathogen attack is so serious that it is likely to cause economic damage. The "damage threshold" Principle requires intensive training of farmers, but also permits reduction of pesticide use by up to 30%. Genetically modified cotton is another approach of reducing cotton pest and the use of pesticides. Many African cotton farmers likewise see genetically modified cotton as a technical progress, and do not want to be left out of it. But so far, the only country in Sub-Saharan Africa where smallholder farmers grow genetically modified cotton is Burkina Faso's organic cotton (2010).

Cotton Industry in Ghana

Recognizing the potential of cotton production, the Government of Ghana in 1968 established the Cotton Development Board (CDB) with the mandate to stimulate the production of cotton, ensure adequate supply of raw materials to local textile industries and undertake research on improved varieties (MOFA, 2006). The CDB performed its functions effectively with increasing production until 1977 when Production began to fall due to declining producer prices relative to food crops. The CDB was privatized and re-constituted into the Ghana Cotton Company Limited (GCCL) in 1985 with 30% of its shares taken by government. This was a move towards building private sector effect into the structure of the company and still recognizing Government's voice on decisions of cotton production in the operations of the company.

Peasant Cotton Production

Agricultural production in Ghana is still mostly undertaken by smallholder farmers on relatively small plots of land and is very labour intensive. Shifting cultivation in both the forest and savanna zones if practiced; a new parcel of land is opened up each year for cereal production, followed usually by root crops and plantains in the forest zone, or groundnuts or cotton in the savanna zone (MOFA, 2006). According to Ellman (1998), this method of cultivation is open to risks such as fluctuations in seasonal rainfall and soil fertility and unreliable access to inputs. By adopting a low-input method of production, risk is reduced. Yields however are also reduced, while the ability to respond to factors such as good rainfall patterns is further limited by the unavailability and cost of inputs such as fertilizer, insecticides and simple farm tools. Under these circumstances of uncertainty and total absence of crop insurance, many peasants are scared of getting into any type of indebtedness involving substantial monetary magnitudes. In fact it is a virtue not to borrow. Thus one of the distinctive features of a peasant family is collective self-reliance.

Operations of Cotton Companies in Ghana

Zoning is a principle of demarcating the cotton growing areas into an exclusive zone for particular companies. This means that, famers within a zone are limited to dealing only with the company assigned to operate in that zone (MOFA, 2006). The zoning principle was introduced during the 2001/2 crop season by the Ministry of Food and Agriculture to address malpractices in the cotton industry. At the time when seed cotton production was failing, there was a proliferation of cotton companies. This proliferation was

characterized by extensive malpractices by key actors (MOFA, 2006). While cotton companies' poached farmers of other companies and offered unsatisfactory service, farmers registered and received inputs from two or more companies but then sold their cotton to other companies, thereby avoiding payment for inputs received on credit. Some framers went to the extent of diverting some of the inputs to food crop production and even attempted selling them on the open market. Cotton Production Assistants (CPAs) employed by other companies to support group formation and farmer registration also cheated their employees by registering 'ghost' framers. The malpractices resulted in high indebtedness of the companies to the Agricultural Development Bank (ADB) which as at 2000 ceased to fund the cotton companies (MOFA, 2006). Consequently, several of the smaller cotton companies were unable to operate effectively and had to suspend operations. As at 2004, four companies were operating in the three Northern Regions namely Nulux Plantation Limited, and Intercontinental Farms Limited. However cotton production in the three Northern Regions is currently undertaken by three companies namely, Armajaro Cotton Ghana LTD, Wienco Cotton and Olam Ghana Limited (MOFA 2011).

Cotton companies had adopted the strategy of working with farmers in small producer groups within communities' instead of as individual farmers. The sizes of the Cotton Producers Groups (CPGs) vary from about three members to as many as fifty or more members. The CPGs who are basically at the community level and are linked to Cotton Farmers Associations (CFAs), perform the following functions; conduct initial screening of members before registration by cotton companies, receive farm inputs from cotton companies for onward distribution to members, record data on land preparation, farm inputs and seed cotton marketing for use by CPAs. Contribute to pay any outstanding debts should any member default. Monitor cotton companies through zonal officers and Cotton Production Assistants (CPAs). The CFAs are represented at the District, Regional, Zonal and National levels. Although the CFAs seem to be well structured, indications are that it has not been very active as it should be. The groups over the years lack adequate training on group formation and dynamics and are not guided by any set principles (ICAC, 2007).

Finance of Cotton Out-growers in Ghana

The poverty level in the three Northern Regions makes it practically difficult for out-growers to take up cotton production and be effective. It has therefore become necessary for cotton companies to support farmers to produce cotton in the three Northern Regions. Cotton companies in Ghana provide on credit, seeds, fertilizers, insecticides and carry out land preparation works for out-growers and purchase their cotton produce in return. The out-growers therefore are expected to pay for the cost of inputs through the seed cotton they in turn offer to the company during the purchasing season. This form of support is necessary because it has become difficult for farmers to obtain financial support from banks (MOFA, 2006).

According to Rwegasira (1991), the needs of financial capital in peasant agricultural operations are obvious particularly where methods geared towards increasing productivity are concerned. He contends that credit finance may be required for irrigation schemes, fertilizers, seeds and many other related inputs. However, it is not always possible for the Finance Institutions commissioned to assist these peasants to give out money to prospective borrowers because it is not clear how to go about evaluating the peasant credit-worthiness.

Pricing of Seed Cotton

Seed cotton price fixing in Ghana is based on negotiation between cotton farmers' and cotton companies (MOFA, 2008). First, producers consider all producer cost, expected average yield and profit per hectare before setting their price. Cotton Companies on their part consider the world price of cotton lint, deduct all marketing cost and indicate their price for negotiation. These methods often lead to incompatible figures resulting in disagreements during negotiations (MOFA, 2006).

Extension Service to Cotton Out-growers

In Ghana, extensive research is being carried out in the food crops and cocoa sectors. However, research in the cotton industry is lagging (MOFA, 2002). Extension service provision in Ghana is the sole responsibility of the Ministry of Food and Agriculture (MOFA). However, in the cotton sector, the cotton companies provide extension service to cotton farmers through the Cotton Production Assistants. A Study Thirtle et al. (1993) has shown that in general, agricultural production in Zimbabwe is affected by the adoption of new technology, generated by research and development expenditures, or imported from abroad and spread to the farmers by the extension service. They concluded that the determining variables that shift the production function were assumed to be research and development expenditures, extension expenditures, and the weather.

Prospects of the Cotton Industry in Ghana

Currently, vast opportunities exist which when fully tapped, would improve the cotton sector. There is favorable policy environment that suggest prospects of cotton production in the Northern Region. The Government of Ghana has pledged its commitment towards increasing cotton production in the country. To this end, a technical assistance programme to revitalize the cotton production in Ghana is being developed in partnership with the United Nations Industrial Development Organization (UNIDO), International Fund for Agriculture (IFA) and the World Bank. This is to facilitate the adoption of new cotton varieties developed through biotechnology and incorporating genes which confer resistance to insect pest damage. The programme would also rehabilitate the cotton classing and grading facility and also build the national capacity to

produce high quality cotton. It would also build pilot processing centres for cotton seed oil processing and other by-products from seed cotton (ICAC, 2007).

Policy Environment

The government through MOFA developed the Food and Agriculture Sector Development Policy (FASDEP II) document, which had outlined strategies and programmes to develop the cotton sector in the long term. In the medium term, the objectives are to increase the availability of improved planting materials, adoption of improved agronomic practices and expansion of average farm Size per holder. In addition, the out grower-nucleus farmer linkage will be strongly promoted as a way of improving smallholder's access to credit. The government has also solicited the assistance of the French government through the Agency Fran ɋise Development (AFD) to develop the sector. According to the FASDEP II document of the Ministry of Food and Agriculture (2002), the vision for the food and agriculture sector is linked to the national vision in Ghana Poverty Reduction Strategy (GPRS) II, New Partnership for African Development's (NEPAD), Comprehensive African Agricultural Development Programme (CAADP) and the Millennium Development Goals (MDG'S).

Availability of Land

A study on Ghana's cotton sector indicates that, there is adequate land for cotton production in the three Northern regions where cotton is grown, of about 57.1% of Ghana's land area suitable for agriculture, only about 30.2% is currently under Cultivation (ICAC, 2007). Land can be acquired without much difficulty. Further, there are favorable climatic conditions in the northern sector which can support the production of Cotton, a drought resistant crop which can stand long dry spells. In addition, other areas in the Brong Ahafo and the Volta Region have also been found to be conducive for cotton production.

Grinning Capacity

According to the United States Department of Agriculture (2007), the three cotton gains operated in Northern Ghana have the capacity to process 55,000 tons per annum. It further indicates that Ghana produced 5010 tons in 2010. According to Howard et al (2012), Ghana's annual cotton production hovers around 4,000 tons. This gap can be filled when investment is made to promote cotton production in Ghana. There is no doubt that government is committed to increasing crop production through its Agricultural policies in which cotton production is adequately placed.

Private Companies Commitment

There is commitment from private companies to develop the cotton sector in Ghana. They have invested substantial financial resources in the industry and are committed to expanding their operations (MOFA, 2008).

Market for Cotton

The price of cotton on the world market which has taken a decline in recent years and discourages farmer's zeal to produce cotton is highly attributed to the introduction of synthetic fibers on the market (ICAC, 2007). However, recent trends in oil prices worldwide provides hope for reversing the declining price trend as petroleum products is the main source of raw materials for the synthetic fibers. Also, seed cotton cake, a by-product of seed c0tton is utilized as feed and is highly demanded by the livestock sector (ibid, 2007).

Methodology of the Study

Based on the previous works, the study researcher applied a descriptive-surveying kind for the study. The data was collected by using structured questionnaire. It should be noted that, in the design of the questionnaire, the questionnaire of similar studies were used. Questionnaire consisted of two parts. Part-one is a demographic characteristics of the sample. Part-two consisted of questions and positive worded statements pertaining to soliciting information that will help address the main objectives of the study. The descriptive research method generally describes a set of observations and all other data collected. In a survey research method, attempts are made to describe and explain conditions of the present by using many subjects and questionnaires to fully describe a phenomenon (Hale, 2011).

The study Population was cotton out-growers within the Tolon district specifically farmers possessing farmlands located within the district. Other respondents included field officers, assistants, accounts manager, assistant zonal manager, and management and workers of Armajaro cotton Ghana Limited. The cotton out growers in the District are about 696.

The sample frame for the study includes all farmers in the five stations of the Tolon District namely: Kasulyili, Tali, Dimabi, Chirifoyili and Tolon. Both probability and non-probability sampling methods were used for the research. Twenty (20) cotton out-growers totaling 100 from the five main stations in the Tolon district were proportionally selected since the cotton-out growers in the five stations are estimated to be almost equal. Questionnaire was then randomly administered to respondents. The sample size represents fourteen percent of the total population.

Regarding the reliability and representativeness of the sample size, Nenmann (2000), Weinbach and Grinnell (1998) contends that there is no fixed and inviolate rule about the size of a sample for a study. They further state that there is no ideal fixed number, formula or percentage that should be used to determine the size of the sample to take. They continue that, the nature of the research problem and its setting would ultimately influence one's decision on the appropriate sample size.

3. Analysis and Presentation of Results

Socio-demographic characteristics of the Farmers

The demographic characteristics of farmer respondents are shown in Table 1 below. A total of 87.0% of the

respondents are male while 13.0% are female. On marital status, 69% of the respondents are married, 27.0% are single and the rest of the 4.0% are widowed. The age distributions of the farmers are as follows: 16-25, 26-35, 36-45, 46-55, 56-65 and above 66 years are 10.0%, 15.0%, 25.0%, 27.0%, 16.0% and 7.0% respectively. On the issue of education, 27.0% of the respondents had no education at all, 28.0% has non-formal (adult education), 19.0% said they had Primary/JHS/Middle School education, 15.0% said they had SHS/O Level/A Level, 3.0% said they had Technical education, and the rest 0f the 8.0% said they had tertiary education.

Table 1. Demographic characteristic of cotton-out growers in Tolon District

Demographic parameter	Categories	Percentage
Gender	Male Female	87.0 13.0
Marital	Single Married Widowed	27.0 69.0 4.0
Age	16-25 26-35 36-45 46-55 56-65 Above 66	10.0 15.0 25.0 27.0 16.0 7.0
Education	No education at all Non-formal education Primary/JHS/Middle School SHS/O Level/A Level Technical Tertiary	27.0 28.0 19.0 15.0 3.0 8.0

Source: Field survey, 2013

From the above Table 1 is crystal clear that more males are into cotton farming in Tolon than female. It might also be because many women in the north do consider their farming activities as helping their husbands. The finding of this study that more males are into cotton production than females supports findings of studies by MOFA (2006), Thirle et la (1990) GSS (2012) AND ICAC, (2007) who found that more males engage in agricultural activities than females in Ghana and Africa as a whole.

Majority of the respondents are married. This shows that they might also have children to look after. The widowed might also have raised children before losing their spouses. The percentage of married people found by this study is higher than the national figure of 42.9% of married men and women in Ghana as found by the 2010 Population and Housing Census. However, the number of respondents who were single or had not married before, formed 27% of the sample.

The results in Table 1 above also supports earlier findings by MOFA (2006) that farming in Ghana is mostly done by people who are aged 40 and above. It is important however to mention that about a quarter of the respondents in the table are below 36 years. MOFA (2006) found that farming is not attractive to the youth in Ghana and that people only join or engage in it when other businesses or endeavors they have tried in life failed. The findings are also consistent with the assertion by the Ghana Statistical Service (2012) in the Population and Housing Census that was conducted in 2010, which found that agriculture is the main economic activity for most Ghanaians with people who are aged 40 and above mostly engaged in it.

Dependency Ratio

The researcher assessed the dependency ratio of the respondents. The minimum number of dependents was zero with the maximum number being 24. A computation of the results gave the mean dependency ratio to be 8.1 with a standard deviation of 6.8. Therefore the mean of dependents was 8.1. The high dependency ratio found by this study confirms the assertion by the findings of the Ghana Demographic and Health Survey (2008) that the dependency ratio is high thus 6.0 in the Northern Region.

Number of years in Cotton Production

Majority of respondents, 53.0% have been in cotton production for more than ten years while those who have been producing within the past 1.2 years were 20% of the study sample. These findings are inconsistent with that of ICAC (2007) which found that most of the cotton farmers do not continue the production because of poor motivation of farmers. According to their study farmers opt out of cotton production because of the low profits that they make from cotton production.

Production Capacity of Respondents

In assessing the production capacity of the farmers, the study looked at the units of land cultivated, the supply of farm inputs of farmers and production of other crops by the cotton farmers on their plots of land. The results show that of most the farmers who represented 55% of the study sample cultivated only 1 unit of land with 28% cultivating 2 units of land. Meanwhile 5% of the respondents cultivated 5 units of land while 3% cultivated 4 units of land.

All the respondents reported that they were supplied with farm inputs by the cotton company. There were no inputs supplied by the government. The respondents also cultivated other food crops besides the cotton they produce. Most (93%) of the respondents said that they produce other crops, with 28% of them cultivating root tubers; mostly yam and cassava. About 20% of the respondents cultivated cereals specifically maize, rice and sorghum as shown in Table 2 below.

Only few people cultivated 5 units of land with majority cultivating just one unit of land which supports the findings of Howard et al (2012) that cotton production is low because of the smaller sizes of farms cultivated by farmers. This is in consonance with the assertion by MOFA (2008) that most farmers in Ghana are poor because they are not able to expand their farms to increase their yields and profits. This further supports the finding of ICAC (2007) that cotton production has been left in the hands of private companies in most countries. Governments do not mostly invest into the production of cotton.

Table 2. Production capacity of respondents

Variable		Frequency	Percentage
Units of land Cultivated	1	55	55
	2	28	28
	3	9	9
	4	3	3
	5	5	5
Inputs Supply			
	Cotton Company	100	100
	Government	0	0
	Buy from the market	0	0
Satisfaction with inputs Supply	Yes	8	8
	No	92	92
Production of other food crops	Yes	93	93
	No	7	7
Crops produced	Cereals	20	20
	Legumes	25	25
	Root tubers	28	28
	Both cereals and root tubers	20	20
	Not applicable	7	7

Source: Field Survey, 2013

Provision of Extension services by MOFA

In assessing the capacity for farmers, the study assessed the provision of extension services to farmers. The analysis showed that none of the farmers received any extension service from the Ministry of Agriculture or from any government source.

All the farmers said that they did not receive extension services from the ministry of Agriculture or any government source to help them in their production. MOFA (2008) showed that, extension services provided to farmers is a challenge to the agricultural sector in Ghana. Farmers do not get enough extension services which account for the low productivity and low quality of life among most farmers.

Education and Orientation on Farming Practices

Majority of the farmers representing 87% reported that they did receive education on good cotton farming practices. Only 13% of the respondents said that they did not receive some education on such farming practices.

The respondents who claimed they received education and orientation said that they were specifically taught how to apply fertilizers, thinning, weeding, picking and storage of the cotton produced. About 84% of them however, indicted that the orientation was not enough to enhance their efficiency to produce more seed cotton, the make more profit.

Supervision of Farmers

All the farmers who were interviewed said that the company supervised them. Again, they all reported that they were supervised by the Cotton field officers or the cotton Production Assistant.

The fact that the cotton farmers were supervised by the cotton field officers or Cotton Production Assistant supports the findings of Rwegasira (1991) who found that private companies are profit minded or driven which makes them to provide close supervision to the farmers they sponsor.

Loan Recovery

The mode of payment of the loans given to the farmers was assessed by the study. All the farmers representing 100% said that they pay back the loans with their farm produce. The loan is deducted from the cotton produced by the farmers. Again, all the farmers representing 100%, said that they were satisfied with this mode of payment because it affords them the opportunity to pay their debt at the right time. Their discontent was however the fact that, not much income was left for them to support the subsequent year's cotton production and immediate family needs because of low productivity. This high percentage of farmers responding positively to the mode of payment goes to affirm Dorward et al. (1998) assertion that farmers in Sub-Saharan Africa are poor, needing support to produce cotton and should be motivated and sustained.

Income Levels of Cotton Out-Growers

The levels of income obtained by the cotton farmers varied. Some of them representing 29% obtained income between GH□ 301 to GH□ 600 while those who obtained GH□ 1000 and above were 18% of the study sample. Regarding the use of the income from the cotton cultivation, majority of the farmers representing 47% said they use it to feed their families while 18% said they use their income in the payment of the school fees of their children. Only 6% reported that they use their income to invest into other ventures.

The ICAC (2007) found most farmers earn less income compared to other businesses. They attributed this to the small scale farming which is done by most people. The money which is received from the farm produce is mostly used to feed the family and provide some basic needs of life.

Sources of Farm Labour

The results of the study showed that, the cotton farmers depend solely on family labour for their production. About 70% of the farmers depend on family labour while 21% depend on hired labour. MOFA (2006) found that most farmers in Ghana use their family members especially their children as the source of labour. Children are involved in child labour and are prevented from going to school. The

study again stated that the use of family labour does not help farmers to produce crops in large quantities.

Quality of Inputs Supplied to Cotton Growers

Variables that were used in the assessment of the quality of inputs include; the effectiveness of pesticides, effectiveness of fertilizers, and the viability of cotton seeds supplied to farmers. All the sampled farmers said, they do not know the source of their seeds and were also not involved in determining the cost of the inputs. About 54% of the farmers claim they have challenges associated with supply of seeds to them and the remaining 46% said they are satisfied with the processes. Major challenges mentioned are:

- Poor germination of seeds
- Lack of storage facilities for seeds
- delay delivery of seeds
- Ineffective pesticides

Ninety one percent of the respondents said the fertilizer supplied to them is effective. The delay delivery challenges might be necessitated by the lack of storage facilities at the site.

Armajaro Cotton Ghana Officials:

All the officers indicated that, there are adequate measures put in place to keep farmers abreast with modern farming practices through training and supervision. This scheme the company called the "farmer business school". However only 30% of the respondents agreed, the farmers are well motivated and 70% disagreed with the statement.

The officers indicated that, the major challenge to cotton production in the country is erratic rain fall. This they say affects timing of plough, planting, germination, maturity and quality.

REFERENCES

[1] Asefa A. (1987) A Review of the performance of Agricultural Finances in Ethiopia: Pre-post reforms periods. Adis Ababa University Press.

[2] Baffes J., Beghin J. C. and Aksoy A.M. (2005); Global Cotton Marketing settings, trade policies, and other issues in developing countries, World Bank publication.

[3] Beets C.W. (1990); Raising and sustaining productivity of smallholder farming system in Tropics.

[4] Dorward A., Kydd J. and Poulton C. (1998); 'Smallholder Cash crop production under market liberalization: A new institutional economics perspective Cab International, USA.

[5] Ellman A. (1998); Smallholder cash crop production and marketing in Tanzania: Who benefits? ODI. London, AgREN Newsletter 37.

[6] FAOSTAT website, www.faostat.org <http://www.faostat.org>.

[7] Hale J. (2011); The three basic types of descriptive research methods. Psych central. Retrieved on May 17, 2013.

[8] International Cotton Advisory Committee (2002). Cotton world statistics, Washington D.C.

[9] International Cotton Advisory Committee (2007). State of cotton Industry and prospects for the Future in Ghana, <http://www.icac.org/meetings/plenary/67>.

[10] International Cotton Advisory Committee (2010). Cotton world statistics, Washington D.C.

[11] Khuda B., Ishtiaq H., and Asif M. (2005). Factors Affecting Cotton Yield: Case study of Sargodha (Pakistan), Journal of Agriculture and Social Sciences, 1332-334.

[12] Ministry of Food and Agriculture (2006); Diagnostic Study of the Cotton Sector in Ghana, Draft Final Report.