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Faculty of Regional Development and International Studies

Department of Regional and Business Economics

BACHELOR THESIS

The status of rural agriculture and farmer's household food security in the northern region of Ghana: a case study of the Yendi Municipality

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Brno 2016

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Kenneth Koranteng

Acknowledgement

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Dedication

I would like to dedicate this work to my brother Edwin Koranteng and sister Betty Koranteng for their prayers and support throughout my studies.

ABSTRACT

Encouraging the growth of national and worldwide food security is important for eliminating hunger and reducing poverty. The objectives of the study is to examine the state of technological use by farmers, to examine the threats to rural agriculture and to farmer's household food and also assessment of how farmers access land for crop production in the Yendi municipality. The main tool for data collection was self-administered questionnaires. Purposive sampling was use in the selecting of the targeted population, in all 100 respondents was selected for the study. Descriptive statistical analysis of collected data was done using Statistical Package for Social Scientists (SPSS). The study reveals that most of the tools used by farmers are not mechanize, farmers are using the right methods of pest control and fertilizer application, farmers and their households in the study cannot boast of food security, since they are not able to meet the food needs of their families all year round. And assessment of land access by farmers for the cultivation and the rearing of animals are encouraging, as getting access to the land is very easy. It was strongly recommended that, Stakeholders in agriculture especially NGOs should particularly encourage farmers to increase their outputs by providing them with enough resources in the form of financial support or inputs. Also the government should come up with policies which will provide soft loans to the farmers through micro finance companies and also ensures that farmers insure their farms that will protect them from natural disaster or outbreak of diseases which can affect their yield and also since loans from micro finance companies come with collateral. Government should also encourage small processing plants and storage facilities in the rural areas so that farmers in these areas can get a ready market for their produce, which will help them avoid post harvest losses.

Keywords: Rural agriculture, Food security, Household, Farming, Ghana.

ABSTRAKT

Podporování růstu národní a celosvětové bezpečnosti potravin je důležité pro odstranění hladomoru a snížení chudoby. Cílem této práce je prozkoumat stav technologií používaných farmáři, prozkoumat hrozby vůči venkovskému zemědělství a domácnostem farmářů. Zároveň je cílem posouzení toho jak farmáři přistupují k půdě určené pro rostlinnou produkci v obci Yendi. Hlavní nástroj použitý pro sběr dat byly rozdávané dotazníky. Na základě vlastního úsudku byla pro tuto studii vybrána skupina 100 lidí. Deskriptivní analýza shromážděných dat byla provedena pomocí Statistický software balíček pro sociology (SPSS). Studie odhalila, že většina nástrojů používána farmáři nejsou velké stroje, ale pouze příruční nástroje. Farmáři používají správné metody hubení škůdců a aplikace umělých hnojiv. Farmáři a jejich domácnosti ve studii nedosahují vysoké bezpečnosti potravin jelikož nesplňují potřeby svých rodin po celé období roku. Posouzení přístupu farmářů k pozemkům kvůli pěstování a chovu zvířat dosahuje dobrých výsledků jelikož získat přístup k pozemku je zde velice jednoduché. Bylo silně doporučeno aby zainteresované strany v zemědělství a převážně nestátní organizace podporovaly farmáře k navýšení produkce tím, že jim poskytnou dostatečné zdroje ve formě finanční podpory nebo vstupů. Také vláda by měla přijít s politiky, které budou poskytovat zvýhodněné úvěry zemědělcům prostřednictvím mikro finanční společnosti a také zajišťuje, že zemědělci pojistit svá hospodářství, které budou chránit je před přírodní katastrofou nebo vypuknutí nemocí, které mohou ovlivnit jejich výnos a také od půjček od mikro finanční společnosti přicházejí s vedlejší. vláda podle měla rovněž podpořit malé závody zpracování a skladování ve venkovských oblastech, aby zemědělci v těchto oblastech může dostat odbytiště pro své výrobky, což jim pomůže vyhnout se ztrátám příspěvek o sklizni.

Klíčová slova: Venkovské zemědělství, Bezpečnost potravin, Domácnost, Farmaření, Ghana

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1.0 INTRODUCTION

1.1 Background of the study

Encouraging the growth of national and worldwide food security is important for eliminating hunger and reducing poverty, however it is insufficient. Today even in the midst of adequate worldwide food supplies, 800 million individuals are hungry because they can't afford to purchase the food they require for healthy life. More than 2 billion individuals are at danger from micronutrient insufficiencies (for instance, vitamin A, iron and iodine,), and more than 1 billion are really incapacitated by mental impediment, learning issues, and visual deficiency (World Bank 1994).

Land and land resources in Africa depict a situation of rapidly increasing population putting pressure on the land resource base without significant external inputs to ensure sustainable yields. “This much is clear in rural subsistence agriculture, on the dependence on wood-based fuels even in the towns and cities, the extraction of timber without substantial controls to reduce waste and mining, which tends to expose the land to erosion. The issue of rural agriculture relying on expansions in land area to achieve higher production directly exposes the soil to erosion” (Kendie, 2002).

Decreasing poverty and hunger will need encouragement of rural development in general and a well manage smallholder private agricultural economy specifically. The encouragement of rural development is the most ideal approach to help poor farmers and rural inhabitants to become more productive and improve their living conditions for everyday comforts. It is additionally critical to expand national and worldwide food supplies. Besides, rural development can contribute significantly to improved management of natural resources and the environment.

Food security is now a challenge for the world, in other to assure food security, necessary attention should be giving now. It can't be, met without renewed commitment by researcher (scientists), farmers, international donors, policymakers and the World Bank to increase agriculture productivity through research and innovation improvement to implement strategies and programs that will guarantee that poor and hungry people benefit from increasing agriculture productivity.

The Government of Ghana is very focused on reducing poverty through agriculture and rural development. In addition to that, its 2014-2017 Ghana Shared Growth and Development Agenda II (GSGDA II) focuses on the need to concentrate on agriculture, small and medium scale venture, fisheries, and sanitation. In addition, the plan underscores the focal part of the nation's Food and Agriculture Sector Development Policy for 2009-2015, known as FASDEP II. This approach perceives the significance of supporting agriculture through value chain development. It was the takeoff point for the Comprehensive Africa Agriculture Development Program (CAADP) process in Ghana, which got to be one of the first nations to sign a CAADP conservative in October 2009.

1.2 Problem Statement

Farmers in the rural areas in Ghana are mostly illiterate, they uses traditional implement in farming, they depend on rain-fed agriculture, some have limited farm sizes and depend on family hands as farm labour, they lack the infrastructure and sufficient access equipment such as agriculture input and technology, and facilities for storing, processing and marketing farm product. Due to this, they mostly plant to feed their family and do not produce more for the nations since they can't preserve their produce which affects the country economically.

1.3 Objectives

1. To examine technological use of farmers.
2. To examine the state of rural agriculture and farmers household food security status.
3. To assess how farmers access land in the study area for crop production.

2.0 LITERATURE REVIEW

2.1 Definition of Food Security

"Food Security exists when all people at all times have physical or economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO, 1996).

However, the term food security was also defined by the Ministry of Food and Agriculture Ghana as "*good quality nutritious food hygienically packaged, attractively presented, available in sufficient quantities all year round and located at the right place at affordable prices*"(MoFA, 2007 PP.24).

2.2 The Four Dimensions of Food Security

Food security has four important aspects entitled the Four Dimensions of Food Security. These four dimensions can easily be taken out of the WFS definition and are equally important and useful as tool for food security when together, See figure 1 below.

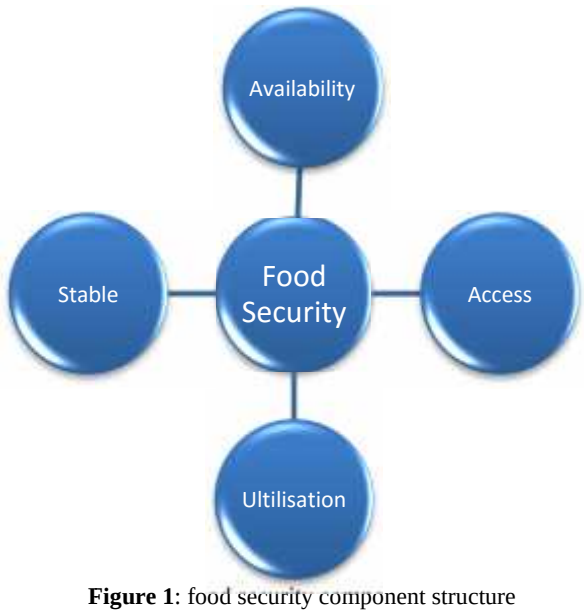

Figure 1: food security component structure

Source: Author of thesis.

2.2.1 Availability

The first dimension which was elaborated in the definition is availability, and also referred to the term “sufficient”. This is defined by the World Food Program (WFP) as “The amount of food that is present in a country or area through all forms of domestic production, import, food, and stock and food aid” (WFP, 2009, p.170). This definition given by WFP clearly talks about the net commercial imports when the commercial and other exports are deducted, beside the definition does not include countries and also villages and households. A past definition by WFP did likewise refer to "commercial imports including cross-border trade" is still a standard of their operational manual.

Furthermore, the final declaration which was adopted by the FAO Founding Conference stated that “the first cause of malnutrition and hunger is poverty”, it was formerly considered that food security was a synonym of availability of food (Shaw, 2007, p. 4). For the past three decades, researchers, teachers and practitioners made argument and demonstration to convince people that food security is not simply the availability of food.

Also, for the past fifty years, there has been a rapid growth in agricultural production than the population, the amount of food available on earth is enough to feed the world’s population today but yet some people do not have access to food. In other terms, food availability refers to the physical availability of food which may be own produce, purchased internally or imported from other countries (Gregory *et al*., 2005) explained that food availability is basically the existence of food stocks available for consumption.

2.2.2 Access

The second dimension of food security which was also talked about is access. The definition referred to it as to “have physical, economic and social access”. Even though Amartya Sen was the first person to adopt the concept of access to food in the early 1980’s, it is not yet necessarily common to refer to it as a vital component of food security. Also, due to the Niger food crisis in 2005 and also the world food prices in 2008, numerous people are tempted to restrict their access dimension on food security to it economical or financial dimensions. WFP, for example, defines the food access as “A household’s ability to acquire adequate amount of food regularly through a combination of purchases, barter, borrowings, food assistance or gifts” (WFP, 2009, p. 170). There are three component /access to food: financial, socio-cultural and physical.

Furthermore, Food access may also be defined as the ability to acquire sufficient food which is quality and in quantity to meet the nutritional requirement of all household members. According to the definition, they should be available at the right place at the right time and people should be able to afford nutritious food. Kuwornu *et al*., (2011) gave an explanation that getting access to food is determined by physical, financial, social and political factors.

2.2.3 Food Utilization

Food utilization basically refers to the way our body makes the most of various nutrients out of food. Taking in sufficient energy and nutrient by people is the result of taking good care and good feeding practices, food preparation, diversity of the diet and intra-household distribution of food. (FAO 2008)

2.2.4 Stability

Food stability is the fourth dimension of food security and it basically refers to the continuous supply and availability of food all year round without being short. In the situation whereby the population increase, when the climate is not favourable and there is a growing demand for biofuel use, in other to supply food constantly will depend on improved productivity and availability of proper storage facilities. The means of distribution of the food also requires the provision of good roads linking the growing areas. Also the use of van here will be a key factor to prevent post -harvest lost, which will enable/interest farmers to grow more to feed the population.

2.3 Food Security Situation in the Northern Region of Ghana

Ghana has been characterized over the years by regional inequality in terms of wealth and resource endowment that is basically geographical and political (Shepherd *et a*l., 2004). The northern part of Ghana which is predominately of savannah vegetation is associated with extremely poor quality soils, short bimodal rainfall season and periodic drought (Dickson and Benneh, 1988). This situation contrasts with the natural soil fertility and bimodal rainfall seasons of the southern part of the country. Coupled with these adverse environmental conditions of Northern Ghana is the poor access to markets and well-functioning financial institutions.

These conditions have contributed to a higher level of food insecurity in the region (Whitehead, 2006). The region has actually remained the poorest in terms of living standards, literacy levels, health, and nutrition status for several decades (Whitehead, 2006).

Although poverty levels have declined in the country over the last decade, progress has been much slower among food crop farmers than for other livelihood groups (Devereux, 2008). In particular, rural households in the north suffer seasonal strains in well-being and seasonal pressures are found to be worst where the households face declining food stocks. Despite the efforts by policy makers to combat poverty by improving farmers' access to improved technology, poverty remains prevalent in the region. Devereux (2008) points out that the 'poorest' groups in Northern Ghana who are normally vulnerable to shocks such as drought, bush fire, and loss of animals may no longer engage in agriculture at all and for that matter struggle to obtain enough food, especially during the 'hungry season' months of the year. The 'less poor' who are more dependent on agriculture than the 'poorest' or the 'vulnerable' may also face land and labor input constraints that limit their ability to accumulate enough capital.

A conducted survey by Ghana's Ministry of Food and Agriculture (MoFA) revealed, the 'less poor' tend to pursue a 'survival strategy' rather than a 'development strategy'. As noted by Ashong and Smith (2001), most rural households in Ghana adopt various livelihood strategies in order to overcome food poverty. This livelihood strategy has been widely documented for other parts of the world by several authors (Barrett et al., 2001; Lanjouw and Feder, 2001; Reardon *et al.*, 1998; Reardon *et al*., 2001). Available evidence suggests that rural non-farm income represents on average 42% of rural income in Africa, 32% in Asia, 40% in Latin America and 44% in Eastern Europe (FAO, 1998; Davis, 2004). Canagarajah *et al*. (2001) found in Ghana that participation in non-farm activities increased more rapidly for married women and female-headed households than for men and asserted that women are able to combine agriculture and non-farm employment as a way out of poverty and household food insecurity. Gladwin *et al*. (2001) have noted that addressing food insecurity in Africa through increased food production may be inadequate so efforts must be geared toward enhancing farmers' access to additional income through non-farm employment.

Rural non-farm enterprises promotion is one of the Government's poverty reduction strategies set out in the Ghana Poverty Reduction Strategy Paper II (MoFaEP, 2003).

The activities of Non-Governmental Organisations are complementary to these efforts of the government in the promotion of rural non-farm enterprise as a livelihood strategy for enhancing

food security in rural areas of Northern Ghana.3 the non-farm activities include agro-processing, commerce, transport services, charcoal production, firewood gathering, repair services, wage work, and seasonal migration, among others. Agro processing, which is mostly carried out by women is generally pursued through traditional methods and on very small-scale bases. These activities generally include processing of sheanuts, groundnuts, rice, cotton ginnery, and soap manufacturing. Other activities include trading in foodstuff such as maize, beans, rice and other grains, sand winning, the bulk of which is used for construction work in Tamale Metropolis and Fishing along the Black Volta (District Profile, 2006).

2.4 Definition of Land

Land is defined as a delineable area of the earth's surface, encompassing all attributes of the biosphere immediately above or below the surface (Kendie, 2002). This include the near surface climate, the soil and associated groundwater, the plant and animal populations and the physical result of human activity (Kendie, 2002). Land in customary law is also understood to have a wider range of applications. It includes the surface soil, things on the soil which are enjoyed with it as being part of the land by nature. Examples include water and marine resources, farmlands, forest or wildlife, and mineral deposits. It also includes any estate, interest, or right in, to, or over the land or over any of the other things which land denotes (Ollennu, 1985).

2.5 Determinants of Food Security

Factors used to explain the differences in levels of productivity and food security between households include income, household land holdings, employment status, household productive asset endowments and household composition. A study carried out by Rukuni (1994) revealed that to ensure high productivity levels and sustainable food security among the poor, especially in low rainfall areas, on-farm productivity and income growth is essential.

2.5.1 Landholding

The most common asset in rural areas is landholding and this is a good indicator of poverty when income is unobserved (Ravallion, 1989). Households with small farms are prone to food insecurity.

In addition, land quality has been found to provide a good amount of yield in communal farms. In most communal areas, lands are of relatively poor quality and require the use of chemical fertilizer (Rutsch, 2003).

2.5.2 Income Sources

Farm households derive their income from many sources including crop and livestock sales, wages, salaried labour, remittances and small enterprises. These small enterprises include basket making, brick making, curios, pottery and selling of fish. The contribution of each source to total income and its reliability varies greatly between households. Factors contributing to this variation include agro-ecological conditions, wealth and income levels (Jayne *et al*, 1994). Off-farm labour is an important source of income for most smallholder farmers. Off-farm income is positively associated with higher and less variable total income (Jayne *et al*, 1994). Some studies have also shown that off-farm income has a positive effect on the adoption of expensive traction technology and good quality inputs, which results in high productivity levels (Zindi and Stack, 1991). Thus, it is clear that income diversification can have a positive effect on food access by increasing total incomes and under proper circumstances increasing investment in agriculture (Jayne *et al*, 1994).

2.5.3 Livestock

A study on livestock was conducted by Ndlovu (1989), who focused on the role of livestock in promoting food security in farming systems. Ndlovu (1989) found that livestock are important to food security as sources of manure, draught power, cash income, food (milk and meat) and as long-term investments. Zindi and Stack (1991) did a survey on the contribution of livestock to household's food security in communal areas. The most important livestock types in communal areas are cattle, chickens and goats, each of which serves different functions under different household circumstances. Cattle are generally regarded as an investment and a production input while small stock, especially goats, is viewed as a ready source of cash. Thus, FAO (1997) proposed a food based strategy to alleviate rural food insecurity that included small stock (goats and sheep) and vegetable gardens as well as formal agriculture, especially the rearing of poultry to improve household food security. FAO (1997) showed that small stock are easy to keep as they can survive in harsh conditions and are able to feed on low quality crops as compared to cattle.

2.5.4 Gender of Household Head

Men and women engage in different activities to obtain income. This is important in determining the impact of gender of household head on crop productivity and food security. Studies have shown that women focus on the production of food crops, and that women's income from cash cropping and other sources is more likely to be spent on food than the men's income (Mattias *et al*, 1995). It has been argued that households with female heads are more likely to be food insecure than those with male heads.

2.6 Impact on Household food security

Access to food by communal farmers has been conceived as a function of entitlements, which includes a set of all alternative bundles of commodities that a person can obtain legally by using his or her endowments (Feleke *et al*, 2005). People may suffer if there is inadequate food because of lack of "entitlements" or access to food, implying that food insecurity should be analyzed in terms of the decline or failure of food entitlements of different socio-economic groups (Anderson, 1998). In other words, there can be food insecurity even without any fall in food availability due to a variety of other variables such as loss of endowments, loss of employment, a fall in wages, or unfavourable shift in terms of trade of food exchange for assets.

Ownership of other productive assets such as farm equipment (ploughs, cultivators, labour and draft power) may be reasonable *proxies* for food security status of households.

May *et al* (1999) observed that households have various ways of achieving food security. In this regard, pensions and access to salaried labour has gained prominence. The FAO (1997) proposed a food based strategy to alleviate rural food insecurity that included conservation strategies, food assistance, production from agriculture and buying power of communal farmers. The FAO (1997) came across these indicators when they were assessing food insecurity in some southern African countries that were food insecure such as Namibia, Zambia, Lesotho, Mozambique and Zimbabwe. Abalu (1999) and May (2000) argued that agriculture is one of the main sources contributing to livelihood strategies and underpinning food security in the rural areas of most African countries. Some of the ways that food security can be enhanced in communal areas include conservation strategies, food assistance, production, purchasing power and feeding livestock from crops residues. This also follows Kirsten *et al* (1998) suggestion that increased agricultural production has a positive contribution to household food security and nutrition.

2.7 Measurement of Household Food Security

Food secure households at the minimum are able to produce enough food at all times such that all members can lead a productive and healthy life. The food can either be produced or the household's agricultural production can generate enough income to purchase all the required food items. This means that food security can be measured in terms of both household actual food quantities produced from the family farm or the income generated from the production. The choice of method depends to a large extent on the availability and degree of analysis of food security. However, it should be noted that poor rural farming households produce to subsist and only that part of the produce which cannot be consumed (surplus) is marketed (Hoddinott and Yohannes, 2002)

3.0 MATERIALS AND METHODS

3.1 Study Area

The research was carried out in the Yendi Municipal Assembly. It is one of the 20 districts of the Northern Region of Ghana. The Northern Region occupies an area of about 70,384 square kilometers (km2) that is 29% of the land area of Ghana as the largest region (en.wikipedia.org/wiki/Northern Region). The Yendi Municipal Assembly has its capital in Yendi the northeastern quadrant of Ghana in the Dagbon territory (Districts of Ghana as at statoids.com and Ghana Disricts.com). It covers an area of 5,350km2 with a projected population for 2010 as 185,145 (YMA-Profile), the Municipality however has a population of 155,000 and is varied in terms of ethnicity with the Dagomba constituting the majority. The other ethnic groups include Konkomba, Akan, Ewe, Basare Moshie, Chokosi and Hausa. The population is largely rural, about 62% live in the rural areas while 37.4% are in towns. The population growth rate is approximately 2.9% per annum. Out of the population, 75,950 are males and 79,050 constitute the female population. The main religious groupings are Muslims, Christians and Traditionalist. Migration pattern is more pronounced among the youth, especially female girls who basically travel down south to engage in “Kayaye”. Yendi is the traditional capital of the Dagbon kingdom with the Ya Na as the Overlord. The people of Dagbon are called Dagombas. (http://ghanadistricts.com/districts).

The Yendi Municipal Area straddles the Greenwich meridian, which passes through a number of settlements in the municipality. It shares boundaries with seven other districts; to the east with Saboba, Chereponi and Zabzugu/Tatale to the South with Nanumba North and South, East Gonja, Savelugu/Nanton to the North.

The climate in the Yendi municipal Area is relatively dry with a single rainy season that begins in May and ends in October. This tropical climate sustains the guinea savanna vegetation made of grassland and clusters of shrubs .The dry season is from November to late March under the influence of cold and hazy harmattan winds particularly during the nights and early morning and high temperatures by midday.

The economy of the people is largely subsistence with agriculture being their main occupation. Over 80% of the people depend on agriculture for their livelihood.

Out of the total land area of 535,000 hectares, arable land constitutes 481,000 hectares out of which only 15% is under cultivation. Other economic activities include weaving, agro-processing (shea butter extraction), meat processing, fish mongering, wholesale and retail of general goods, transport and many others. These activities are on a medium and small scale. The economic potential of the Municipality in agriculture is enormous. The land is suitable for the cultivation of cereals, tubers and rearing of animals. Animals reared include cattle, sheep, goats, pigs and poultry birds for domestic and commercial purposes. Many people are engaged in small scale manufacturing business. They include smock weavers, blacksmiths, bakers, mechanics, shear butter extraction and groundnut oil extraction. See figure 2 below.

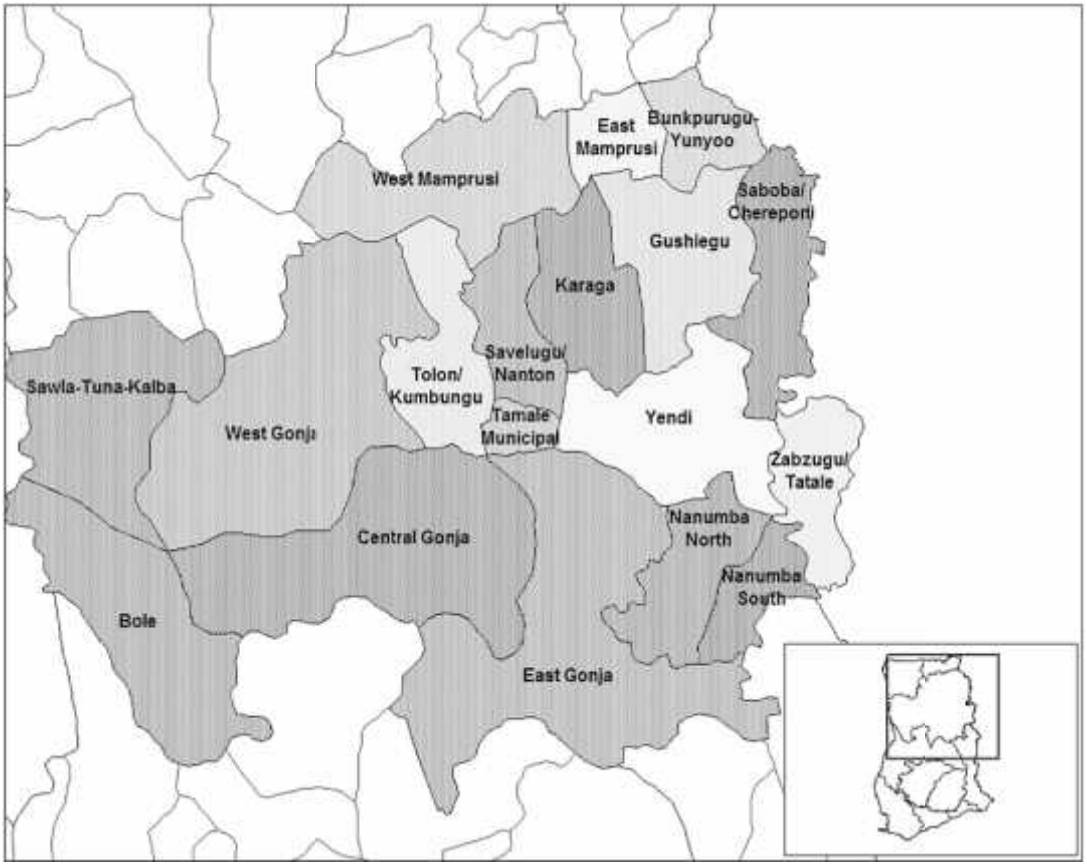

Figure 2: Map of Ghana, showing study area

Source: commons.wikimedia.org/wiki/File:Northern_Ghana_districts.png

3.2 Sources of Data

The study uses both secondary and primary sources of data. Primary data, on the other hand, is the data collected by the researchers themselves. For example, interview, observation, case studies, life histories and questionnaires. Secondary sources are data that already exists such as reports from previous research, official statistics, mass media products, government reports, web information and historical data and information.

3.2.1 Primary Sources (Social Survey)

The primary source of data for this research is the social survey. It is a method of collecting data using a questionnaire where many respondents answer the same questions. The choice of social survey was made because the researcher was interested in finding out from small scale farmers the types of technology they use in farming, the causes and effect of land degradation, and the threats that links rural agriculture to food security, the food security parts of the questionnaires was taken from the United State household food security survey module done in September 2012. Respondents who were unable to read, translations from their local language to English language were done to facilitate understanding of the questionnaire, whereby the researcher ticked the answer chosen by the respondents.

3.2.2 Secondary Sources

Already documented information in the form of textbooks, journals, theses and dissertations were evaluated and used for the study as literature review. Relevant information from these sources was reviewed to ensure proper understanding of the subject of investigation.

3.3.1 Target Population and sampling procedure

The target populations for this study were farmers from the Yendi municipality, which consist of both males and females. Purposive sampling was used to select the participants for the study. In all 100 respondents were identify for the study, they were all farmers.

3.3 Data Processing and Analysis

The answered questionnaires were edited to detect unanswered questions and also to eliminate errors such as double answers. The data were coded for entry into the Statistical Package for Social Sciences (SPSS) for Windows software by the researcher. The data were analysed and presented statistically using pie chart.

4.0 RESULTS AND DISCUSSION

4.1 Introduction

The analysis and presentation of data gathered for the study are in three major sections. The first section contains the socio-demographic characteristics of respondents. The second section presents the technology use and productivity by farmers. The third section present farmers house hold and food security.

4.2 Socio demographic characteristics of respondents

From figure 3 below, the majority (52%) of the respondents were males while (48%) of them were females. The number of male farmers is more than that of their female counterparts; this is because most females are engaged in post-harvest processing and selling as well as catering for the household, due to this most of the farming activities are done by male.

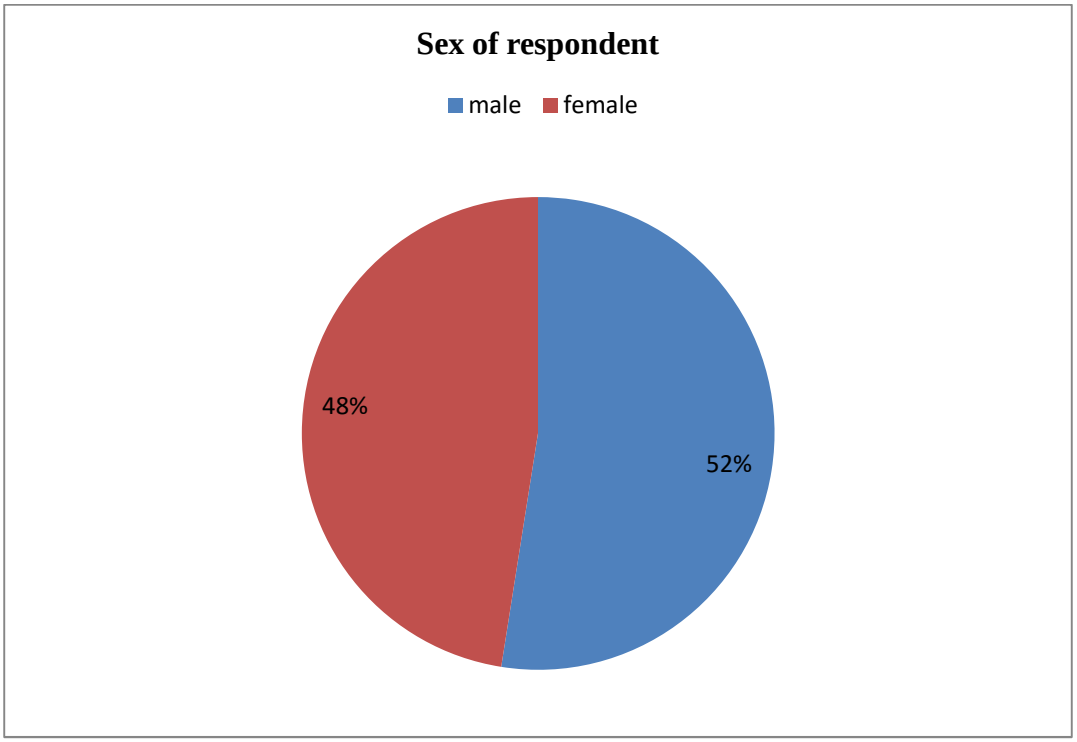

Figure 3: Sex distribution of respondents

Source: field study data, March, 2016

For the age of respondents the largest number of respondents was 31– 40 years (42%). This was closely followed by the 41– 50 years age group with (23%).

The others were 21 – 30 years age group with (20%) of respondents which was followed by the 51 – 60 age groups with (10%). The age group with the least percentage (5%) of respondents was the 61 – 70 years. , this shows that majority of the farmers in the communities are adults and also are in their active age to do hard work, see figure 4 below.

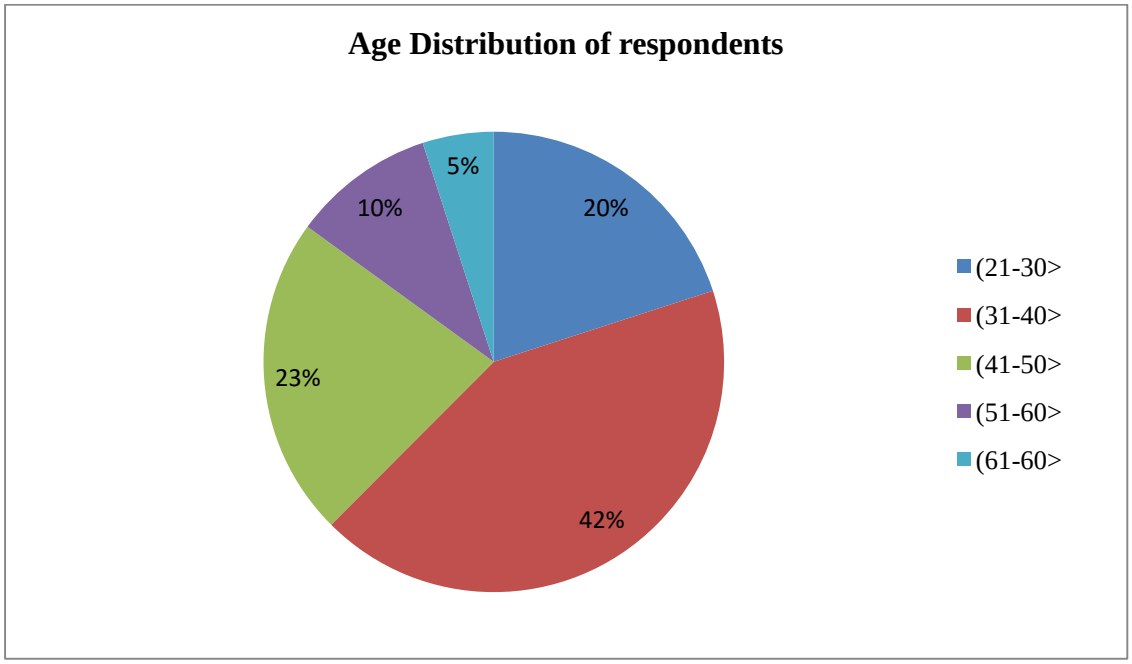

Figure 4: Age distribution of respondents

Source: field study data, March, 2016

Majority of respondents (42.5%) are in the 7-10 house hold group, followed by 4-6 (35.0) house hold group. And for 10-13 (17.5%) of house hold, the least number of respondents (5.0%) are in the 1-3 house hold group.

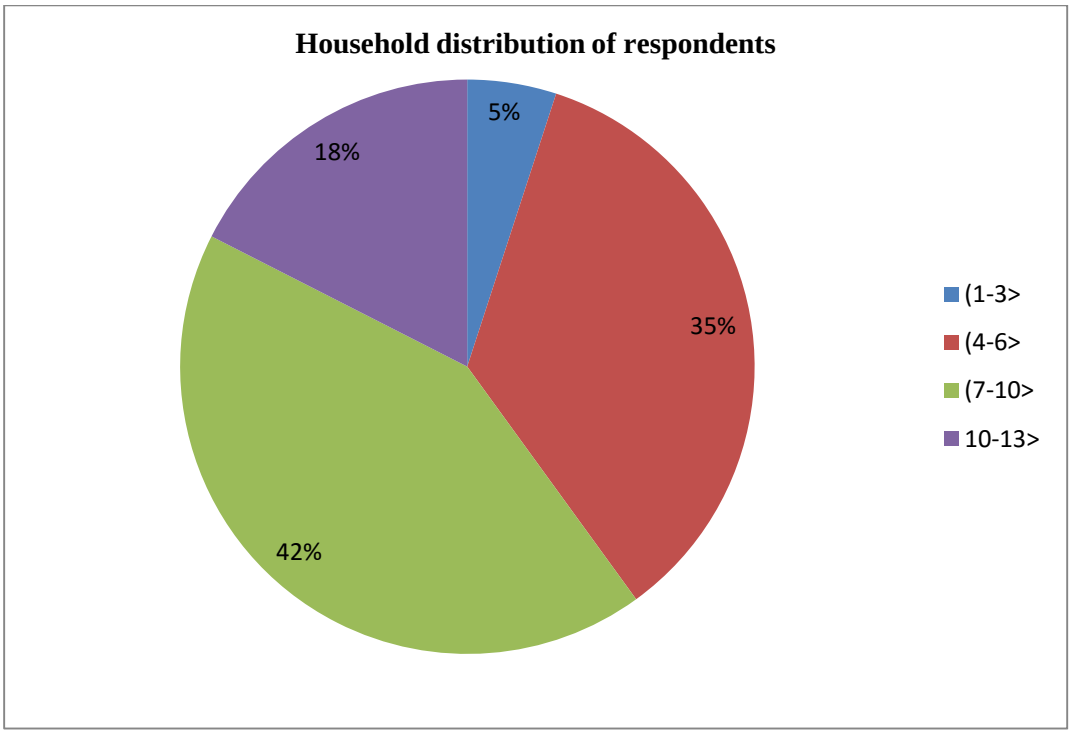

Figure 5: Household distribution of respondents

Majorities of the respondents (90%) ended their education below high school level, followed by respondents (10%) who ended their education at high school diploma level. None of the respondents ended their education at Bachelors Degree, Masters Degree and Doctoral level, see figure 6 below.

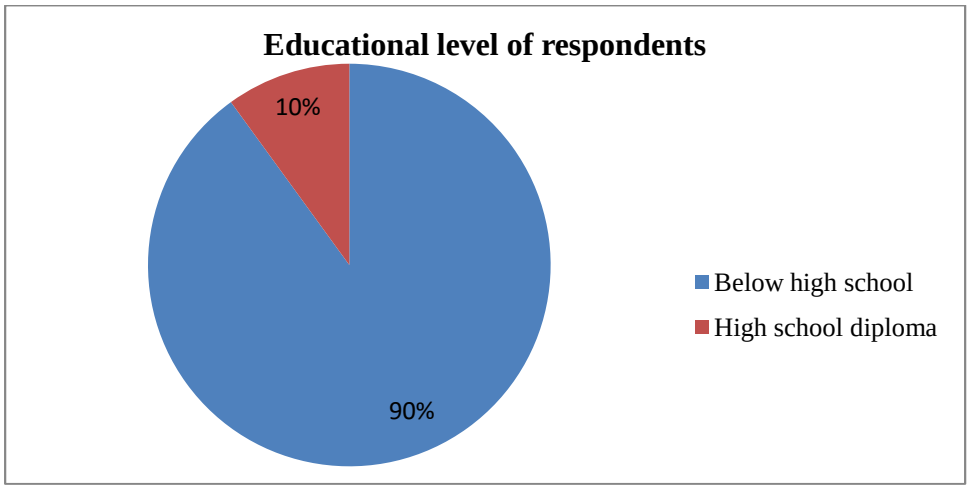

Figure 6: Educational level of Respondents

Source: field study data, March, 2016

It is obvious that none of the respondents ended their education at Bachelor's Degree, Master's Degree and Doctoral level, but majority of them ended their education below high school level, this shows the class of people who are into farming activities in the communities.

Majority of the respondents (42%) testified to be full time farmers, followed by (30%) of respondents who said they are not full time farmers, and for (28%) of the respondents they are not sure and also majority of the farmers have been farming for 4-6 years followed by those who had farm for 7-10 years and also 10-15 years this is as a result of the majority of the farmers being full time farmers and also because there is no other job than only farming for them to cater for them self's and their families.

4.3 Land assess by farmers and farming activities

4.3.1 Land Tenure

From figure 7 below, majority of the respondents (45.0%) use family lands for their agriculture activities, closely followed by (42.5%) of the respondents who use their own lands for agricultural activity. (10.0%) of the respondents rent lands for their farming activities, only one of the respondents (2.5%) use government land for his agriculture activity, this shows that acquiring a land to farm on it is not a problem to the people.

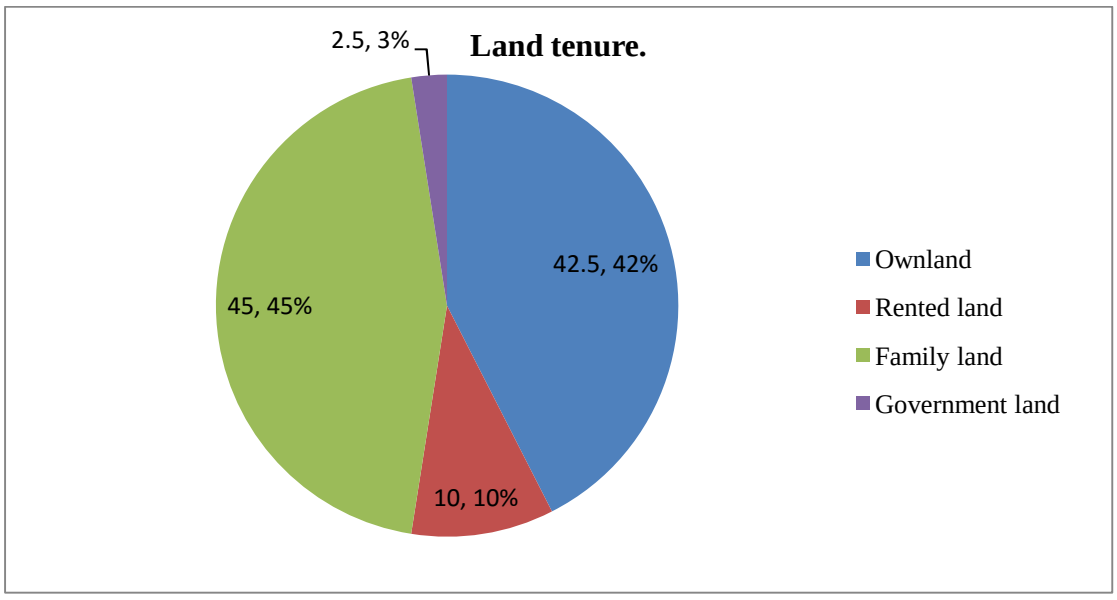

Figure 7: Land tenure

Source: field study data, March, 2016

4.3.2 Farm Size

Majorities of the respondents (32.5%) cultivates on 1-3 hectares of land size, followed by those who cultivates on 11-12 hectares of land. (25.0%) of the respondents cultivates on 4-5 hectare of land, and only (15%) of the respondents cultivates on 4-6 hectares of land, this could be as a result of the abundance of land in the northern region of Ghana. This conform to Ravallion (1989) were he stated that the most common asset in rural areas is landholding and this is a good indicator of poverty when income is unobserved.

4.3.3 Agricultural Activity

For agriculture activities undertaken by farmer's majority of the respondents (53%) are involved in cultivating of crops, followed by the respondents (30%) who are involved in rearing of animals. Only few percentages of the respondents (17%) engage in both cultivation of crops and rearing animals, this could be that it will be much economical to cultivate crops, than to rear animals or to practice the two. The two most cultivated crops by the respondents are maize and yam and the most reared animals by the respondents are cattle goat and sheep. A study by Ndlovu (1989) found that livestock are important to food security as sources of manure, draught power, cash income, food (milk and meat) and as long-term investments, see figure 8 below.

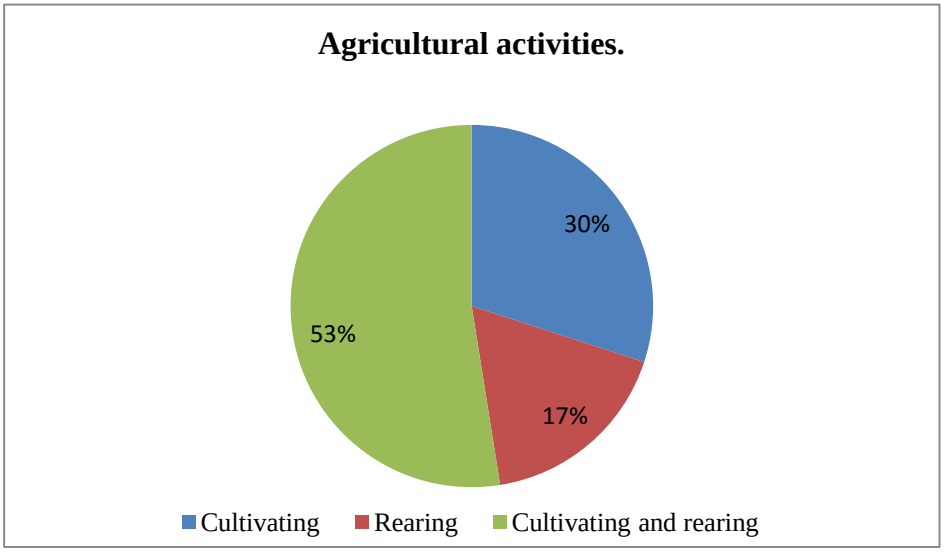

Figure 8: Agricultural activities

Source: field study data, March, 2016

4.3.4 Crops Cultivated

From figure 9 below majority of the farmers (33%) are involve in the cultivation of maize, followed by (23%) of the respondents are involved in Yam cultivation. Only few of the respondents are involved in soya bean, beans, and groundnut cultivation.

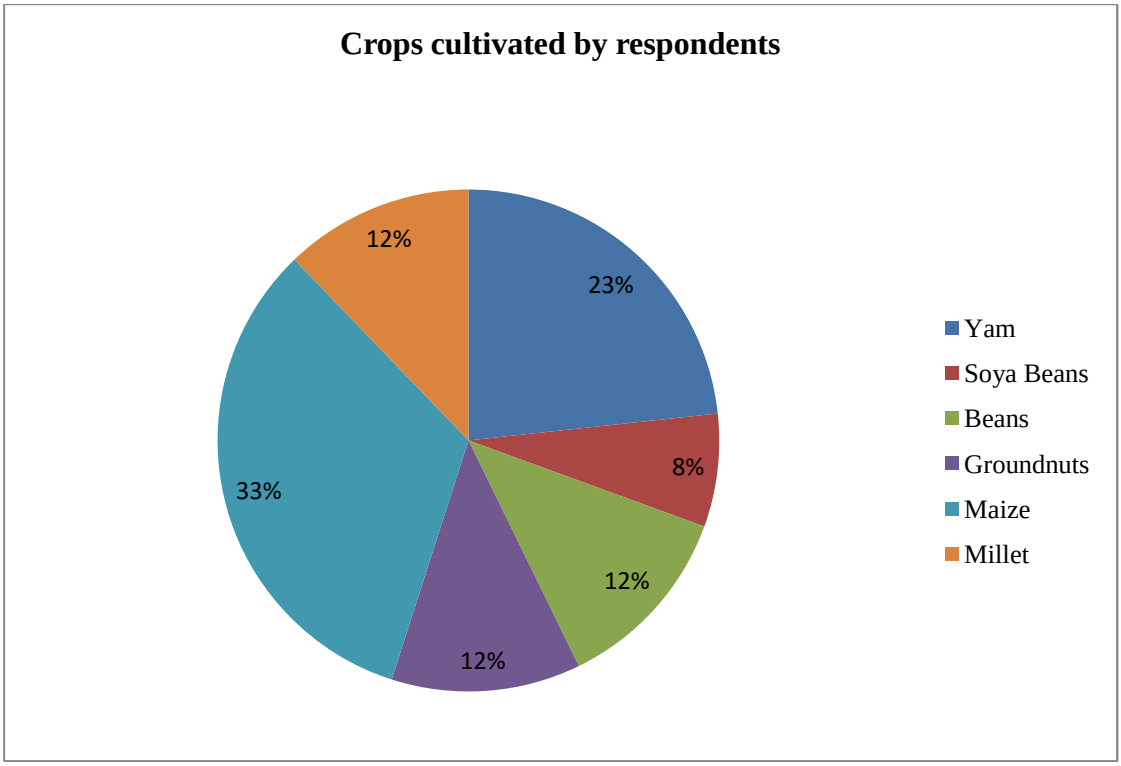

Figure 9: Crops cultivated by respondents

Source: field study data, March, 2016

4.3.5 Distance covered to farm

Majority of the respondents (57%) walk 1-3Km to farm, followed by (25%) of the respondents who walk not more than 1Km to farm, and only few of the respondents (17.5%) walk for about 4-6Km to their farms, this shows how farmers have to walk far distances to their farms.

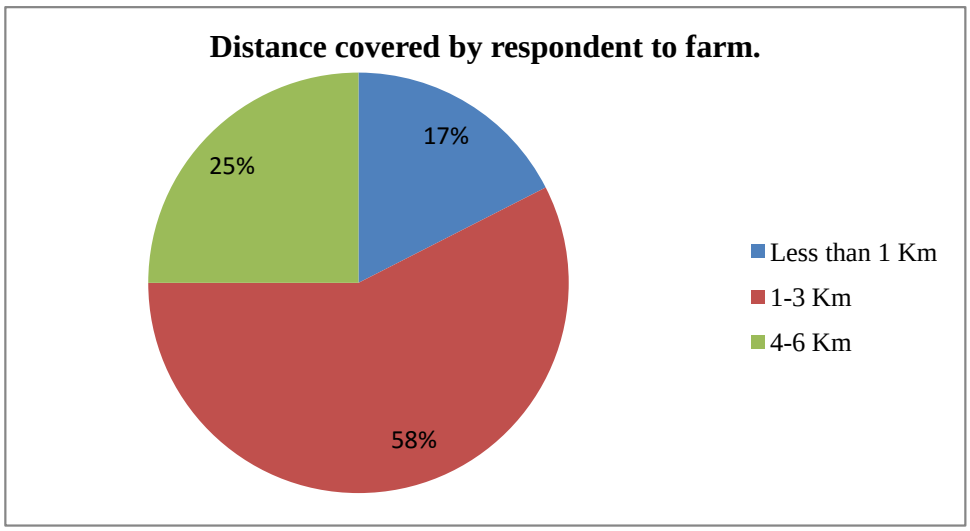

Figure 10: Distance covered by respondents to various farms

Source: field study data, March, 2016

5.3 Technology Adoption by Farmers

5.3.1 Tools Used

From figure 11 below, all respondents (36%) uses both hoe and cutlass in the cultivation of crops, followed by (21.6%) of the respondents who use bullocks for farming, and only a few percentage of the respondents (6.3%) use tractor for their farming activities. This shows that all the respondents use hoe and cutlass in the cultivation of their crops, also followed by using bullocks in the tilling of the land, and only a few of the respondents gets assess to tractors in farming, this could be because of the expensive nature of hiring or purchasing the tractor and also the cost of maintaining it, see pictures in appendix.

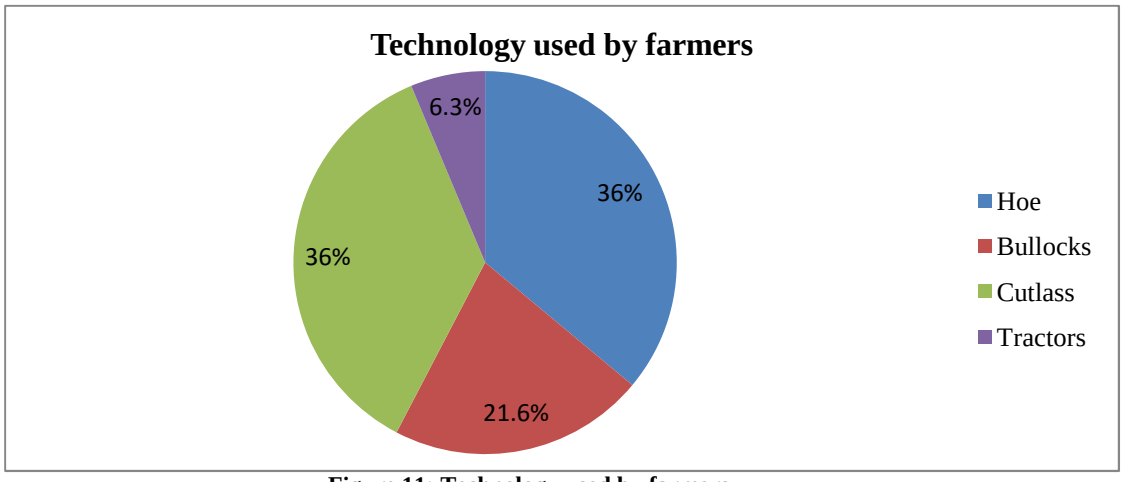

Figure 11: Technology used by farmers

Source: field study data, March, 2016

5.3.2 Improving Soil Fertility and Pest control

Majority of the respondents (46.8%) uses chemical fertilizer to improve soil fertility on their farms, followed by (30.6%) of the respondents also uses mixed cropping and the rest of the respondents (22.6%) also uses organic fertilizer to enhance the soil fertility of their farm. Majority of the respondents (72.0%) uses pesticide to control pest on their farm, followed by (28.0%) of the respondents also uses shifting cultivation to control pest on their farm. This is a good practice on the part of the farmers this could be as a result of the good extension education in the area.

Methods of Pest Control by farmers: majority of the respondents (72.0%) uses pesticide to control pest on their farm, followed by (28.0%) of the respondents who also uses shifting cultivation to control pest on their farm.

5.4 Farmers household food security status

5.4.1 Household Source of Food

From figure 12 below, majority of the respondents (85.0%) rely on own production and product bought from the market as their main source of food, followed by (7.5%) of the respondents who also depend on the market pressure and the remaining (7.5%) of the respondent also depend on their own production for food. This shows that majority of the respondents rely on own crops cultivated and product bought from the market as their main source of food, only a few of the respondents rely on market and their own production of food, this shows that the only go to the market to buy what they don't produce on their farms to add up to what they have to feed the house hold.

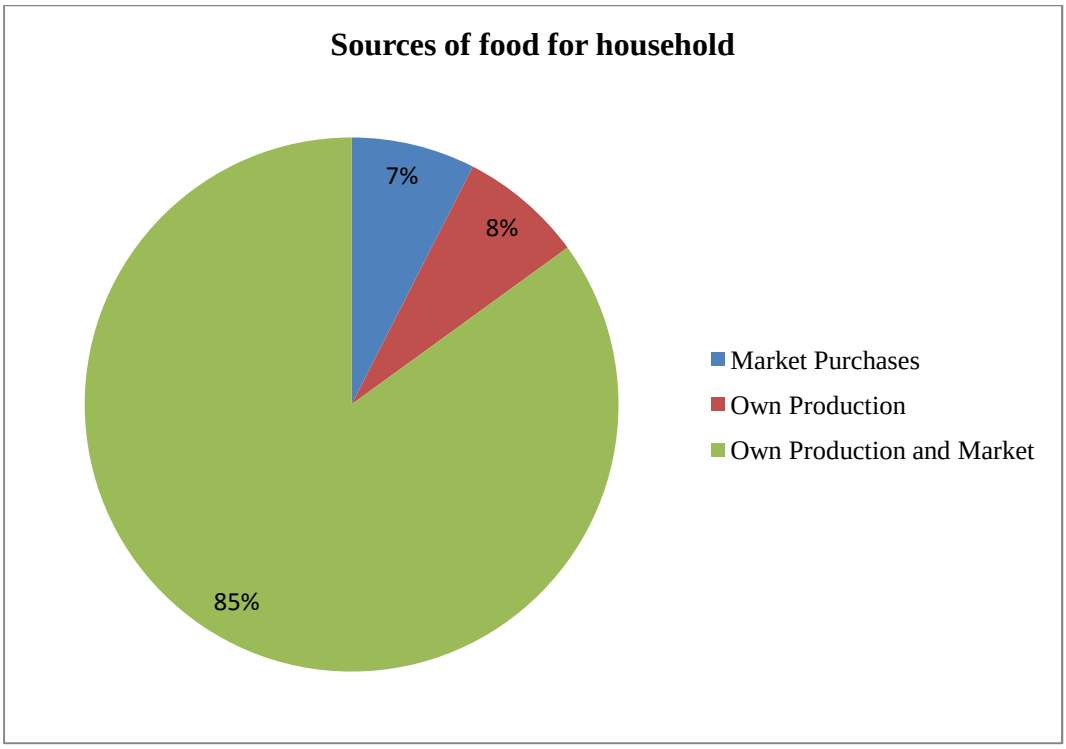

Figure 12: Sources of food for household

Source: field study data, March, 2016

Food secure households at the minimum are able to produce enough food at all times such that all members can lead a productive and healthy life. The food can either be produced or the household's agricultural production can generate enough income to purchase all the required food items. This means that food security can be measured in terms of both household actual food quantities produced from the family farm or the income generated from the production (Hoddinott and Yohannes, 2002).

5.4.2 Major Source of Income

Majority of the respondents have their major source of income through Agricultural activities, followed by commence and others. This could be as a result of most of the farmers being full time farmers. Most of the respondents (50%) earn 400-900 Ghana cedis per month, followed by farmers (35%) who earns 100-300 GH cedis per month this shows that the respondents are doing well in their farming activities.

5.4.3 Household food Consumption patterns

From figure 13 below, majority of the respondents (57%) they have enough food to eat most of the time but not always the kind of food they want, most of them (33%) also refuse to answer this question, this could be that they only eat what they get and for them there is no special food. Furthermore (5%) of them also respondent as having enough of they want to eat whiles the rest of the respondent (5%) also said they sometimes don't have enough to eat.

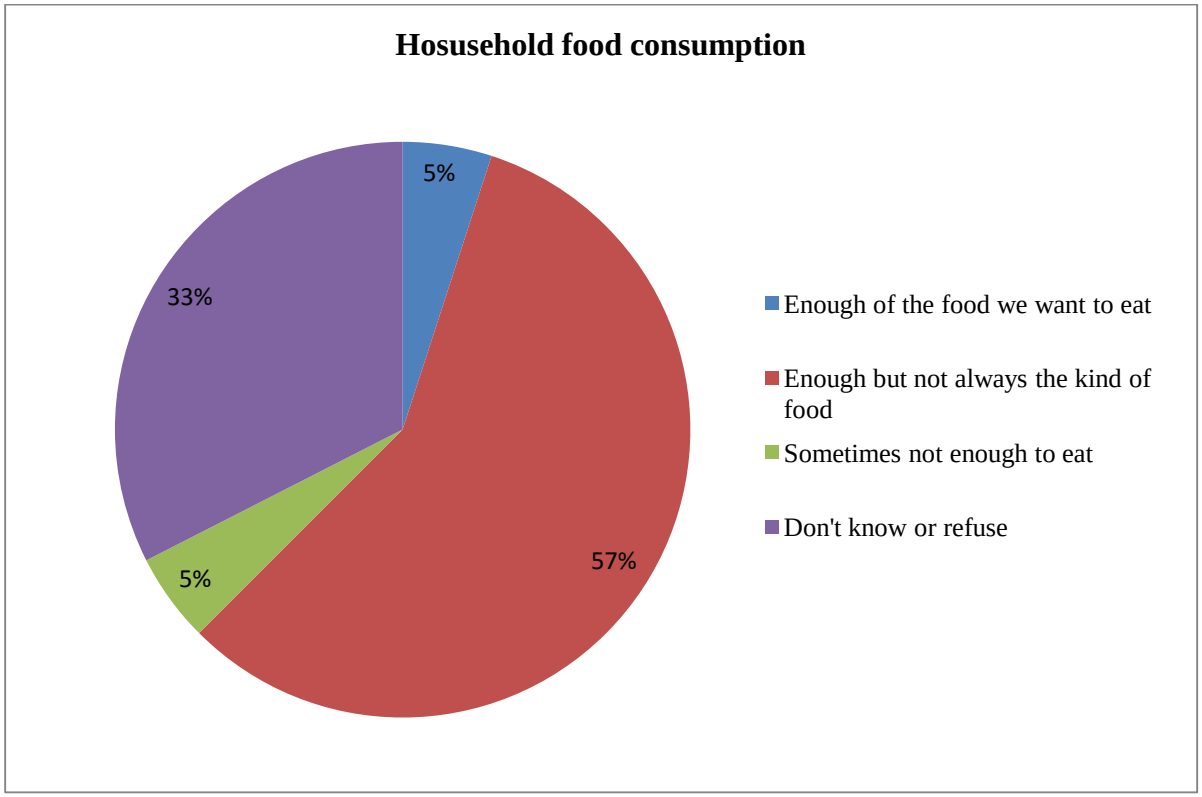

Figure 13: Household food consumption

Source: field study data, March, 2016

For majority of the respondents (65.0%) the household had sometimes run out of food and some of the respondents (17.5%) refuse to answer the question. Only a few of the respondent confirm to have never run out of food before.

From the figure 14 below majority of the respondents (53%) they did not have money for food sometimes, others (20%) refused to answer the question whiles few number of respondents (15%) never true that they couldn't afford food and the rest of respondents (12%) said it's often

true that couldn’t afford food. This shows that just a few of the respondents could boast of being able to purchase food.

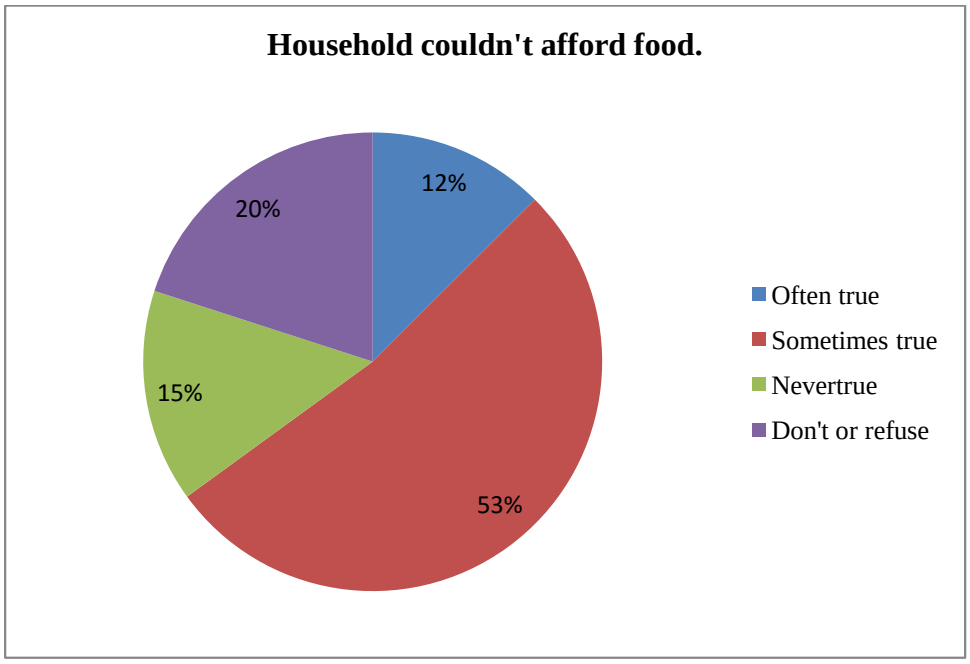

Figure 14: Household couldn't afford food

Source: field study data, March, 2016

Form the figure 15 below, majority of the respondent testified of not eating a balance food most of the time, for them being able to feed the family always is the most important thing to do. Followed by 22.5% of the respondent who also said often true that they couldn’t afford a balance meal and 15% of them also responded never true to that they couldn’t afford a balance meal for the last 12 month and the remaining 12.5% refused to answer the question.

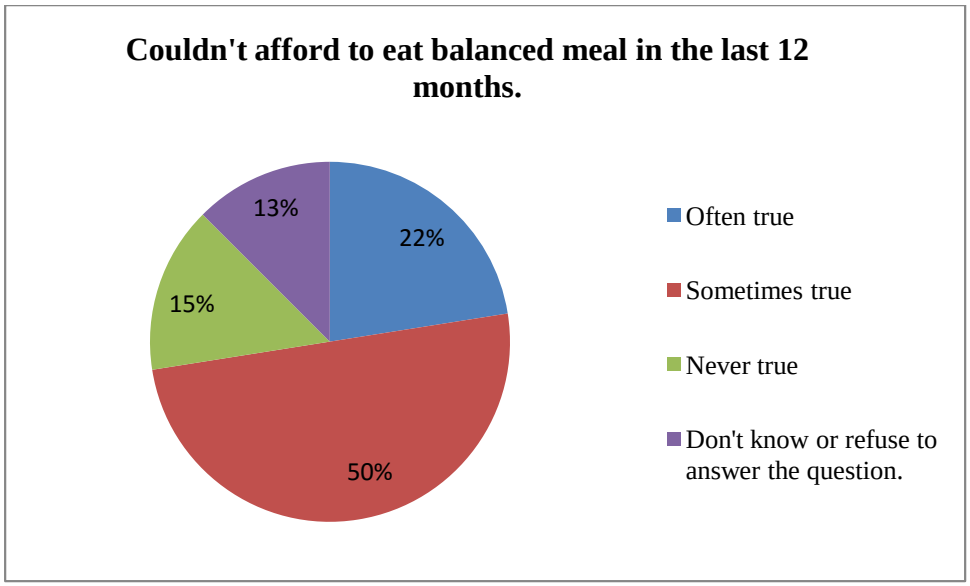

Figure 15: couldn't afford balance meal in the last 12 months.

Source: field study data, March, 2016

From the figure 16 below, majority of the respondents testifies that they have to skip or cut the size of their meals because there is no enough money, when they were asked how often it happened, for majority of the respondents it happened some months not every month this could happened at the beginning of the growing season because there is no much crops to harvest.

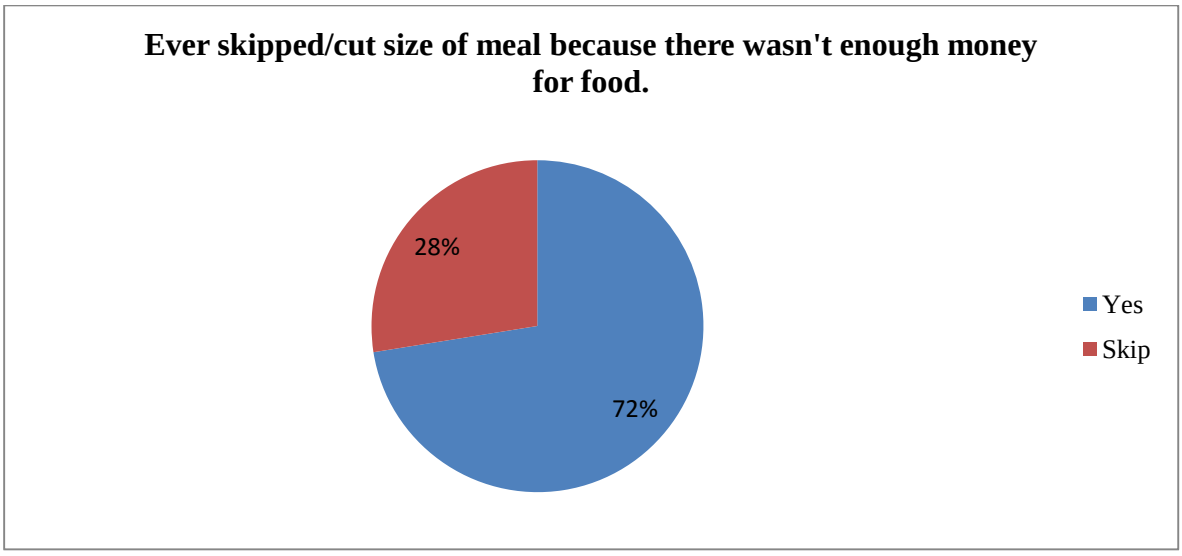

Figure 16: ever skipped/cut size of meal because there wasn't enough money for food.

Source: field study data, March, 2016

Majority of the respondents (62.5%) did not know the answer to the question when they were asked whether they have ever eaten less, 22.5% of them responded no to have eaten less and the remaining 15.0% responded yes to have eaten less before because there wasn't enough food.

From the figure 17 below, majority of the respondent (50%) testified to have been very hungry, because there is no enough food for the household and also some did not testify of been hungry.37% of the respondents also responded no to have being hungry and couldn't eat because there wasn't enough money for food and 13% of them refuse to answer the question.

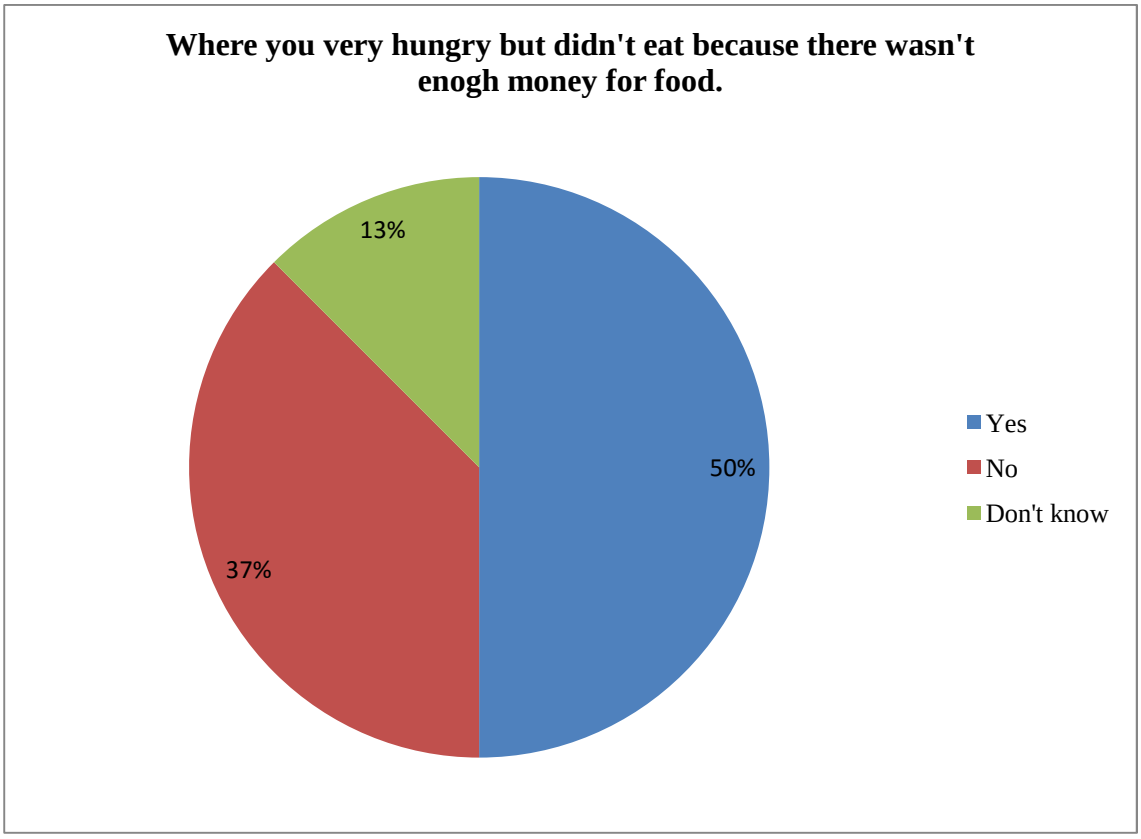

Figure 17: Where you very hungry but didn't eat because there wasn't enough money for food.

Source: field study data, March, 2016

Majority of the respondents testified of losing weight because they did not have enough food to eat sometimes.

Majority of the respondent (55%) testified for not eating for all day because there is no food in the house and also 42% responded no to that, only a few (3%) refused to answer the question.

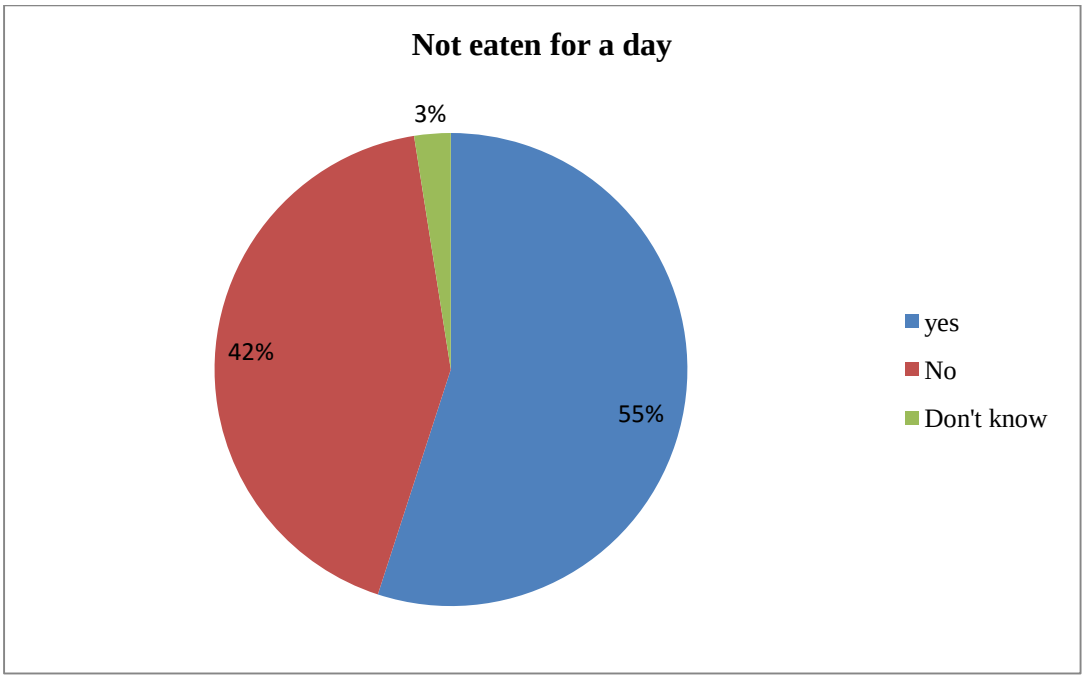

Figure 18: not eaten for a day.

Source: field study data, March, 2016

Majority of the respondents agree to rely on low cost food sometimes whiles others refuse to answer the question, see figure 19 below.

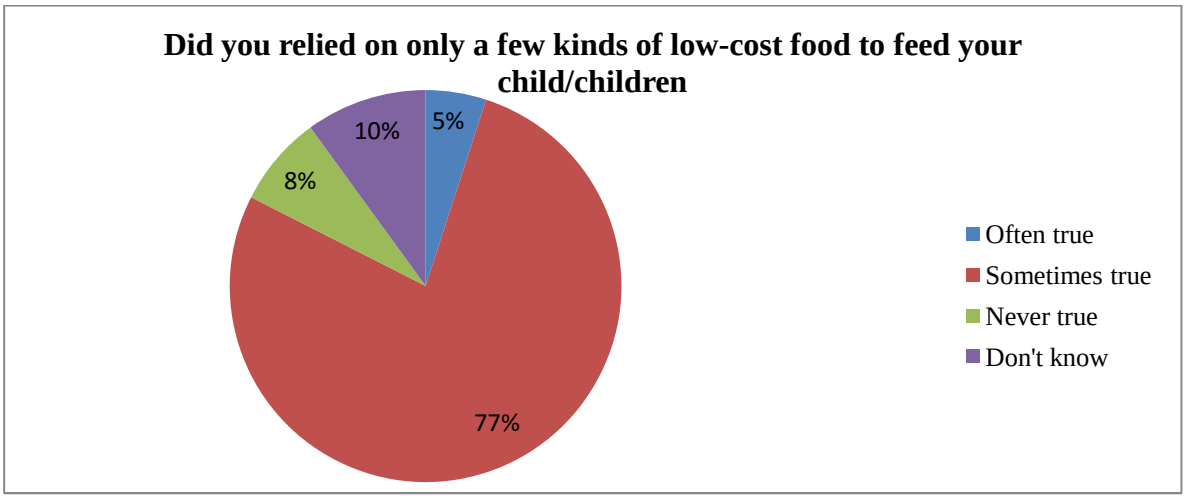

Figure 19: did you relied on only a few kinds of low-cost food to feed your child/children.

Source: field study data, March, 2016

Majority of the respondents couldn't feed their children sometimes because there was no food in the house, some also refuse to answer the question, and for some of the respondents they always try their possible best to feed their children always.

Majority of the respondents they couldn't afford food sometimes, followed by those who can afford food often and always. Majority of the respondents cut the size of their children's meals because sometimes there is no enough meal to feed them, which was closely followed by those who never cut the size of their child's meal. Majority of the respondents testified of skipping meals; while others said they have not skip meals before while others refuse to answer the question, most of them said they skip meals for some months and some refuse to answer the question. From majority of the respondents there are times were they eat for the whole day, while others said they do not eat for the whole day.

6.0 CONCLUSION AND RECOMMENDATION

6.1 CONCLUSION

The aim of the study was to find out the status of rural agriculture and farmers household food security in the northern region of Ghana. In this view, rural farmers in the Yendi municipality were the prime target group for the study. It was determined that there were a few obstacles that hinder rural farmers to provide food for their household all year round. One hundred farmers where interviewed on various questions and out of the responds given, we concluded that most farmers are illiterate, they use traditional implement in farming, they depend on rain-fed agriculture, they are not practicing modern system of agriculture in terms of the use of highly mechanized tools and equipment due to the high price of this equipments/inputs in relations to the insufficient finances, they cannot boast of food security since they are not able to meet the food needs of their families all year round. I also found out that assess of land by farmers for the cultivation and the rearing of animals is encouraging and also farmers are using the right method of pest control and fertilizer applications which was very encouraging.

In summary the following conclusions were made:

- It can be concluded from the study that, most of the tools use are not mechanize, and for pest control farmers are using the right methods of pest control and fertilizer application.
- Farmers and their households in the study cannot boast of food security, since they are not able to meet the food needs of their families all year round.
- Assess of land by farmers for the cultivation and the rearing of animals is encouraging, as getting access to the land is very easy to acquire.

6.2 RECOMMENDATIONS

- Stakeholders in agriculture especially NGOs should particularly encourage farmers to increase their outputs by providing them with enough resources in the form of financial support or inputs.
- The government should come up with policies which will provide soft loans to the farmers through micro finance companies and also ensures that farmers insure their farms that will protect them from natural disaster or outbreak of diseases which can affect their yield and also since loans from micro finance companies come with collateral.

- Government should also encourage small processing plants and storage facilities in the rural areas so that farmers in these areas can get a ready market for their produce, which will help them avoid post harvest losses.

References

1. Abalu, G, I., 1999. Food security, rural economic linkages and the creation of employment in rural areas of Southern Africa, in *Agrekon Journal*, 38, 36-48.
2. Amikuzuno, J. and Akologo, H., (2008). Land Degradation in Northern Ghana: Causes and Effects under High Population Pressure and Land Use Competitiveness.
3. Asenso-Okyere, W.K., Benneh, E.Y., Tims, W. (Eds.) © 1997 Sustainable Food Security in West Africa.
4. Ashong, K., Smith, D.R., 2001. Livelihoods of the poor in Ghana: a contextual review of Ghana-wide definitions and trends of poverty and the poor with those of peri-urban Kumasi. Kumasi and London Centre for Development of People and University of Greenwich, Natural Resources Institute. <www.livelihoods.org>.
5. Barrett, C.B., Reardon, T., Webb, P., 2001. Nonfarm income diversification and household livelihood strategies in rural Africa: concepts, dynamics and policy implications. Food Policy 26, 315–331.
6. Bussiness Dictionary, (2010). Definition of Land degradation. Retrieved April 18, 2016, from http://www.bussinessdictationary.com/definition/land-degradation.html.
7. Canagarajah, S., Newman, C., Bhattanmishra, R., 2001. Non-farm income, gender, and inequality: evidence from rural Ghana and Uganda. Food Policy 26 (4), 405– 420.
8. Devereux, S., 2008. Linking social protection and support to small farmer development. Report of a Workshop Held at Food and Agriculture Organization of the United Nations (FAO), Rome, on 17–18 January, 2008.
9. Dickson, K.B., Benneh, G., 1988. A New Geography of Ghana. Longman, London.
10. Eswaran, H. Lal R. and Reich, P. F. (2001). Land Degradation; an Overview. Bridges, Responses to Land degradation. Proc.2nd. International Conference on Land Degradation and Desertification, New Delhi, India: Oxford Press.
11. FAO, (1997). Guide for the conduct of the constraints analysis component. Special programme for food security, Handbook Series, SPFS/DOC/18. Rome.
12. FAO, 1998. The State of Food and Agriculture: Rural Non-farm Income in Developing Countries. Food and Agriculture Organization of the United Nations, Rome.
13. Feleke, S, T., Kilmer, R, L., & Gladwin, C, H., (2005). Determinants of food security in Sothern Ethiopia at household level. *Agricultural Economics Journal*. 33, 351-363.

14. Glossary of Environment Statistics, (1997). Studies in Methods, Series F, No. 67, United Nations, New York. Retrieved September 30 2009, from Unstats.un.org/unsd/publication/SeriesF/seriesf-67E.pdf.
15. Hoddinott, J. and Yohannes, Y. (2002), Dietary diversity as a food security indicator, International Food Policy Research Institute (FCND Discussion paper no. 136), N.W. Washington, D. C. 2006 USA
16. Jayne, T. S., Jones, S., GovereH, J., Nyoro, J., & Reardon, T., (1994).Market-Oriented Strategies to Improve Household to Food Experience from Sub-Saharan Africa. MSU International Development Working Paper No 15, Department of Agricultural Economics Michigan State University
17. Mattias, K. A., *et al*, (1995). "Targeting Assistance to the poor and Food Insecure: A Review of the Literature" Michigan State University International Development Working Papers No 47, Department of Agricultural Economics and Michigan State University.
18. May, J., (2000). The structure and composition of rural poverty and livelihood in South Africa, in B Cousins (ed). At the Crossroads: Land and Agrarian Reform in South Africa into the 21st Century. Cape Town: Programme for land and Agrarian studies
19. MoFaEP (2003). The Growth and Poverty Reduction Strategy Paper II (GPRSPII).
20. Ndlovu, L.R., (1989). "The role of livestock and small ruminants in promoting Food Security": pages 242-250 in": Mandivamba Rukuni, Godfrey Mudimu and Thomas S. Jayne, (Eds) 1990. Food Security Policies in the SADC Region. University of Zimbabwe/Michigan State University, Food Security Research in Southern Africa Project. Department of Agricultural Economics and Extension, University of Zimbabwe.
21. Sarpong, D. B. (2007). Cost implications of Agricultural Land Degradation in Ghana. An Economy wide, Multimarket Model Assessment. International Food Policy Research Institute. Discussion Paper 00698.
22. Shepherd, A., Gyimah-Boadi, E., Gariba, S., Plagerson, S., Musa, A.W., 2004. Bridging the North–south Divide in Ghana. Background Paper for WDR 2006 on Equity and Development.
23. United state department of agriculture, 2012 united state household food security survey module. Washington DC USDA

24. Whitehead, A., 2006. Persistent poverty in North East Ghana. Journal of Development Studies 42 (2), 278–300.
25. Zindi, C., &Stack, J., (1991). Patterns of Livestock ownership and distribution in Zimbabwe's Communal Areas. Working Paper AEE 4/91. Department of Agricultural Economics and Extension, University of Zimbabwe.

List of Abbreviations

CAADP	Comprehensive Africa Agriculture Development Program
FAO	Food and Agriculture Organisation
FASDEP	Food and Agriculture Sector Development Policy
GSGDA	Ghana Shared Growth and Development Agenda
MOFA	Ministry of Food and Agriculture
SPSS	Statistical Package for Social Scientists
WFP	World Food Program