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INSTITUTE OF DEVELOPMENT STUDIES

MASTERS OF ARTS IN COMMUNITY DEVELOPMENT (MA CD)

**FOOD INSECURITY AND HOUSEHOLD COPING STRATEGIES IN BAHU
DISTRICT: A CASE OF BAHU, NAGULO AND UHELELA VILLAGES IN BAHU
WARD**

BY

MSANGWA, BARNABA

**A DISSERTATION FOR PARTIAL FULFILMENT OF THE REQUIREMENT FOR
THE AWARD OF A MASTER DEGREE OF ARTS IN COMMUNITY
DEVELOPMENT AT ST. JOHN'S UNIVERSITY OF TANZANIA**

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(SUPERVISOR)

2015

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2015

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CERTIFICATION

I, the undersigned, certify that I have read and hereby recommend for acceptance by St. John's University of Tanzania dissertation entitled “ **Food insecurity and household coping strategies in Bahi district: A case of Bahi, Nagulo and Uhelela villages in Bahi ward** ”, in fulfillment of the requirements for the degree of master of arts in Community Development studies of the St. John's University of Tanzania.

.....

DR. Baltazar M.L. Namwata (PhD)

(SUPERVISOR)

Date.....

DECLARATION

I Barnaba Msangwa, declare that; this dissertation entitled “Food insecurity and household coping strategies in Bahi district: A case of Bahi ward”, is my own work and it has not been presented and will not be presented for any other course of study. I verify that; the right credit has been given where reference has been made to the work of others.

Signature.....

Date.....

DEDICATION

This dissertation is dedicated to my beloved parents Mr. & Mrs. Msangwa for their parental care and spiritual guidance in my life. I will always pray for you and remain grateful to you.

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LIST OF ABBREVIATIONS

ADB	-	Asian Development Bank.
ADP	-	Agricultural Development Program.
ASAL	-	Arid and Semi Arid Lands.
ASDP	-	Agricultural Sector Development Plan.
BRN	-	Big Results Now.
CAADP	-	Comprehensive African Agricultural Development. Program.
DAICO	-	District Agriculture Irrigation and Cooperative Officer.
DCDO	-	District Community Development Officer.
ERP	-	Economic Recovery Program.
FAO	-	Food and Agricultural Organization.
FS	-	Food Security.
GDP	-	Growth Domestic Product.
IMF	-	International Monetary Fund.
LDCs	-	Least Developed Countries.
MAFC	-	Ministry of Agriculture Food security and Cooperatives.
MDGs	-	Millennium Development Goals.
NSGRP	-	National Strategies for Growth and Reduction of Poverty.
SADC	-	Southern African Development countries.
SAGCOT	-	Southern Agricultural Growth Corridor of Tanzania.
SAP	-	Structural Adjustment Program.
SFP	-	Structural Facility Program.
SPSS	-	Statistical Package for Social Science.

SSA	-	Sub Saharan Africa.
TDV	-	Tanzania Development Vision.
UN	-	United Nations.
UNEP	-	United Nation Environment Program.
UNICEF	-	United Nations Children’s Fund.
URT	-	United Republic of Tanzania.
VEO	-	Village Executive Officer.
VCPs	-	Village Chair Person.
WAO	-	Ward Agricultural Officer.
WB	-	World Bank.
WC	-	Ward Chancellor.
WCDO	–	Ward Community Development Officer.
WEO	–	Ward Executive Officer.
WFP	–	World Food Program.
WHO	–	World Health Organisation.

ABSTRACT

This study sought to investigate household food insecurity and coping strategies among households in Bahi, Nagulo and Uhelela at Bahi ward in Bahi district. Specifically, the study aimed to: Examine the relationship between food insecurity and socio-economic characteristics of household in the study area, examine factors influencing food insecurity among households in the study area and to identify coping strategies adopted by households to mitigate food insecurity in the study area. A total of 110 respondents were sampled from the total population of 18293 from 4066 households in the ward. Data were collected by the use of structured questionnaire, focus group discussion and key informant interview guide. Data analysis was done by using SPSS - computer software program. Frequency tables, pie charts, and bar graphs were used to present the findings of the study. The study found that almost all households (96.9%) in the study area are food insecure except (3.1%) of the households. The study revealed that Reasons for food insecurity are mainly low rainfall (drought) shortage of land and poor production. People are applying several coping strategies such as; reducing number of meals from three to two and less than two, this was the main strategy to cope with food insecurity, others are; selling of livestock, migrating to other places, borrowing food from friends or relatives and doing casual laboring and small business. The study recommends that the government through the ministry of water and irrigation should modify and implement the present irrigation policies in all semi-arid areas (dry lands) in the country to ensure sustainable crop production as one of the measure to alleviate household food insecurity.

CHAPTER ONE

1. INTRODUCTION

1.1 Chapter over view

Contained in this chapter is the introduction and background to the study in which the food insecurity is started as serious problem for the entire world. This subsection is followed by statement of the problem which captures the problem that is to be dealt with in this study then significance of the study. Both general and specific objectives are then started followed by research questions and scope of the study. Finally there is conceptual frame work that closes up the chapter.

1.2 Background information of the study

Food insecurity is inability of an individual or a household to have enough food to provide and sustain its members' dietary intake (Philips & Taylor, 1990).

According to Maxwell (1998), food insecurity is lack of access to enough food; this exists when members of household have an inadequate diet for part or all of the year or face the possibility of inadequate diet in the future.

Food insecurity is the major problem and continues to be a major development problem across the globe often undermining people's health productivity and their survival (UNICEF, 2013). Africa's food insecurity challenge is manifested by high prevalence of hunger and malnutrition particularly among children (FAO, 2013). Many families face the problem in

obtaining sustainability and adequate food worldwide. Poverty reduction and elimination of hunger is goal number one among eight Millennium Development Goals (MDGs) which was set to be archived by 2015 (UN, 2000). According to FAO (2008) the number of people facing hunger has increased by about 80 million people compared to 1990 1992 base period. Victims of food insecurity mostly come from developing countries.

The majority of severest food crises after the second half of the 20th century were caused by combination of several factors. The most common causes of food insecurity in Africa and other third world countries are: Decline in soil fertility, climatic changes, high cost of inputs and lack of support for diversified income sources are all critical problems and are widely recognized as major factors responsible for declining agricultural productivity and increasing food insecurity and poverty (UNEP, 2009).

Drought and other extreme weather events, the comparison of the severest food crises in the later history reveals that all were preceded by drought or other extreme weather events. Resulted in poor harvest which in turn resulted food scarcity and prices of available food (WHO 2013).

Climate and other weather natural disasters such as floods, tropical storms and long periods of drought are on the increases with terrible consequences for the poor in developing countries. Drought is one of the most common causes of food shortage in the world. In 2011, recurrent drought caused crop failure and livestock losses in parts of Ethiopia, Kenya and Somalia. In 2012

there was a similar situation in Sahel region of West Africa. In many countries, climate change is raising already adverse natural condition.

Lack key agricultural infrastructure, such as passable roads, storehouse and irrigation schemes. These results are leading to; high transport costs, lack of storage facilities and unreliable water supplies. All plot to limit agricultural yields and access to food. Investment in improving land management, using water more efficiently and making more resistant seed type available can bring big improvements (FAO, 2013).

Following the commencement as SAP in 1986, fertilizer use fell steeply after the removal of fertilizer subsidy reaching only 63,000 tons in 1998/99 from a peak of over 100,000 in 1998/99 (World Bank, 2000; Isinika et al., 2003).

The increase of fertilizer prices up to the point where in some part of the country, correlation between the price of maize and fertilizer become negative (Bilance, 1996) In remote regions such as Ruvuma and Rukwa, use of organic fertilizer on maize become unprofitable, changing the spatial distribution of maize- producing areas in the country as regions in the central part of Tanzania (eg. Dodoma) gained prominence due to their competitive advantage in marketing, being close to consuming areas (Isinika, 2005).

In Tanzania about 27% of the population lives in household expenditure that is insufficient to obtain enough food to meet their nutrition requirements (Woksey, 2012) Basing on food production, Tanzania is considered to be

quasi- self sufficient gain that the national food balance has been favorable in most years with food product exceeding the theoretical overall food requirement, even though a desegregated level nutrition energy requirement are far from being met. About 40% of the population lives in food deficit areas where production is lower than consumption requirements.

Many countries in the world implement policies to support the farmers to increase crop production and productivity. Some of these policies can be in form of subsidy (URT, 2012). Tanzania depends mainly on agriculture for economic growth had reintroduced agricultural subsidies in 2003/2004 to support technology adoption by smallholder farmers in the country.

Tanzania liberalized its agricultural markets in mid - 1980s and had removed price controls and privatized various public enterprises, as these were thought to cause fiscal constraints and to result in inefficient and corrupt management. Fertilizer subsidies were gradually removed since 1990. After all subsidies were cut, the relative price of fertilizer increased. But because of low initial use of fertilizer in national context, its impact on fertilizer use was not important and its impact on national maize production has been uncertain by only less than 5% (Woksey, 2012).

To reduce food insecurity problem, many countries in the world have implemented policies to support their farmers increase crop production and productivity, for example World Bank and IMF-funded programs such as (ERP) economic recovery programs in Tanzania and Uganda, and enhanced

(SFP) economic recovery programs in Kenya, Malawi, Tanzania and Uganda; and fiscal restructuring and deregulation program in Malawi More recently in eastern and southern Africa have adopted the medium term expenditure frame work to further consolidate their macroeconomic reform to attain food security. Environmental conservation programs are adopted in different parts so as to reduce risk of food insecurity in the world.

In Tanzania efforts to address incidences of poverty including food insecurity have been adopted several policies and programs that address the problem after Independence Tanzania identify hunger as enemy of the country this came with number of slogans such as *Kilimo cha kufa na kupona* (Agriculture for life and death), *Kilimo ni uti wa mgongo wa Taifa* (Agriculture is the backbone of the Nation), *Siasa ni Kilimo* (politics is Agriculture), *Mvua za kwanza za kupandia* (first rains are for planting), *Chakula ni uhai* (Food is Life) and currently *Kilimo Kwanza* (Agriculture first). Tanzania is also in line with MDG1, and Vision 2025 all are aiming at reducing hunger to house hold (URT, 2009).

Other initiatives include the Southern Agricultural Growth Corridor of Tanzania (SAGCOT) under the comprehensive African agricultural development programs (CAADP), under collaboration of NEPAD, AU and FAO. That aimed at improving productivity and ensuring food security both in terms of availability, affordability, and access by the poor, Maputo Declaration 2003 which addressed the need for African leaders to commit 10% of their GDP on Agriculture (Morris et al, 2007).

All these initiatives are aiming at reduction of poverty and hunger and therefore attaining development. Efforts to overcome the development challenges posed by food insecurity necessary begin with accurate measurements of key indicators at the household level. This is due to the fact that identification of household behaviors relating to food access serves as a critical foundation for the development of policies and programs for helping vulnerable populations.

1.3 Statement of the problem

Food insecurity is the most serious problem in many households all over the world, including (Bahi) Dodoma region. Since independent the government of Tanzania made poverty a priority concern in its development strategies and policies. Many programs which aimed to reduce poverty (food insecurity) have been implemented not only by the Tanzania government but also by various donor agencies. Among the programs/ strategies and policies include: implementation of Millennium Development Goals (MDGs¹) the first goal is of alleviation of extreme poverty and hunger and the country plans to achieve this, by reducing the proportion of people who suffer from hunger by half by 2015, Tanzania Development Vision (TDV) 2025, Nation Strategy for growth and reduction of poverty (NSGRP) 2005, Formulation of agricultural policy 2013, Agriculture first (*Kilimo Kwanza*) 2010, and the earlier slogans like *Kilimo ni uti wa mgongo wa Taifa* (Agriculture is the background of the Nation). All these initiatives identify food security is among the major areas of concentration/ emphasis for the attainment of better livelihood to citizens.

Regardless of the efforts made, food insecurity in Tanzania still is a burning challenge.

Despite of the different studies done on food insecurity and coping strategies, still not much has been documented on food insecurity in the area, So there is a need to have a study on the factors influencing to household food insecurity and the coping strategies that is specifying Bahi.

Therefore, this study is intending to focus on food insecurity, and the related coping strategies in the study area (Bahi ward, which has three villages; Bahi, Nagulo and Uhelela), this is due to fact that it is among the areas of Tanzania which are frequently facing food insecurity and has high prevalence of malnutrition (UNICEF, 2011)

1.4 Significance of the study

On the other hand, people have diverse coping strategies to cope with food insecurity and more initiatives are needed. In order to formulate effective policies at improving food security, the study was aiming on providing a thorough understanding of location and causes of food insecurity and their corresponding coping strategies need. Such information will be useful in formulation of policies and strategies to reduce the vulnerability to food insecurity. The findings will help the decision and policy makers in making appropriate strategies and policy in order to archive the vision 2025. Also the study will help other development practitioners who are dealing food security to understand why, how when people are food insecure and how, when and

how much to assist the community to overcome the problem. Then the study will help to build capacity among the households on food insecurity in rural areas. The study findings will be shared with the MAFC to provide input in policy making in the area of household food insecurity. In addition the information will contribute to the general knowledge of food insecurity in our community (Tanzania).

1.5 Objectives of the Study

1.5.1 General objective

The general objective of this study was to assess food insecurity and the coping strategies adopted by the households to alleviate food insecurity in Bahi ward in Bahi district.

1.5.2 Specific objectives

The specific objectives of this study were.

- i. To examine the relationship between food insecurity and socio- economic Characteristics of households in the study area.
- ii. To examine factors influencing food insecurity among households in the study area.
- iii. To identify the coping strategies adopted mostly by households to mitigate food insecurity in study area.

1.6 Research questions

The research question were formulate in relation to specific objectives as followings:

- i. What is the relationship between socio – economic (socio-demographic) characteristics of households and food insecurity in the study area?

Variables

- Age
- Sex
- Marital status
- Education level
- Household size
- Occupation
- Income generating activities

- ii. What are the factors influencing food insecurity among households in the study area?

Variables

- Food production
- Technology (Tools used for production)
- Food usage after harvest
- Farm size
- Shortage of food
- Types of crops grown
- Months of food insecure

- iii. What coping strategies adopted by households in order to reduce household food scarcity in study area?

Variables

- Migrate to other places
- Reduce meals per day
- Assistance from relatives
- Labours selling
- Food credits

1.7 Scope of the study

The study focused on food insecurity at household level and their corresponding coping strategies. The study was conducted in Bahi district at Bahi ward to three villages namely Bahi, Nagulo and Uhelela, these villages are among the areas facing frequently food insecurity in the country. The study included institutions such as District office, Ward office and Village offices.

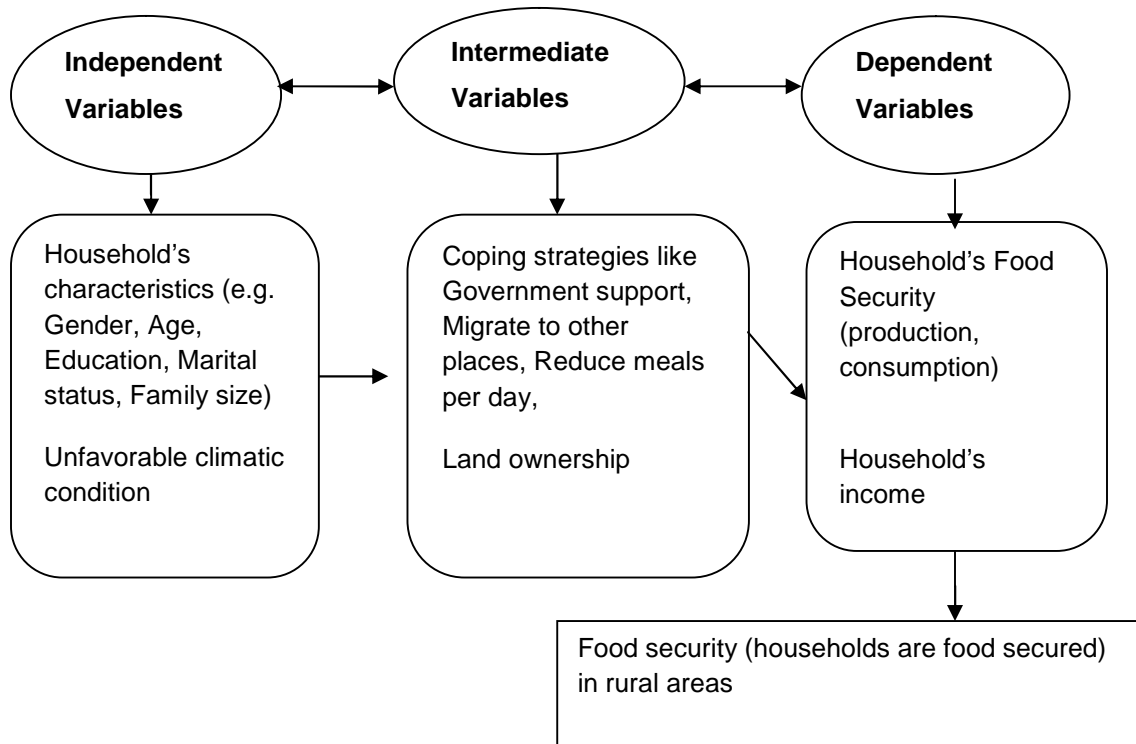
1.8 Conceptual frame work

Conceptual framework according to Smyth (2004) is structured from a set of broad ideas and theories that guide the study properly to identify the problem under investigation frame their questions and find suitable literature. It is used in research to outline possible causes of action or to present a preferred approach to an idea or thought.

The conceptual frame-work shows the relationship between independent intermediate and dependent variables. Independent variables include household's characteristics, Soil fertility, and Unfavorable climatic condition.

Intermediate variables are coping strategies, Government support and Land household's income.

FIGURE 1.1: CONCEPTUAL FRAMEWORK



1.9 Definition and concepts

1.9.1 Food Security

In 1970s, food security was defined as food supply in the form of grain in stock and was being applied at regional or district level. In 1980s focus shifted to question beyond supply, it included access to food at households and individual level. (Wandel, 1990) refers to food security as access to food and define as the process and extent to which the available and produced food can reach all members at the households throughout the year.

FAO (2013) defined that food security exist when all people at all times have physical and economic access to sufficient safe and nutritional food to meet their dietary need and food reference for active and health life. It was argued that food security depends on three components: availability, stability accessibility of availability. Availability means sufficient amount of food; stability means food available at all time in sufficient amount; and accessibility of availability means having resource to obtain appropriate food. (FAO,1996). The World Food summit of 1996 defined food security as existing “When all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active”.

Commonly, the concept of food security is defined as including both physical and economic access to food that meets people’s dietary needs as well as their food preferences. In many countries, health problems related to dietary access are never increasing threat; in fact malnutrition and food borne diarrhea are double burden.

1.9.2 Food insecurity

Food insecurity is lack of access to enough food; this exists when members of household have an inadequate diet for part or all of the year or face the possibility of inadequate diet in the future (Maxwell, 1998).

According to Loveldel (2004), food insecurity can be grouped into: chronically food insecure means households with less than 6 months food secure,

potential food secure means households with 6-12 months foods secure and food secure means households with 12 months or more food secure. Food insecurity exists when there is no enough food for those who need it because of producing food inadequate, failure to distribute food to people in need and failure to afford to buy the food available. Food insecurity will be solved when people living in marginal areas have secure access to the food they want (Maxwell, 1998).

1.9.3 Food availability

Food availability refers to the supply of food in a nation, region, or locality; source of supply may include home production for consumption, domestic commercial, food stocks, imports and food aid (FAO, 2013).

Food availability is an extent to which there is enough food supply in a particular place to household to meet food needs of all members over the year (Ishengoma, 1998).

People depend mostly in agriculture for their live hood by growing food crops which account for the bulk of the area cultivated. However, production land is becoming scare due to increasing population (UNICEF, 1990).

1.9.4 Household

A household comprises either one person living alone or a group of people who may or may not be related, living (or staying temporary) at same place, with common housekeeping, who either share at least one meal a day or

share common living accommodation (i.e a living or sitting room). Resident domestic servants are included. Members of a household are not necessarily related by blood or marriage (Thomas, 1998).

A household is a group of people who normally live and eat their meals together in a household. Members must acknowledge the authority of one person as the head of household members. In polygamous households, each wife is treated as district household when the wives live in different houses, cook separately and take decisions independently.

A unit comprising of group of people living together, sharing from the same dietary pot and same source of live hood on a regular basis.

1.9.5 Household food insecurity

Inability of a household to have enough food to provide and sustain its. Members dietary intake. Food insecurity has three components: Unavailability, lack of access and non-utilization of food.

To achieve household's food security, households must have sufficient income to purchase the food if they are unable to grow for themselves; households food security describe the use of food accessed by various members in the households (Ishengoma, 1998)

1.10 Coping strategies

Are the methods used by households to survive when confronted with unanticipated livelihood failure (Ellis, 2000).

Are 'ex post measures in that they seek to reduce the impact of a negative event once it has happened (Rose, 2008).

1.11 Chapter summary

The above chapter explains about back ground to the study, statement of the problem which reveals the gap for knowledge to be filled in. More over the chapter shows conceptual frame work which shows relationship between variables. It goes further to provide research objectives, research questions, purpose and significance of the study. Definitions of key words to be used in the study, few to be mentioned are also found in the chapter above.

CHAPTER TWO

LITERATURE REVIEW

2.1 Chapter overview

This chapter is reviewing literature with respect to food insecurity and coping strategies. The chapter also provides a brief overview of food insecurity in Tanzania and in the globe. In addition, this chapter takes in hand definitions of key terms used in the study.

2.2 Definition of key terms

2.2.1 Food Security

FAO (2013) defined that food security exist when all people at all times have physical and economic access to sufficient safe and nutritional food to meet their dietary need and food reference for active and health life. It was argued that food security depends on three components: availability, stability accessibility of availability. Availability means sufficient amount of food; stability means food available at all time in sufficient amount; and accessibility of availability means having resource to obtain appropriate food. Commonly, the concept of food security is defined by including both physical and economic access to food that meets people's dietary needs as well as their food preferences.

2.2.2 Food insecurity

Food insecurity exists when there is no enough food for those who need it because of producing food inadequate, failure to distribute food to people in need and failure to afford to buy the food available. Food insecurity will be

solved when people living in marginal areas have secure access to the food they want (Maxwell, 1998).

2.2.3 Food availability

Food availability is an extent to which there is enough food supply in a particular place to household to meet food needs of all members over the year (Ishengoma, 1998).

2.2.4 Household

A household comprises either one person living alone or a group of people who may or may not be related, living (or staying temporary) at same place, with common housekeeping, who either share at least one meal a day or share common living accommodation (i.e a living or sitting room). Resident domestic servants are included. Members of a household are not necessary related by blood or marriage (Thomas, 1998).

A household is a group of people who normally live and eat their meals together in a household. Members must acknowledge the authority of one person as the head of household members. In polygamous households, each wife is treated as district household when the wives live in different houses, cook separately and take decisions independently.

2.2.5 Household food insecurity

Is the inability of a household to have enough food to provide and sustain its Members dietary intake. Food insecurity has three components: Unavailability, lack of access and non-utilization of food.

2.3 Review

2.3.1 Global Food Insecurity

Despite growing attention in the world media and expanding aid efforts by many organizations, the world household food insecurity countries to worsen as many communities struggle with daily hunger and starvation (Project concern International 2009). A number of factors have been responsible for the continuing world food insecurity. One factor is the rise in prices of the world staple foods.

It established that inflation of wheat is 120% and rice is 75. Another factor is poverty, an estimated 100 million people have fallen into poverty, for instance in 2007, Afghanistan households were spending 75% of their income on food (WB, 2008). Dependence on food imports also influences the global food insecurity. A case in point is Haiti where over 80% of staple rice is imported. The result of it is that over half of the country's population is undernourished and 24% of children suffer chronic malnutrition. Moreover the climatic change due to global warming has influenced world household food insecurity. El – ninas and La – ninas hamper good crop production in Latin America and the sub – Saharan Africa. Droughts caused by L – ninas have caused household food insecurity especially in Ethiopia where 7 million

people are classified as food insecure and further 10 million classified as prone to drought, other factors that contribute to household food insecurity in world include: shift to more non – agricultural technology, politics, environmental degradation, insecurity and high population growth, (FAO, 2008).

Demands for food aid are a series of consequence of the food insecurity. Each year 10% of Burundi's population requires food aid (FAO, 2008). Another consequence is poor health status exemplified in Benin where by almost a quarter of children between 5 years are underweight (Ibid). There are also increased malnutrition rates globally whereby in 2004, the global malnutrition was 15%, (WHO, 2004) World household food insecurity has also increased poverty among the global population and there was also serious global hunger index of 15.1% in 2010 (Grebmer et al., 2010).

Bangladesh considers fighting food and nutrition insecurity as a key means to becoming middle income country (Asian Development Bank, 2011). Its commitment to food security matches to renewed global commitment that resulted from the 2008 food crisis and materialized in July 2009 L'Aquila.

Food Security initiative and the 2009 world Food security summit in Rome. LDCs are primary agricultural economies with early 70% of the population engaged in agriculture. The vast majority of the poor and food insecurity are in rural areas. Productivity of LDC agriculture is relative low. Land

degradation is a major problem, due to increasing population pressure, erosion, water scarcity and the breakdown of tradition system for soil fertility. Farmers have little support from the Government with African countries spending only less than 3% of their budget on agriculture, disproportionate to the size of the sector in terms of employment and economic activity (Govereh et al., 2009).

2.3.2 Food insecurity in Africa

Various countries in Africa have experienced the devastating effects of household food insecurity. For instance Cameroon in west Africa, Egypt in north Africa, Ethiopia in the eastern Africa and the whole SSA. The world food programme (WFP) describes Cameroon as a food insecurity and has further demonstrated that food intake in household is lower now than in the early 1980s. The result of this is that 19% of young children in the country are underweight and child mortality rate is rising rather than falling (One World Net (US), 2009).

Ethiopia experiences serious household's food insecurity. Over 7 million people out of 76.9 million Ethiopia populations are classified as food insecure; and further 10 million people are identified as prone to drought. High population growth rate in the country increases the food insecurity (Chu, 2009). Although South Africa produces bumper harvest especially in the 2007/2008 season, it has been affected by high food price in the decline world economy. High food price are causing hardship particularly among the

poorest family households who spend a huge proportion of their income on food (One World Net (US), 2009).

Egypt produces half of its demand for wheat. In spite of average food production, the country is exposed to the escalating food price due to its wheat imports. It is classified as the number one importer of produce in the world. The country has also a high population growth rate of 2% per annum. Moreover the desert terrain of Sahara limits crop production. A report by the world Bank indicates that the baladi bread subsidy costs Egyptian government almost \$ 3.5 million per annum (One World Net, 2009).

In recent years the SADC and many African governments have come to realize that attaining food self – sufficiency, increasing and stabilizing market supplies and stabilizing producer and consumer prices do not necessary guarantee food security at the household level. This micro – level objective has now become the focus of food security policies throughout much of the region. Although archiving household food security requires many of the policy instruments such as strategies for increased production, supply stabilization and price stabilization, focusing on these letter objectives will seldom achieve the broader objective of household and individual food security (One World Net, 2009).

2.3.3 Food insecurity in Tanzania

Most Tanzanians are experiencing food insecurity because are engaged in subsistence agriculture, use of simple production input and depends on

unreliable climatic condition (Mwaipopo, 1994). Mungodo (1996) added that climatic factors greatly contribute to household food insecurity in the country. The basic causes of food insecurity are low production in a year, fluctuation of food supply and low incomes of households. Over the past century or so, agricultural development has been based on a model of increasing productivity and maximizing the production of cereals. This paradigm has produced an agricultural system that is world's primary source of calories and employs 60-80 percent of people in low income countries (IFC, 2009).

Maize is considered as the most important food crop in Tanzania covering 45% of total arable land and generating close to 50% of rural cash income, an average of 100 USD per maize producing household in 2008 (USAID, 2010). On the basis of the ministry of Agriculture, Food security and cooperative (MAFC) report, more than 20 regions in Tanzania are producing maize annually mainly white type. The southern region of Iringa, Ruvuma, and Mbeya accounts for more than 35% of the total annual maize production. The southern highlands produce surplus maize compare to consumption levels, while there are deficits in the northern highlands, Dar es Salaam and central regions (Tamali, 2013).

Food insecurity is a major problem that has pervasive effects on health. Typically, it is linked to dietary intake, nutritional status, and ultimately to physical health outcomes like child growth morbidity and mortality (Frongillo,2001).

Among many ways of increasing agricultural production, adoption and careful use of modern agriculture inputs is considered as critical i.e. Use of high yield varieties of seeds, appropriate application of mineral fertilizer followed by timely control of disease and pests and other improved management practices (FAO, 2013).

2.3.4 Food insecurity in Dodoma

Dodoma is a region that is located at center of Tanzania, it covers an area of 41,310 square kilometers (equivalent to about 5% of the total are of Tanzania main-land. Dodoma has dry savannah type of climate, which is characterized by a long dry season lasting between April to December and short single wet season during the remaining months. Food crops grown in Dodoma region including the following: - Maize, Paddy, Millet, Groundnuts, and Finger millet (URT, 2009).

Dodoma is regarded as a minor area for agricultural production (food production) due to its low and unreliable rainfall. The agricultural condition in Dodoma differs from other places in the country because Dodoma is facing frequent drought. Dodoma depends from other region to feed its people as they cannot produce enough food for a whole season. Whereby about 27% of population in Dodoma lives in household expenditure that is insufficient to obtain food to meet nutritional requirement (Cooksey, 2012).

2.4 Summary of the reviewed Literature

From the literature reviewed. It is evident that household food insecurity food insecurity is a serious problem especially in the developing countries; some of the initiatives have been mentioned on the alleviating household food insecurity among poor people in rural areas. In spite of the initiatives and the encouragement of local food production as means of alleviating household food insecurity. More efforts need to be accomplished in order to achieve household food security in the community. From the literature, no in-depth studies have tended to focus of food production, food sources, coping strategies against house hold food insecurity among poor people in rural areas especially Bahi.

Due to this observation, the study on food insecurity and coping strategies in rural areas at Bahi in three villages was at right time.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Chapter overview

This chapter describes the study area, research approach, research design, data type, sampling techniques & sample size, data collection methods, methods of data analysis, data processing and data presentation.

3.2 Research design

Research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine significance to the research purpose with economy in procedure” It is the conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data (Devarajan, 2011). The research design provides the back bone structure of the study; it supports the study and holds it together (Devarajan, 2011.)

Cross sectional research design was used in this study. According to Kate (2006) and Creswell (2003), cross sectional studies allow collection of data at one point in a time over a short period. This design usually used to estimate the occurrence of the outcome of interest for a given population and that it was potential design that has greater degree of precision in social science studies. The choice of this method was reasonable due to its ability to meet the objectives of the study.

3.3 Study location

3.3.1 Geographical location

The area of study was in three villages; Bahi, Nagulo and Uhelela at Bahi ward in Bahi district. The area was selected due to fact that it is among the areas of Tanzania which are frequently facing food insecurity and has high prevalence of malnutrition (UNICEF, 2011).

Bahi district is one of the seven districts of Dodoma region; other districts are Chamwino, Chemba, Dodoma urban, Kondoa, Kongwa and Mpwapwa. The headquarters of the districts is located in Bahi ward which is 50 km away from Dodoma municipality and located close to highway connecting Singida and Dodoma region. Bahi district is found on the southwest part of the region. Bahi is lying between Latitude 4⁰ and 8⁰ south and between longitude 35⁰ and 37⁰ north. Bahi stands on a broad upland plateau with an altitude of 834mt above sea level (URT, 2013).

3.3.2 Land area

Bahi covers an area of 5,949 Square km. Overall computation shows that Bahi district land area is about 13% percent of Dodoma Regional, Out of 5,949 Square km (70% are arable land. The area for arable land which is currently under use is (44%) Most of this is used for subsistence agriculture and grazing. So it is indicating that large portion of land suitable for agriculture remains unutilized (Kasile, 2013).

3.3.3 Climate

The climate of Bahi is semi-arid, characterized by a marked seasonal rainfall distribution with a long dry season starting from early April to late November and a short wet season starting late November to the early April.

Average rainfall ranges from 550 to 600mm per annum. Due to unreliable rainfall it has scanty vegetation which consists mainly of bush thickets mixed with annual herbs, grasses baobab and acacias trees. The minimum average temperatures vary from 10 °c in June to 23⁰c in November, June in the coldest month while November is the hottest month, with mid-day temperatures exceeding 30⁰c (Kasile, 2013).

The current projected population for Bahi district is 221645 based on the population and Housing census conducted in 2012. The total number of households is 49255, with an average household size of 4.5, while Bahi ward has a total population of 18293 and 4066 households with the average household size of 4.5 (URT, 2013).

3.4 Study population

Population refers to an entire group of individuals, events or objectives having common observable characteristics. It is the total of all that conforms to a given specification, (Mugenda & Mugenda, 2003). The main purpose of this study was to assess the coping strategies adopted by the households to alleviate food insecurity in rural areas a case of Bahi ward. Therefore, the targeted population for this study was the households and community

leaders as well as agricultural practitioners in Bahi ward. Mainly the researcher focused on this category of respondents as to satisfy the needs of the study.

3.4.1 Sampling Unit

Sampling unit is either a single member (element) or a collection of members (elements) subject to analysis (and selection) in the sample (Rwegoshora, 2006). The sampling unit in this study was the individual households' heads in the community and purposively selected official and different community leaders at Bahi ward.

3.4.2 Sampling design

According to Kothari, (2006), sampling is defined as the selection of some parts of aggregate of the totality based on which a judgment or inference about the aggregate or totality is made. It is a process of selecting a group of people, events, behavior, or other elements with which to conduct a study. An important issue influencing the choice of a sampling technique is whether a sampling frame is available, that is a list of unites comprising the study population, both probability sampling and Non – probability sampling technique were used in this study.

3.4.2.1 Simple random sampling

Probability sampling is a sampling technique where in the samples are gathered in a process that gives all the individuals in the population equal chances of being selected (Adam & Kamuzora, 2008). This method was

used to select heads of household. Probability sampling enabled a researcher to obtain the number of respondents (the heads of households). Probability sampling was through simple random sampling. Using a random sampling led to avoid sampling bias.

3.4.2.2 Purposive sampling method

Purposive sampling is a sampling technique where the samples are gathered in a process that does not give all the individuals in the population equal chances of being selected (Adam & Kamuzora, 2008) the method was used purposely to select key informants because the method concise, convenience and guarantee inclusion of relevant elements in the sample. The key informants of this study included VEOs, VCPs, WEO, WC, WCDO, DCDO and Agriculture Officers at Ward and District level (WAO and DAO) .

3.4.3 Sample size/Unit

Sample is a collection of some parts of the population on the basis of which judgment is made (Kothari, 2006). For this study sample size from household heads was determined by using the formula developed by Yamane (1967).

Which is:-

$$n = \frac{N}{1+N(e)^2}$$

Where by:

n= Sample size,

N= Number of members

E= Level of precision

Hence number of members $N= 4066$ and level of precision $e= 10\%$ or (0.1)
 $N= 4066$ this is the total number of households in Bahi ward (URT, 2013)

$$\text{Therefore; } n = \frac{4066}{1+4066(0.1)^2} = 98$$

Household heads were used as a sample of respondents selected, was 98 households, whereby were selected randomly equally from the three villages (Bahi, Nagulo and Uhelela) i.e. about 33 respondents from each village, (Bahi, Uhelela and Nagulo). Then 12 key informants were purposely selected, these were: VEOs, VCOs, WEO, WC, WCDO, DCDO and Agriculture Officers at Ward and District level (WAO and DAICO). Finally they made a total of 110 respondents.

TABLE 3.1: COMPOSITION OF RESPONDENTS AND THEIR CATEGORY

Respondent category	Number of respondents
Household heads from Bahi ward	98
VCPs	03
WEO	01
WC	01
WCDO	01
DCDO	01
VEOs	03
WAO	01
DAICO	01
TOTAL	110

3.5 Research approach

This study employed both qualitative and quantitative approaches. The quantitative approach used to guarantee the level of reliability for information gathered. Neumann (2009) contents that one of the major advantages of employed. Probability sampling allows having a representative snapshot of the population under study area. On the other hand qualitative allowed the exploration of information that was used to supplement the quantitative one. This is due to its capability to explore and explain those relationship and contextual differences in the quality of those relationships (Lugumira, 2013).

3.6 Data collection methods and tools

The methods of collecting primary and secondary data differ since primary data are to be collected from origin, while in case of secondary data the nature of data collection work is merely that of compilation Kothari, (2004). Hence the study employed different methods of data collection, where by both primary and secondary data were collected.

3.6.1 Types of data

3.6.1.1 Primary data

Adam & Kamuzora, (2008) defined Primary data are data that collected directly from the field. On the other hand (Kothari, 2004) defined primary data are these which are collected afresh and for the first time, and thus happen to be original in character. For the purpose of this study structured questionnaires were used as instruments for data collection of primary data

from the respondents. Checklist was tool for discussion for focus group discussion and key informative interview.

3.6.1.2 Secondary Data

According to Kothari, (2004) the secondary data are those which have already been collected by someone else and which have already been passed through the statistical process. Secondary data were obtained from governments Offices. The major purpose of secondary data was to complement the primary data.

3.6.2 Data type and collection methods

3.6.2.1 Questionnaire survey

Both open ended and closed questionnaires were used in primary data collection. At household level, questionnaire was used as an important tool of data collection from respondents.

3.6.2.2 Focus group discussion

A focus discussion is a form of group interviewing in which a small group usually 10 to 12 people is led by a moderator (interviewer) in a loosely structure discussion of various topics of interest. The discussion is usually planned in advance and most moderators rely on an outline, or moderators guide, to ensure that all topic of interest are covered (Morgan, D. L. 1988).this was used in three villages namely (Bahi, Nagulo and Uhelela) where by nine (9) groups of households heads were involved in discussion, the discussion based on the focus group checklist as a tool used to gather

information. A focus group discussion enables the researcher to gain a larger amount of information in a shorter period of time (Morgan & Kreuger 1993).

3.7 Pre-testing research tools

Pre-testing the questionnaire was carried out to 10 households randomly selected from Mkonze and Kizota. These locations were not considered in the main study. The first pre-test was carried to five subjects from Kizota and the second pre-test was done among 5 subjects in Mkonze. The pre-test to these two different places was done in two different days. Suggestions concerning the instruments clarity and relevance were sought from the respondents, and relevant alterations done to enhance its validity and reliability. The process was to make sure that the questions in the instruments obtain reliable data.

3.8 Validity and Reliability of Researcher Instruments

3.8.1 Validity

Validity refers to the quality of information gathering instruments or procedures which measure what is supposed to be measured (Cohen et al, 2001). To ensure validity, this study applied the triangulation technique by using; Questionnaires, checklist for Focused Group Discussion and Checklist for key informants and this was done through piloting of the data collection instruments that were used to collect data. The data were collected from the household heads and key informants. In this study, a pilot was conducted.

3.8.2 Reliability

Reliability refers to whether the data accumulated from the instrument is consistent, reasonable over time and across researchers (Miles and Huberman, 1994). This study utilized three data collection tools which are:- Questionnaire's, Checklist for Focused Group Discussion and checklist for key informants. The pre – test was done to ensure that questions are corrected and are clear, so that responses would not be omitted when putting them down on paper. This process ensured that the questions in the instruments extract reliable data. The use of more than one method, referred to as triangulation so as to maintain and ensure reliability of the data which were collected to carry out the study. Triangulation refers to the use of multiple data collection methods, data sources, analysis or theories to increase soundness of one's research finding (Gall et al, 2005).

3.9 Data processing and analysis

3.9.1 Data processing

Data processing implies editing, coding, classification and tabulation of collected data so that they are agreeable to analysis (Kothari, 2004). The collected data were edited, compiled, classified, coded and summarized manually in order to eliminate errors that were included during data collection. The reason was to simplify the analysis of the work. Then, data collected from the primary source using the structure questionnaire were summarized, edited and coded before entering them into a computer for analysis.

3.9.2 Data analysis

Data analysis refers to the computation of certain measures along with searching patterns of relationship that exist among data groups (Kothari, 2004). Quantitative analysis done by using computer software program; statistical Package for social Sciences (SPSS) software version 21 to make the analysis easier and to obtain accurate results. Quantitative data obtained were organized into separate categories, patterns and themes identifies. Then were evaluated and analyzed to determine its adequacy, reliability and usefulness to objectives of the study.

3.10 Data presentation

The analyzed data were presented in form of table, charts and figures.

3.11 Ethical consideration

Ethical consideration is about identifying certain normal and standards of Behavior that researchers are expected to follow (Connolly, 2003). In the whole process of the data collection and analysis, confidentiality, objectivity, privacy, carefulness, awareness were highly observed and maintained as follows: permission to conduct the research was obtained from the research consultancy office of St. Johns University of Tanzania and the Bahi District Executive Directors (DED), Bahi Ward Executive office (WEO) village Executive Officers (VEO) from the three villages namely Bahi, Nagulo and Uhelela Respect of the right and dignity of all those who were involved in this study were observed. No respondent was forced to participate in the study without his or her will, and then individuals were free to agree or refuse to

participate in the study. The respondents were informed that: - (i) information that were obtained will be used for academic purposes and not otherwise.(ii)respondent were considered to have right at any time to withdraw from the study either for the time being or permanently without the need to provide a reason, (iii) the respondents were free to decide what information they wish to provide. (iv). Then the data were stored in a secured manner. Finally the research report was written in a complete and correct manner so as to avoiding misreporting of the findings in any way.

3.12 Plan for dissemination of research findings

The research result will be disseminated by providing copies to the ward where the study took place, to the university and to some of key informative whom the researcher contacted when finding data of the study.

3.13 Study limitation

A number of limitations were encountered during this study. First, time and financial resources ranked the highest stumbling block during execution process of this research. The two limitations were minimized through the use of hires motorbike as a major means of transport, duplications of questionnaires were done in bulk at inexpensive price and direct involvement of the researcher in data collection process without using research assistant played significant role in wounding down costs of operations.

3.14 Chapter summary

This chapter has given thorough information about research design selected for the study setting, study population, sample, sampling procedures and sample size. It also gave methods that researcher used to ensure valid and reliability, data analysis methods and plan. Ethical consideration issues such as informed consent, confidentiality and risk- benefit analysis were explained and ways of ensuring them were elaborated. Lastly this chapter explained about plan for dissemination of research result and overall limitation in this study.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Chapter overview

This chapter presents the findings and discussion of the study. The results and discussion of findings based on the specific objectives of the study. The discussion is about food insecurity and household coping strategies. The discussion of the findings include demographic characteristics of the households, social – economic characteristics of households, household source of income, households income Generating Activities and resources for households livelihood, Factors influencing food insecurity and household coping strategies.

4.2 Demographic characteristics of respondents

4.2.1 Sex of respondents

Results on distribution of respondents in the study area by sex are given in (Table 4.1). It was found that more than half of respondents (72.4%) were male while the remaining accounted (27.6%) were female, this is similar to all the three villages. Although the 2012 Tanzanian census report which revealed female dominance within the population in terms of composition by sex. Women population accounts more than half (51%) of the entire population as compared to their male counterpart (UTR, 2013). But in this finding, the dominance of male respondents is because of patriarchal system that has allowed men to dominate women; customs and culture have endorsed men as influential and head of the household. This is in line with (Franklin, 2003) who argued that in African culture male (father) are

considered as the head of the family as well as the provider and protector of the family, where by more than 86% of African men perform the role of providing for the family.

TABLE 4.1: SEX OF RESPONDENT

SEX	VILLAGES			TOTAL
	Bahi	Nagulo	Uhelela	Freq/%
Female	11	07	09	27(28%)
Male	22	25	24	71(72%)
Total	33	32	33	98(100%)

4.2.2 Age of respondents

Results on the distribution of respondents based on age group are shown in Table 4.2. It was found that respondents within the age ranges 41 -60 years dominated in the study area totaling (50.0%) of all age groups followed by 20- 40 (30.6%) and over 60 (18.4%). Respondents with less than 20 years of age constituted less (1.0%) numbers of households in the study area. It is believed that low involvement of people (households' heads) aged less than 20 years is due to most of them been absorbed in ward secondary school or still remains attached to their parents. These findings relatively corresponds to the ones documented by Lister (2011) who studied on the effect of Farmer Input support Program (FISP) on household farmers involved in maize production in Mwembeshi – chibombo district of Zambia. It was found that few farmers aged 15-24 and those above 65 years all together (10.4%) were

household heads as compared to majority (89.6%) of energetic and economically active group aged 25 to 64 years. While for the case of Bahi ward economically active aged 25 to 64 years. While for the case of Bahi ward economically active aged group when added up constituted about (80.6%). The remaining age groups which constituted about (19.4%) were of below 20 years and elderly category having above sixty years. This category is also known as dependants' population and need special attention.

TABLE 4.2: AGE OF RESPONDENTS

Age	VILLAGES			TOTAL
	Bahi	Nagulo	Uhelela	Freq/%
< 20	00	00	01	1(1%)
20 - 40	07	13	10	30(31%)
41 - 60	21	15	13	49(50%)
>60	05	04	09	18(18%)
TOTAL	33	32	33	98(100%)

4.2.3 Marital status of respondents

The study found that majority of respondents (74%) interviewed from the three villages were married (family men and women) who require family income to accommodate their families, followed by widow/widower (16%) while single and divorced constituted (7%) and (3%) of the sample population respectively. The statistical dominance of married respondents in this study

indicate the need for a given individuals to lead a household to engage intensively in production (particularly food production as to ensure food availability to meet food requirements at the household level. Not only that but also the high percentage of marriage respondents in the study area was an indication that the respondents enjoyed support from their spouses and children.

TABLE 4.3: DISTRIBUTION OF RESPONDENTS BY MARITAL STATUS

Marital status	VILLAGES			TOTAL
	Bahi	Nagulo	Uhelela	Freq/%
Single	04	02	01	07(7%)
Married	23	26	24	73(74%)
Divorced	02	01	00	03(3%)
Widowed	05	03	08	16(16%)
TOTAL	33	32	33	98(100%)

4.2.4 Distribution of respondents by education

Education is a key area in the reduction of poverty and other vulnerabilities in community. The general level of education in the study area is low among the household heads. According to URT (1995) the major education attainment levels used in Tanzania are primary, secondary and post – secondary education. Primary education aims at providing the basic element of education, literacy programs for adults are also classified under primary education. Secondary education is provided at ordinary and high schools.

Post-secondary education is provided at teacher training colleges, vocational and technical colleges, universities, other higher learning institutions.

The study findings revealed that majority of surveyed respondents from the three villages were primary school leavers/have primary education leavers/have primary education level (61%) while informal education(didn't attend to school), Post secondary education and Secondary education constituted (28%), (7%) and (4%) of the sample population respectively. The dominance of respondents with primary education in the study area. On the other hand absence of ward secondary school before 2006 could explain as to why few respondents has secondary education with regard to post secondary education levels of education. It is found that respondents with post-secondary accounted 7% while those with secondary levels of education accounted 4%. This signifies that few respondents with secondary education and above are found in the study area and the few who are there are not involved in agricultural activities in the study area. Low involvement of household small scale farmers with higher level of education (4%) involved in food production was also discovered by Lister (2011) under FISP in Mwembeshi – Chibombo district of Zambia, who argued that since the education level of the respondents is mainly low it is believed that this has significant effect on job choice, utilization of good agricultural practices and household food security in the study area. ILO (2003), and Mariam (2004), acknowledge important role of education on choice of jobs such as office jobs (white collar jobs), adoption rate of agriculture innovations, improved labor productivity and household food security status.

TABLE 4.4: DISTRIBUTION OF RESPONDENTS BY EDUCATION

Education level	Villages			Total
	Bahi	Nagulo	Uhelela	Freq/%
Informal education	04	09	14	27(28%)
Primary education	21	21	18	60(61%)
Secondary education	03	01	00	04(4%)
Post-secondary education	05	01	01	07(7%)
TOTAL	33	32	33	98(100%)

4.2.5 Household size

The findings in Table 4.5 revealed that forty three percent (44%) of the surveyed respondents (households head) have household size that range from 4-6 members, followed by households with household size that range from 7-10 are about (30%), then households with more than 10 members (14%) and few (12%) households with household size that range from 1-3 members. The situation was similar to all the three villages. According to Alem and Shumiye (2007), a shift to smaller family size with less than five (5) members decreases the probability of food insecurity. Following this assertion, means that the increase in number of households members increases in food consumption and need; therefore majority of households in the study area are considered to be more food insecure because majority had 5 or more than 5 members.

TABLE 4.5: MEMBERS IN A HOUSEHOLD (HOUSEHOLD SIZE)

MEMBERS	VILLAGES			TOTAL
	BAHI	NAGULO	UHELELA	Freq/%
1-3	08	03	01	12(12%)
4-6	14	12	17	43(44%)
7-10	10	10	09	29(30%)
>10	01	07	06	14(14%)
TOTAL	33	32	33	98(100%)

4.3 The relationship between food insecurity and socio – economic characteristics of respondents

4.3.1 Sex of respondents and food insecurity

Results on distribution of respondents in the study area by sex are given in (Table 4.6). It was found that (72%) were male whereby 68% accepted that they have experienced food insecurity while 3% they have never experienced food insecurity, and women accounted 28% of the respondents, whereby all of them accepted that they are experiencing food insecurity.

TABLE 4.6: CROSS – TABULATION TABLE OF SEX (MEN AND WOMEN) IN EXPERIENCING FOOD INSECURITY

Socio – economic characteristics		Experienced food insecurity		Total
		Yes	No	
Sex of the respondents	Male	68 (69%)	3 (3%)	71 (72%)
	Female	27 (28%)	0 (0%)	27 (28%)
	Total	95 (97%)	3 (3%)	98 (100%)

Findings in this study indicated that there is no significant difference of men and women when experiencing food insecurity. This was revealed by cross tabulating experiences in food insecurity and gives the chi-square test results of 1.177 as shown in table 4.7.

TABLE 4.7 CHI-SQUARE TESTS RESULTS ON SEX EXPERIENCING FOOD INSECURITY

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.177 ^a	1	.278		
Continuity Correction ^b	.184	1	.668		
Likelihood Ratio	1.970	1	.160		
Fisher's Exact Test				.559	.376
N of Valid Cases ^b	98				

4.3.2 Household size

The study findings in Table 4.8 shows that ninety seven percent (97%) of the household heads accepted that they have experienced food insecurity, whereby 10% is from the households with 1-3 members, 43% from households with 4-6 members, 30% from households with 7-10 members and 14% is from households with more than ten members, while three percents (3%) of the households have never experienced food insecurity, whereby 2% is from households with 1-3 members and 1% is from the households with 4-6 members.

TABLE 4.8: CROSSTAB TABLE OF HOUSEHOLD SIZE IN EXPERIENCING FOOD INSECURITY

socio – economic characteristics		Experienced food insecurity		Total
		Yes	No	
Household size of the respondents	1-3	10 (10%)	2(2%)	12 (12%)
	4-6	42 (43%)	1(1%)	43 (44%)
	7-10	29 (30%)	0 (0%)	29 (30%)
	>10	14 (14%)	0 (0%)	14 (14%)
Total		95 (97%)	3 (3%)	98 (100%)

Findings indicated that there is no significant difference among the household's size in experiencing food insecurity. This was revealed by cross tabulating household size experiences in food insecurity and gives the chi-square test results of 8.922 as shown in table 4.9.

TABLE 4.9: CHI-SQUARE TESTS RESULTS OF HOUSEHOLD'S SIZE IN EXPERIENCING FOOD INSECURITY

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.922 ^a	3	.030
Likelihood Ratio	6.513	3	.089
N of Valid Cases	98		

4.3.3 Marital status of the respondents

The study found that 97% of respondents have accepted that they have experienced food insecurity in their households, whereby 70% of them is from the married category, 16% from the widowed category, 7% from those who are single and 4% is from the divorced category. While 3% of the respondents have never experienced food insecurity in their households, whereby 2% is from the married group and 1% from those who are single.

TABLE 4.10: CROSS – TABULATION OF MARITAL STATUS OF RESPONDENTS AND FOOD INSECURITY

		Experienced food insecurity		Total
		Yes	No	
Marital status of the respondents	Single	6 (7%)	1 (1%)	7 (8%)
	Married	69 (70%)	2 (2%)	71 (72%)
	Divorced	4 (4%)	0 (0%)	4 (4%)
	Widowed	16 (16%)	0 (0%)	16 (16%)
Total		95 (97%)	3 (3%)	98 (100%)

Findings indicated that there is no significant difference among the marital status of the household heads (respondents) in experiencing food insecurity. This was revealed by cross tabulating marital status of household heads experiences on food insecurity and gives the chi-square test results of 3.618 as shown in table 4.11.

TABLE 4.11 CHI-SQUARE TESTS RESULTS OF MARITAL STATUS IN EXPERIENCING FOOD INSECURITY

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.618 ^a	3	.306
Likelihood Ratio	2.862	3	.413
N of Valid Cases	98		

4.3.4 Distribution of respondents by education

The study revealed that, 97% of the respondents have experienced food insecurity in their households, whereby 59% is from those with primary education level, 27% is from those with informal education, 5% is for those who have post-secondary level of education and 4% is from those with secondary education. While 3% of the respondents have never experienced food insecurity in their households, whereby 2% is from those with post-secondary level of education and 1% is from those with secondary level of education.

TABLE 4.12: CROSS – TABULATION OF EDUCATION OF RESPONDENTS AND FOOD INSECURITY

		experienced food insecurity		Total
		Yes	No	
Education levels of the respondents	Informal education.	27 (28%)	0 (0%)	27 (28%)
	Primary education.	59 (60%)	0 (0%)	59 (60%)
	Secondary education.	4 (4%)	1 (1%)	5 (5%)
	Post-secondary education.	5 (5%)	2 (2%)	7 (7%)
Total		95 (97%)	3 (3%)	98 (100%)

Findings indicated that there is no significant difference among the education levels respondents (household heads) in experiencing food insecurity. This was revealed by cross tabulating education levels of household heads experiences on food insecurity and gives the chi-square test results of 22.901 as it is in table 4.13.

TABLE 4.13 CHI-SQUARE TESTS RESULTS OF EDUCATION LEVELS OF THE RESPONDENTS IN EXPERIENCING FOOD INSECURITY

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	22.901 ^a	3	.000
Likelihood Ratio	13.446	3	.004
N of Valid Cases	98		

4.4 Households income generating activities and resources for households livelihood

4.4.1 Major income generating activities for household livelihood

Economic activities can be used to provide information about the socio-economic characteristics of household. Crop farming (agricultural activities) represents the majority of the population in Tanzania. It is the most important livelihood of the people in the study area. Most of their income from food crop production the information in Table 4.6 indicate that agriculture (88.8%) was the main source of livelihood for the households, followed by formal employment (8.2%), while the remain (3.1%) depends from others sources such as business and charcoal making. This is in the with URT (2012) who

reported that approximately 75% of the population in Tanzania depends on underdeveloped smallholder primary agriculture production, characterized by the use of hands hoe and reliance upon traditional rain fed cropping methods. The finding is also comparable with that of Tharika District Development Plan 2008 – 2012 report, which stipulates that agriculture is the major mainstay of the economy and livelihood of the people in Tharika District in Kenya and, it is estimated that 80% of the population depends on farming (GOK, 2008).

Therefore agriculture is playing an essential role in the socio – economic system of the households as much of the food consumed by households in farm. This imply that the major source of food for the households was own crop production, since their major occupation/source of livelihood was agriculture. That is the income situation in this area is low so are experiencing food insecurity regularly.

TABLE 4.14: MAJOR INCOME GENERATING ACTIVITIES FOR HOUSEHOLDS LIVELIHOOD

Source of livelihood	VILLAGES			TOTAL
	Bahi	Nagulo	Uhelela	Freq/%
Agriculture	24	31	32	87(89%)
Formal Employment	06	01	01	8(8%)
Others	03	00	00	3(3%)
TOTAL	33	32	33	98(100%)

4.4.2 Source of household income

Information in table 4.15 shows that more than half of respondents (household heads) 52.0% earn income by selling of their own produced crops. This is in line with URT (2012) who reported that more than half approximately 75% of the population in Tanzania depends on underdeveloped smallholder primary agriculture production to earn their income. This means that most of household cash income is obtained from direct agricultural production and 33.7% of the respondents depend on selling livestock as to earn income, while 8.2% earn income by depending on salaries, on the other hand 3.1% depend on selling livestock products as a source of income and 3.1% of the respondents are earning income from other sources like business and charcoal making, as it was supplemented by information obtained from key informants interviewed during the study, where by the study, revealed that activities like charcoal – making which depend on locally available natural resources and gathering fruits from indigenous plants/ trees found in the area such as Baobab and Tamarind which are available at certain critical periods of the year, all together are alternative sources of generating quick cash income that used in buying foods for households in the study area. These results also in line with Ishengoma (1998) who argued that household must have income obtained from different sources. The findings therefore are implicative that households in Bahi relied on a variety of sources of earning income.

TABLE 4.15: SOURCE OF HOUSEHOLD INCOME

Source of income	Frequency	Percent
Selling of livestock	33	33.7
Selling of livestock Products	03	3.1
Selling of crops	51	52.0
Salary	08	8.2
Others	03	3.1
Total	98	100.0

4.4.3 Land for cultivation

Land ownership and access is an important factor when considering vulnerabilities to hazards like food insecurity because is one of the major resources for agriculture activities and food production. The ability to not only access, but also own land implies a resource at hand that can be used for farming, renting or livestock grazing. In rural areas, land ownership and access form the basis for their customs and agriculture and is fixed within the communities' institutional setting. Therefore ownership and access to land is usually governed by the existing local informal institutions, which are termed as 'customary land ownership' under the Tanzanian Land acts no 4 and 5 of 1999. (Palmer,1999). The findings in figure 4.1 show that majority of households 70.4% possessed farmland, while only 29.6% (are landless) do not have farmland. On the other hand findings in table 4.13, shows that majority of households (52%) possessed 2-4 acres of farmland, 13.3% owned 5- 10 acres of land, 3.1% of the respondents possessed a land which

is more than 10 acres and 2% of the respondents owned 1 or less acre of land. While 29.6 are not possessing lands at all. This means that majority of household in the three villages have land which does not exceed 4 acres and it was evident that this was a fundamental obstacle to agricultural development of household which is among the reasons that leads to household food insecurity. The land owned were utilized as farmlands for crop cultivation and as pasture land for livestock, this means that, the land owned by individual households and that owned by the community all together were used for both crop cultivation and animal grazing, where those were used for crop cultivation was known as *Migunda*, while that for grazing were of two categories; those for communal grazing are locally known as *luwindo*, but the privately owned lands that are set aside for grazing known as *milaga*.

FIGURE 4.1: LAND FOR CULTIVATION

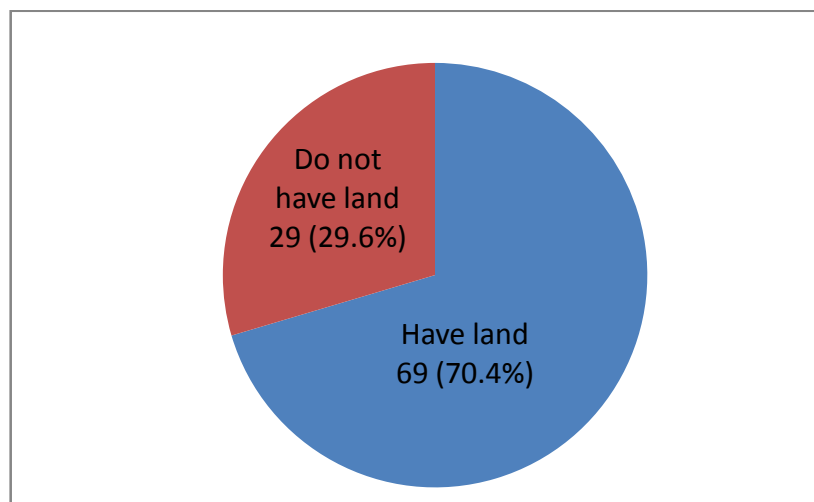


TABLE 4.16: FARMLAND SIZE POSSESSED BY HOUSEHOLDS

Land size in Acres	VILLAGES			TOTAL
	BAHI	NAGULO	UHELELA	Freq/%
<1	02	00	00	02(2%)
2-4	20	14	17	51(52%)
5-10	02	07	04	13(13%)
>10	00	02	01	03(3%)
Do not have land	19	09	11	29(30%)
TOTAL	33	32	33	98(100%)

4.4.4 Respondents engaged in food crop cultivation

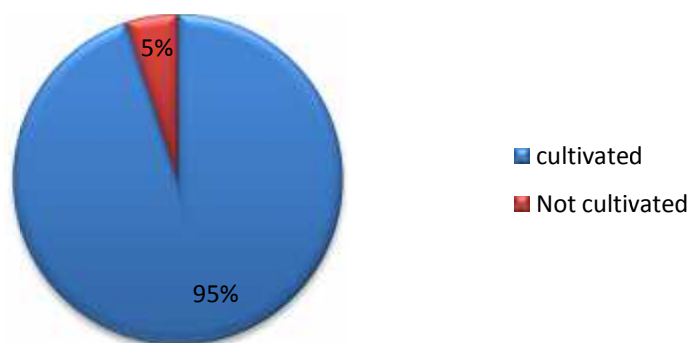
The findings as represented in figure 4.2 show that 95% of the respondents were engaged in food crop cultivation in the last season, while only 5% of the respondents were not engaged in food crop cultivation during the last season, most of them have permanent employment to other sectors. The study revealed that most of the respondents were engaged in food crop production because they depend on their own food production. Many households cultivate crops as a source of food and income to their families. This findings are in line with Rose (2008), who reported that approximately 86% household in Tanzania were engaged in production of staple food crops, that contribute to household food availability; when food stuff is available in a household, it increases the chances of a household being food secure.

As food crop production is one of the best means to reduce household food insecurity. The findings indicate that Paddy was of the major food crops cultivated among the households at 48.0% of all crop output followed by Maize at 42.9% and Millet at 4.1%. These findings show that cereals make the major food crops cultivated by all household (Table 4.17). The findings are supported by (Ngongi, 2013) who argued that the two crops (Paddy and Maize) are regarded to be major staple foods for many rural households in Tanzania and many parts of Sub Saharan Africa (SSA), thus increases in its production may indicate an improvement in the households food security situation. Not only that but also these findings are in line with that of Machethe (2004) who observed that cereal crop production is one of the most important ventures in subsistence agriculture for many rural household of SSA (Sub Saharan Africa). Then it was revealed from the FGD (focus group discussion) that intercropping was practiced in the last season. Intercropping involved the growing of more than one crop in the same land at a time like a combination of maize with legumes like groundnuts and cowpeas, they said inter – cropping was normally done as an insurance against total crop failure, and as a method of fertilizing the soils, not only that but also was done due to inadequate land for cultivation. Generally, cereal crops were the main food cultivated among the households.

TABLE 4.17: FOOD CROPS CULTIVATED LAST SEASON 2013/2014

Food Crops	VILLAGES			TOTAL
	BAHI	NAGULO	UHELELA	Freq/%
Maize	07	14	21	42(43%)
Millet	00	01	03	04(4%)
Paddy	24	16	07	47(48%)
Others	02	01	02	05(5%)
TOTAL	33	32	33	98(100%)

FIGURE 4.2: FOOD CROPS CULTIVATION



4.4.5 Households farm size cultivated for food crops in the last season (2013/2014)

The farm size can determine the volume of crop output. Findings show that majority of households (80.6%) cultivated 2-4 acres of food crops, 7.1% cultivated 5-10 acres of food crops, and 7.1% of the respondents cultivated a

land which is less than 1 acre. While 5.2% did not cultivate at all. This means that majority of household cultivated a land which does not exceed 4 acres and it was evident that this was a fundamental obstacle to agricultural development of household which is among the reasons that leads to household food insecurity. Furthermore, when the respondents were asked if the land they cultivated in the past seasons was enough for their household food production, as figure 4.3 illustrate the majority 80.6% of the respondents said the land was not enough, while 19.4% of the respondents said (yes) the land was enough for their household food production. The finding show that most households cultivated small plots of less than five acres which is not enough for their needs as they posses small plots and there is high land grabbing as people from different areas are coming to rent land for paddy production which affect the natives of the area. These findings are in line with that of Alem and Shumiye (2007), who argued that small farmland size increases vulnerability to household food insecurity because the smaller the farmland size, the smaller the volume of crop output. The land cultivated was utilized as farmlands for crop cultivation, the land cultivated were owned by individual households and that owned by the community, the land used for crop cultivation is locally known as *migunda*.

FIGURE 4.3: THE LAND FOR HOUSEHOLDS USE

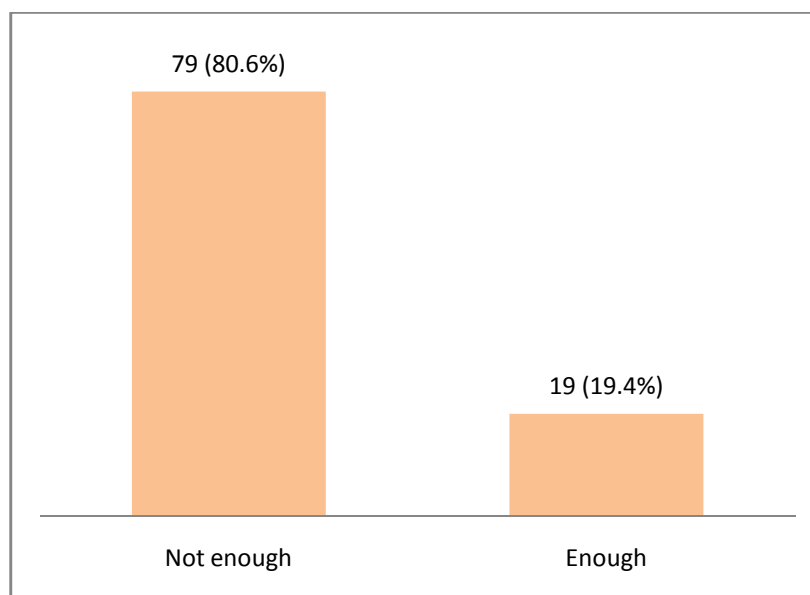


TABLE 4.18: FARMLAND SIZE CULTIVATED FOR FOOD CROPS IN THE LAST SEASON (2013 / 2014)

Land (Acre)	VILLAGES			TOTAL
	BAHI	NAGULO	UHELELA	Freq./%
<01	04	02	01	07(7%)
02-04	24	26	29	79(81%)
05-10	03	02	02	7(7%)
>10	02	02	01	5(5%)
TOTAL	33	32	33	98(100%)

4.4.6 Owners of the cultivated land

As it is indicated in Table 4.19. The finding show that among the respondents who cultivated in the past season 68% of the household heads from the three villages said that the land they cultivated was the property of their family,

23% of the respondents said that were landless and the land they cultivated was not their property, it was hired from other people, on the other hand 4% of the respondents said that the land they cultivated is owned by the government, since these respondents were the households who were employed by the government so the land was the property of their employee.

TABLE 4.19: OWNERS OF THE CULTIVATED FARMLAND

OWNERS	VILLAGE			TOTAL
	BAHI	NAGULO	UHELELA	Freq./%
Government	03	01	00	04(4%)
Family	11	25	31	67(68%)
Hiring	16	04	02	22(23%)
No	03	02	00	05(5%)
TOTAL	33	32	33	98(100%)

4.4.7 Tools used for land cultivation

The uses of tools such as hand hoes, tractors, ploughs were associated with socio-economic characteristics of the household. As the findings indicate that agricultural activities were the main source of livelihood for the households and the majorities were engaged in food crop production, the respondents were asked to mention the major tools they used for land cultivation in the last season 2013/2014. They gave the information as indicated in Table 4.20. Most of the respondents 56% said they used hand hoe for cultivation of their shambas, 37% used drought animal (ploughs) for farming and 2% used

tractor for farming this information are relating to all the three villages. The use of hand hoe is indicating that the kind of agriculture practiced in the study area was poorly conducted, most households cultivated food crops (rice, maize) on small amounts of land (2-3 acres). The activity was practiced mainly using small hand hoes. This indicated the difficulty in cultivating large area with such simple productive tools. Most households owned small tools as hand hoes, very few households managed to use Drought animal and tractors for farming were for renting. Then it was revealed from the FGD (focus group discussion) that due to economic hardship, very few households were able to rent tractors to assist in ploughing activities, probably due to the fact that very few households in the study area were affluent had such assets (interviews revealed tractor rental costs was TSH 70,000/= per acre) and for those managed to rent would cover the costs of the ploughing after harvesting. Therefore the dominant use of hand hoes for cultivation is relating directly to food insecurity as they cannot cultivate large portion of land which lead to poor harvest.

TABLE 4.20: TOOLS USED FOR LAND CULTIVATION

TOOLS	VILLAGES			TOTAL
	BAHI	NAGULO	UHELELA	Freq./%
Hand Hoe	14	18	23	55(56%)
Drought animal	14	12	10	36(37%)
Tractor	02	00	00	02(2%)
No	03	02	00	05(5%)
TOTAL	33	32	33	98(100%)

4.4.8 Owners of tools used for cultivation

The findings show that most 70% of the tools used were owned by families while 25% were for ranting/ hiring. Whereby most of the tools owned by families were hand hoes and few drought animal tools whole all tractors and most of drought animal tools were for hiring, and it was costing TSH 70,000/= for a tractor to plough an acre, as most of the households were economically poor, it was cost full to most of the household to manage paying that amount.

TABLE 4.21: OWNERS OF TOOLS USED FOR CULTIVATION

Owners	Frequency	Percent
Family	69	70
Hire	24	25
No	05	5
Total	98	100.0

4.4.9 Amount of harvested food crops in last season

The respondents were asked to give the estimates in terms of bags of the food crops they had harvested in the period of the last harvested season. They gave the information (Table 4.22). Forty two percent (43%) of the respondent harvested less than five bags of food crop in the last season harvests, then 22% harvested 5- 10 bags of food crops, 21% of household harvested 11 – 20 bags of food crops and a total of 8% of the respondents harvested more than 20 bags of food crops during the last season. Maize and paddy were the primary crop cultivated which explains that are crops

harvested in the largest quantities during the last season. Further, it was revealed and justified from the focus group discussion, that food crop production in the last season was low/poor. The farmers have expected plentiful harvests in that season since they cultivated big land. However, their expectation was not realized because of the drought which precipitated the harvest of food quantities much lower than their expectation.

TABLE 4.22: AMOUNT OF THE HARVESTED FOOD CROPS IN TERMS OF BAGS

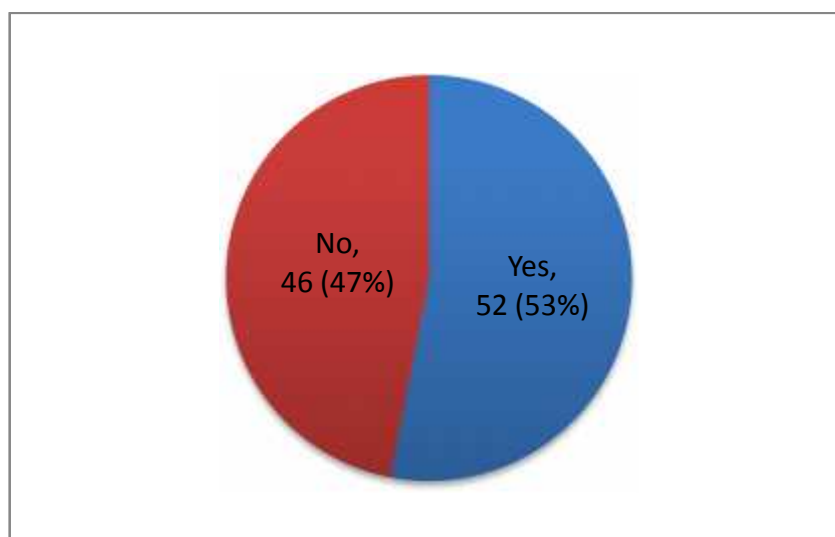
Crops	Harvest in Bags					Frequency	Percent (%)
	< 5	5-10	11-20	21-30	> 30		
Maize	37	05	00	00	00	42	43
Paddy	02	16	21	05	03	47	48
Millet	03	01	00	00	00	03	4
Not responded	-	-	-	-	-	05	5
TOTAL	42	22	21	05	03	98	100

4.4.10 The respondent consumed the harvested food crops

When the respondent were asked if they had consumed all the last season harvested food crops the findings indicate that majority 53% of households (respondents) said yes this was due to low crop production which reduces the availability of food for consumption for a whole year, while 47% said no, although they did not harvested enough food to meet their households consumption requirements within a year, but they sold some of the harvested

food crops, so that they could earn some extra income to enable them to pay for the other basic necessities (medicine, clothing, and shelter) at their household.

FIGURE 4.4: THE RESPONDENT CONSUMED THE HARVESTED FOOD CROPS

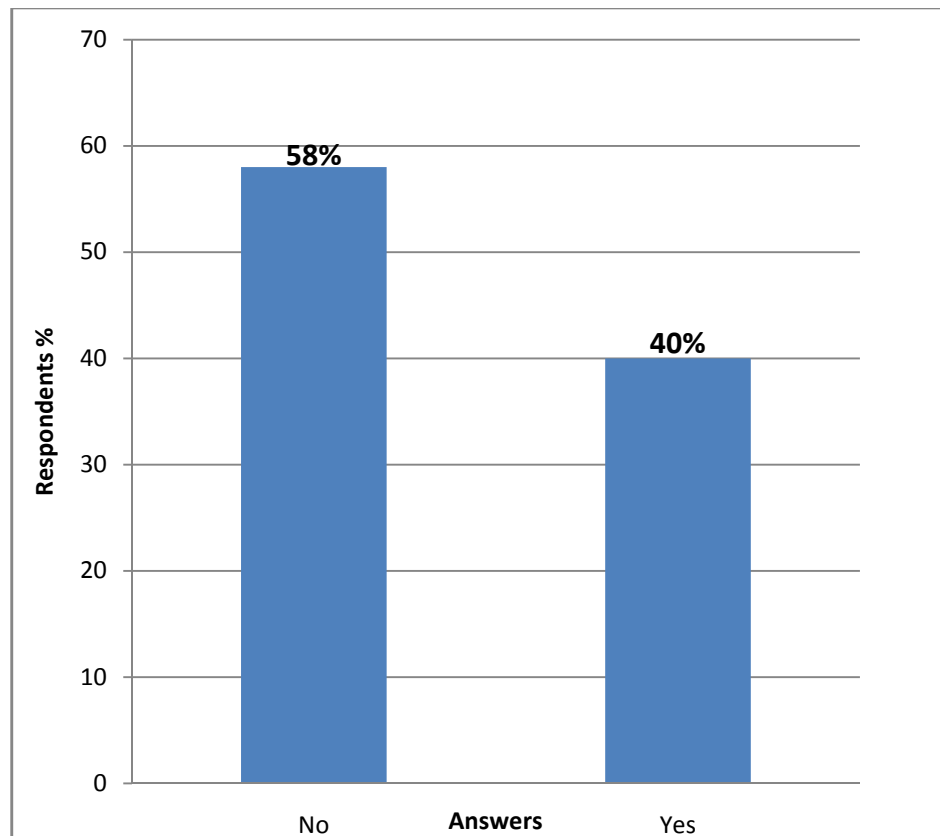


4.4.11 Respondents sold of the harvested crops

Farmers represent more than 85% of the population in Tanzania. Mainly agriculture in the form of subsistence farming is the main source of income for the whole population. Where by the population draws their livelihood from agricultural production. It is the most important livelihood of the country. Most of their income comes from food crop production. When the respondents in the study area were asked if they had sold some of the crops they harvested last season about 58% of the respondents answered “NO” and 40% of the respondent answered “YES” they sold some of harvested food crops, but they sold some of the harvested food crops, so that they

could earn some extra income to enable them to pay for the other basic necessities (medicine, clothing, and shelter) at their household. These findings are in the line with that of (Mjonono, Ngidi & Hendriks, 2009). Who observed that households from Umbulu did not consume sufficient food from their own production which was attributed partly to the sale of produce to purchase other foods or the purchase of other non-food goods.

FIGURE 4.5: RESPONDENTS SOLD SOME OF THE HARVESTED CROPS



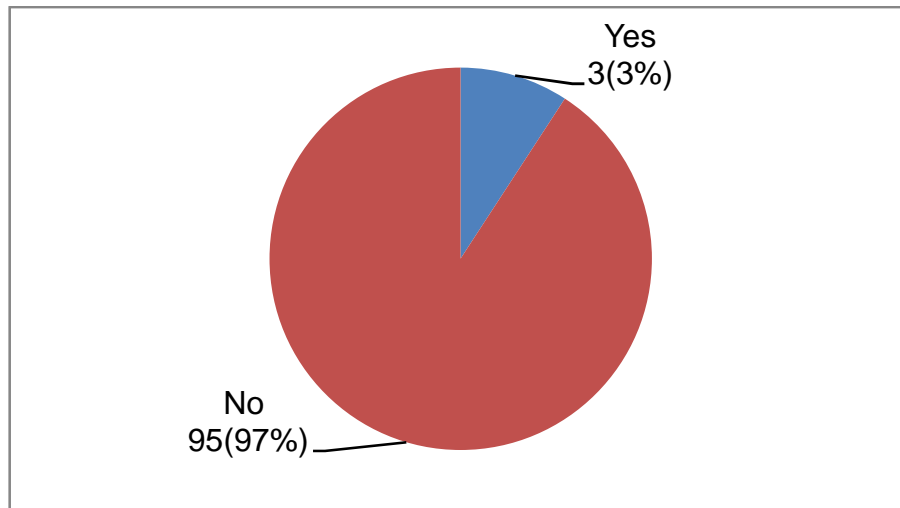
4.4.12 The remained harvested food crops

The study in figure 4.6 showed that Ninety one percent (97%) of all households heads (respondents) were food insecure as they answered “NO” when were asked if they have some remained food crops that they harvested during last season. While 3% of the responded answered “YES” that they have some of the remained food crops they harvested during the last season. It was revealed from the focus group discussion that most of the households had used all the last season harvested food crops as the following quote with the young male household head from Uhelela village who said that;

“We harvested just little food crops which were too little for consumption in our families for whole year, although we harvested insufficient food crops to meet our households consumption requirements for a year, but we sold some of our food crops we harvested last season, we has some extra income to enable us to pay for other necessities our households”

These findings are supportable by the findings which showed that Umbumbulu farmers consumed less of their own production because they were able to sell their own food crops produced. This allowed them to use the money to purchase other necessities. Therefore crop production alone was not sufficient to improve the food security situation among the households (Mjonono, Ngidi & Hendriks, 2009).

FIGURE 4.6: FOOD RESERVE (THE REMAINED HARVESTED FOOD CROPS) AT HOUSEHOLD LEVEL

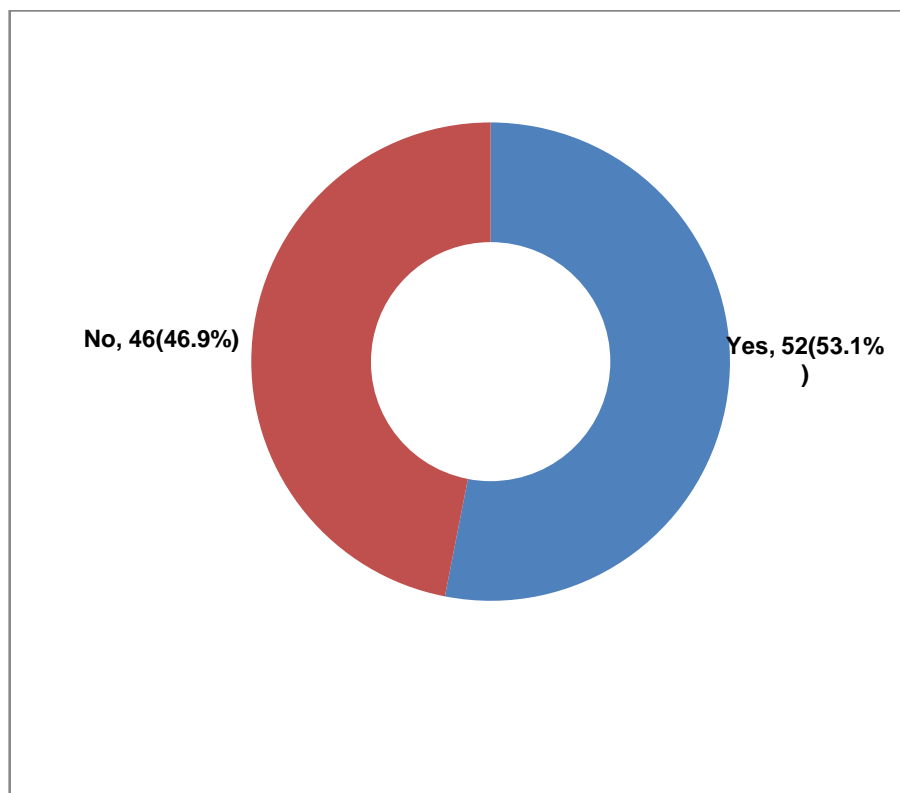


4.4.13 Livestock keeping

In many households, livestock provided as means of adaptation to the harsh climatic conditions in case of crop failure. The livestock economy of the households has been based on cattle, sheep and goats. As the traditional livelihood system among the people in the study area is agro – pastoralist. However, in the context of their being semi – pastoral, people living in the study area subsisted on an agricultural economy with livestock playing an essential role in the socioeconomic system. Apart from being the Centre of social and economic life, livestock were means of adaptation to irregular rainfall. When the respondents were asked if they keep livestock as figure 4.7 shows, most of the respondents 53.1% answered “YES”, while 46.9% of the respondents said “NO”. The findings reveal that livestock are used by household in case of crop failure this was revealed from the three villages. According to WFP (2009), farm family household in ASAL areas practice

livestock production to mitigate crop losses. It was revealed from the focus group discussion that most of the household keep livestock because livestock traditionally played vital economic and social roles in society, as well as provided opportunities to obtain cash through the sale of animals or to directly obtain food by exchanging livestock for food. This is in line with (Rigby, 1969) who discussed that Livestock play a significant role in the survival of the Gogo in various spheres of life, socially and economically, in many households, livestock provided a means of adaptation to the harsh climatic conditions in case of crop failure, households applied the exchange of cattle for grains as a coping strategy. Therefore, it is true that people in the study area draws their livelihood from agriculture and livestock keeping.

FIGURE 4.7: LIVESTOCK KEEPING



4.4.14 Types of animals kept

The Gogo people, the main inhabitants in the study area, are agro-pastoralists and are familiar to survive within an agricultural economy where grain production and livestock have played an essential role in the socio – economic system. Most of the respondents 33.7% when were asked to mention type of livestock are used to keep mentioned Cattle, and 18.44% of the respondents mentioned goats while only 1% of the respondents said sheep. And 46.9% of the respondents are not keeping livestock as they are engaging in crops cultivation only. This finding are in agreement with that of (Christianson, 1981), which observed that livestock, especially cattle, were the basic “value units” in socio – economic term. It was identified that during the rainy season, cattle were kept near homesteads. In the dry season, cattle were driven away from the homesteads in search of grazing and water. It was justified that most of Bahi population draws their livelihood from agriculture and livestock keeping as is indicated below.

TABLE 4.23: TYPES OF ANIMALS KEPT

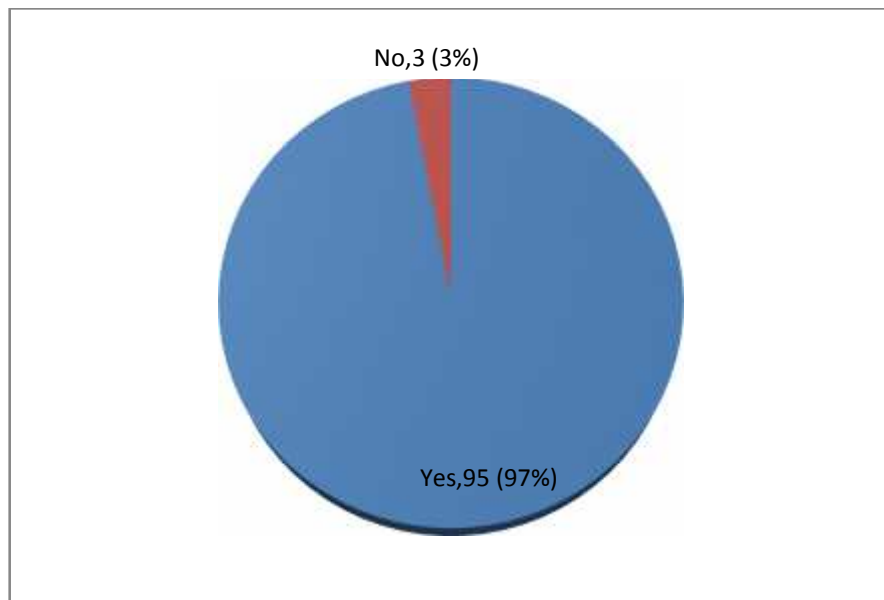
Livestock	Frequency	Percent
Cattle	33	33.7
Goats	18	18.4
Sheep	01	1.0
No	46	46.9
Total	98	100.0

4.5 Factors influencing food insecurity

4.5.1 Household experienced food insecurity

Although participation in crop production among the households (respondents) was high which could be thought to reduce food shortages to some extent, but the percentage of food insecurity in households was still high. The findings shown at figure 4.8 below is justifying that majority 97% of the respondents (households heads) are food insecure, while only 3% of the respondents are food secured throughout the year.

FIGURE 4.8: HOUSEHOLD EXPERIENCED FOOD INSECURITY



4.5.2 Months with most household food insufficient

The findings shows that, the respondents mentioned different intervals in months of inadequate food in their household, where by majority 48% of the respondent had most food insecurity at a range of 3- 6 six months for different periods in a year. 24.5% of the respondents are experiencing most

inadequate food for 6-9 months in a year, 19.4% are experiencing for 1-3 months only, while 5.1% of the respondents had the most inadequate food for a whole year and only 3.1% of the respondents are food secured throughout the year are not experiencing inadequate of food. The access and availability of food among the households was at the early months of dry season just after harvest (post – harvest seasons) but the late and early wet season months most of the household are experiencing food shortage. The findings are supported by the report of (Lister, 2011) who observed that in Zambia where farmers stores food hardly in two months after harvesting season and then run to food shortage for the remaining months of the year.

TABLE 4.24: MONTHS WITH HOUSEHOLD FOOD INSUFFICIENT

Months	Frequency	Percent
1-3	19	19.4
3-6	47	48.0
6-9	24	24.5
whole year	05	5.1
No	03	3.1
Total	98	100.0

4.5.3 The causes of food insecurity

The findings show that reasons for food insecurity were; Drought (low rainfall) When households asked if they had experienced drought (s) in the past seasons, majority 79.6% of the respondents said yes and is the cause

of food shortage. During group interviews with households heads (respondents) one aged man from Nagulo village said that;

“In spite of cultivating droughts resistant crops, the preceding draught was on severe that their crops dried immaturely thus containing their harvests. This exposed us into vulnerability to household food insecurity.”

Rose (2008) argues that droughts increase a community vulnerability to household food insecurity. Also Johnson, (1986) argued that, drought itself can be a cause of food shortage. 13.3% of the respondents said shortage of land is the causative of food insecurity in their households because they have ability to cultivate but they do not have land to cultivate more so that they can get more yield, as they said the larger the land the less the food insecurity in households. This also has been discussed by Sumaye (1993) who mentioned one of the reasons of food shortage is shortage of land, and 7.1% of the respondents said Low productivity is also source of household food insecurity as households do not produce sufficient quantities of crops that can be used throughout the year. Also misuses of food crops was mentioned when the researcher was in group interview with the household heads where're by they said cereal crops are used in making local beer (ujimbi) and people tends to spend more money on alcohol that leads to household food insecurity. On the other hand through key informant's interviews the study revealed that farmers do not store food hence making them to face difficult situation few months after harvest season. These findings also in line with that of (Lister, 2011) who argue that in Zambia, most

of the areas there are no individual maize store and this makes difficulties for farmers to manage their output ahead of better prices, and hence distress selling behavior.

TABLE 4.25: THE CAUSES OF FOOD INSECURITY

Causes	Frequency	Percent
Low rainfall (Drought)	78	79.6
shortage of land	13	13.3
Low productivity	07	7.1
Total	98	100.0

4.6 Coping strategies used among households

The study shows that people used different strategies to cope with food insecurity situation as shown in Table 4.26, shows that 39.8% of respondents reduced number meals per day, 29.6% of the respondents are coping with the situation of food insecurity by selling livestock they keep. This is in line with (Rigby, 1969) who discussed that livestock play a significant role in the survival of the Gogo in various spheres of life, socially and economically, In many households, livestock provided a means of adaptation to the harsh climatic conditions in case of crop failure, households applied the exchange of cattle for grains as a coping strategy. Furthermore WFP (2009), argued that most of farm family households in ASL areas practice livestock production to mitigate crop losses as one of food insecurity coping strategy, 14.3% borrowing food from friends or relatives which is in term of loans,

borrowing food in this manner entailed that one was required to subsequently return much more than the amount borrowed. This kind of local food loan was known as *songoleda*, 10.2% of the respondents are migrating to other places where they can get food, while 6.1% of the respondents are engaging in casual labors and small business that can generate income that can help them to buy food. Diversification of economic activities was more mentioned by the key informants interviewed during the study as one of the coping strategies used by people, activities like charcoal – making which depend on locally available natural resources, this is performed mainly by men while women are engaged in gathering fruits from indigenous plants/trees found in the area such as Baobab and Tamarind which are available at certain critical periods of the year, all together are alternative sources of generating quick cash income in order to improve their livelihood and cope with food insecurity. These results also in line with Ishengoma (1998) who argued that household must have income obtained from different activities to purchase food which are unable to grow themselves. The findings are common to all the three villages, as how are showing that households in Bahi ward relied on a variety of coping strategies to counter their household food insecurity; which is in agreement that increased reliance on coping strategies is associated with lower food availability (Mjonono et al., 2009).

TABLE 4.26: COPING STRATEGIES ADOPTED BY HOUSEHOLD TO MITIGATE FOOD INSECURITY

Strategies	Frequency	Percent
Causal labors and small business	06	6.1
Reduction of number of meals per day	39	39.8
Borrowing food from friends or relatives	14	14.3
Migrating to other places	10	10.2
Selling of livestock	29	29.6
Total	98	100.0

4.7 Chapter summary

Findings shows that most 97% of the households in Bahi ward are food insecure except 3% of the households. It was revealed in the study that majority of the people depend on agriculture and majority cultivated food crops such as paddy, maize and millet, the major tools used was hand hoe, majority harvested less than five bags. The shortage of food was due to drought, shortage of land and low production. Findings evidenced several coping strategies applied to face the problem, which are; reducing number of meals, selling of livestock, migrating to other places, borrowing food from friends or relatives (food credits) and doing causal labors and small business. The analysis of data indicated that there is no significant difference, relationship among the tested variables in experiencing food insecurity.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5 Introduction

This chapter highlights the conclusion and recommendations of the study and suggestions for further research.

5.1 Conclusion

Generally, the findings shows that most 97% of the households in Bahi ward where there are three villages, namely; Bahi, Nagulo and Uhelela are food insecure except 3% of the households.

- The study showed that the relationship between household's socio-economic characteristics and food insecurity is not different among the households in experiencing food insecurity; For example, households with large number of members in households and those with few members are experiencing the same problem.
- It was evidenced from the study that majority of the people depend on agriculture as their main income generating activity and source of livelihood for their households in the study area, majority cultivated food crops, whereby; paddy, maize and millet were the major crops cultivated. Most of the household cultivated a land which range between 2-4 acres, which was not enough for most of the household's use. The major tools used for land cultivation were hand hoe. The harvest was poor as majority harvested less than five bags of cereal food crops, where all the harvested food crops were used before the next harvesting season.

- The study evidenced that majorities of the respondents were food insecure, the shortage of food was due to several reasons; major reasons were drought (low rainfall), shortage of land and low production.
- Findings showed that food insecurity is a problem to most people, due to that, the study evidenced several coping strategies are applied to face the problem, which are; reducing number of meals, this was the main strategy used by the majority to cope with food insecurity. Others are selling of livestock, migrating to other places, borrowing food from friends or relatives (food credits) and doing casual labors as well as small business.
- The analysis of data indicated that there is no significant difference, relationship among the tested variables in experiencing food insecurity. This was revealed by cross tabulation and tested by the chi-square test.

5.2 Recommendation

In view of the findings, the study recommends the following measures to be taken into consideration: As the study area (Bahi ward which has three villages that have similar characteristics) is frequently badly affected by droughts causing poor crop production. It is for this reason that the government through the ministry of water and Irrigation should modify and implement the present irrigation policies in all semi-arid (dry land) areas in the country specifically in Bahi ward, to ensure sustainable crop production.

- Households heads should be advised to plan on how to have few members in households.

- The households in collaboration with the government and other practitioners should plan, initiate and implement irrigation projects so as to improve household's food crop production especially when rains are unreliable. This would diminish crop loss and minimize the use of coping strategies.
- The politician have to sensitize people on the habit of being independent, by encouraging them to follow the regulation set by authorities as well as to cooperate with extension officers by sharing knowledge they have with them.
- Villagers should be sensitized on the establishment of income generating activities so as to increase their household's income also should form and join to different groups so that they can have access to loans.
- Food insecurity prevalence among household was found to be high. To alleviate the situation, development of local capacity through community-based participatory action is suggested as means of improving household's food insecurity.
- The government together with food relief stakeholders should layout sustainable food policies implement them and conduct capacity building with the household's heads through conducting seminars and sessions to equip the community with appropriate household food security information.

5.3 Areas for further research

Based on the findings of the findings of the study on household food insecurity and coping strategies, the following further researches are suggested;

- A similar study should be done covering a wider geographical area.
- A comparative study in relation to food security should be done covering both Semi- arid areas and areas with enough rain in the country.

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APPENDICES

Appendix A: Questionnaire for Household heads

A: Personal particular / Demographic characteristics of respondents.

This section should be answered with clarity for every household involved in the survey.

Date.....

District.....

Ward.....

Village.....

Tick () where appropriate

1: Age

< 20 years

20-40 years

40- 60 years

> 60 years

2. Gender

Male Female

3. Level of education

No formal education

Primary education

From four level

Form six level

University level

4: What is the relationship you have with the head of the household?

- I am the head
- He/ she is my spouse
- I am a child of the head
- I am a relative

5: Marital status of the respondent

- Single
- Married
- Divorced
- Widowed

6: (a) How many members are in your household?

- 1-3 7-10
- 4- 6 >10

6: (b) Ages of members in your household.

AGE	MALE	FEMALE	TOTAL
less than 5 years			
6- 30 years			
18-30 years			
31-45 years			
46-60 years			
Above 60 years			

B: Food insecurity and Socio economic.

7: What is your major source of livelihood for the household?

- Agriculture
- Business
- Formal Employment
- Others mention

8: What is (are) your source of income?

Item	Response
Sale of livestock	
Sale of livestock products	
Sale of own crop	
Sale of portion of food	
Salary	
Others mention	

9: Do you have land for cultivation?

- Yes
- No

10: If you have land for cultivation, how big is that land?.

- 0-1acres
- 2- 4 acres
- 5 – 10 acres
- More than 10 acres.

11. Did you cultivate food crops in the last season?

Yes

No

12: If yes, how many acres did you cultivated for food crops in the last season?

0-1

0- 4

5- 10 acres

More the ten acres

13: Is the land enough for your family?

Yes

No

14: Who is the owner of that land?

Government

Others mention.....

Community

Family

My household.

15: Which tool (s) did you use for land cultivation?

Hand hoe

Drought animal

Tractor

Others mention

16: Who own that tool(s) you used for cultivation?

- Mine
- Nerdy farmer (hire)
- Belongs to SACCOS
- Farmers group
- Others mention

17: Did you harvest what you expected?

- Yes No

18: What are the food crops that you cultivated last season and their productivity

Crop	No. of acres	Amount harvested in terms of bags	Consumed in terms of bags	Sold in terms of bags	Remained in terms of bags
Maize					
Millet					
Sorghum					
Others mention					

19: Do you keep any type of animal (livestock)?

- Yes No

20: If yes! What types of animal do you keep?

Types of livestock	Tick ()	Number
Cattle		
Goats		
Sheep		
Poultry		
Pigs		
Donkey		
Others(mention)		

C: Factors influencing food insecurity:

21. Have you experienced food insecurity in your household?

Yes

No

22. If yes, how many months does your family had food shortage?

Less than a month

1-3 months

3 – 6 months

6 -9 months

Whole year

23. In which months of the year do you face food insecurity? Tick where necessary.

January () February ()
 March () April ()
 May () June () July ()
 August () September ()
 October () November ()
 December () All months/ whole year ()

24. Which of the following were the causative of food insecurity?

Factors	Yes Tick ()	No Tick ()
Climatic change (low rainfall)		
Lack of agricultural implements		
Storage (poor food storage)		
Large family		
Pests and diseases		
Shortage of Land		
Unfertile land (low land fertility)		
Low production		
Subsistence agriculture		
Others Mention		

D: Coping strategies

25. What do you do to cope with food insecurity?

Factors	Yes	No
	Tick	Tick
	()	()
Reduction in size of meals		
Reduction of number of meals per day		
Borrowing food from friends or relatives		
Restrict consumption of adults to allow more for children		
Migrating to other places		
Consuming normal wild foods and fruits		
Sale of livestock		
Consume immature crop		
Assistance from government or NGOs		

Appendices B: Checklist for key informants

1. Is there any food insecurity in these villages?
2. Which months do the people faces food insecurity mostly?
3. What are the factors causing food insecurity in the village?
4. What should be done in order to reduce food insecurity in these villages?
5. What are the household food insecurity coping strategies employed by households to mitigate food insecurity?
6. What would you recommend as a sustainable solution to household food insecurity?

Appendix C: Checklists for focus group discussion

1. Are you experiencing food insecurity in your households?
2. What are the factors that are causing food insecurity?
3. What coping strategies are you using to mitigate food insecurity?
4. What economic activities are you practising as a major source of livelihood of your households?

Appendix D: Research clearance certificate



ST JOHN'S UNIVERSITY OF TANZANIA
DIRECTORATE OF RESEARCH AND CONSULTANCY
INTERNAL REVIEW COMMITTEE

RESEARCH CLEARANCE CERTIFICATE

FOR MASTER'S AND DOCTORAL STUDENTS

Date of Review: 30th December, 2014

Project title: FOOD INSECURITY AND COPING STRATEGIES IN RURAL AREAS OF TANZANIA: A CASE OF BAHU WARD IN BAHU DISTRICT.

Researcher: MSANGWA BARNABA

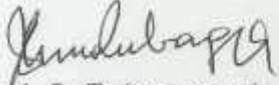
Supervisor: Dr. BALTAZAR M.L NAMWATA

Faculty / Institute / School: The Institute of Development Studies

Degree being studied for: M.A COMMUNITY DEVELOPMENT

This is to certify that the research proposal herein detailed has been examined and approved by the Internal Review Committee of St John's University of Tanzania


Dr. Angela Savage
Director, DRCPGS


Prof. C. Rubagumya
DVCA

Appendix E: Letter from DRCPS office

ST JOHN'S UNIVERSITY OF TANZANIA

Directorate of Research, Consultancy and
Postgraduate Studies

Tel: +255 26-2390044
Fax: +255 26-2390025
Website: www.sjut.ac.tz



PO Box 47
DODOMA
Tanzania

Date: 21.01.2015

TO WHOM IT MAY CONCERN

Graduate Student's Research Clearance

This letter serves to introduce Mr. **MSANGWA BARNABA** (Registration Number M2013/5014), who is a bona fide student of St John's University of Tanzania in the Institute of Development Studies.

He is currently in the research stage of her Masters studies and is required to collect data.

He approved research topic is:

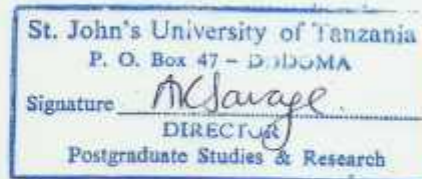
FOOD INSECURITY AND COPING STRATEGIES IN RURAL AREAS OF TANZANIA: A CASE OF BAHU WARD IN BAHU DISTRICT

I request that you grant this student all possible assistance to facilitate the completion of his research study.

Should you need further clarification please contact my office.

I wish to thank you for your kind assistance for this student.

Yours sincerely



Dr Angela Savage
Director of Research, Consultancy and Postgraduate Studies
Email asavage@sjut.ac.tz

Appendix F: Student's permission later to conduct a research in the area District Executive Director

HALMASHAURI YA WILAYA BAHU

(Barua zote ziandikwe kwa Mkurugenzi Mtendaji)

Namba ya Simu Ofisini kwa
Mkurugenzi:- +255 26 2961400
Fax Na. +255 26961401
E -mail: bahide@gmail.com



S. L. P 2993
DODOMA
TANZANIA

Kumb. Na, HW/S.10/15 VOL.II/141

13/04/2015

ST JOHN'S UNIVERSITY OF TANZANIA,
S.L.P. 47,
DODOMA.

**YAH: UTAFITI KUHUSU UHABA WA CHAKULA NA MBINU
WANAZOKABILIANA NAZO**

Kichwa cha habari hapo juu chahusika.

Rejca barua yako isiyokuwa na kumbukumbu namba ya tarehe 21/01/2015 yahusika.

Napenda kukufahamisha kuwa ombi la kufanya utafiti katika Halmashauri ya Wilaya ya Bahi vijiji vya Bahi Sokoni, Uhelela na Nagulo Bahi limekubaliwa atatakiwa kuripoti katika Kata husika kwa ajili ya kupata taarifa za utafiti huo.

Nakutakia kazi njema.

Kayombo F.F.

Kny: MKURUGENZI MTENDAJI (W)

BAHI MKURUGENZI MTENDAJI (W)
HALMASHAURI YA BAHU
S. L. P. 2993
DODOMA

Nakala: Afisa Mtendaji wa Kata ya Bahi- Mpokee na kumtambulisha.