

2012

# Contribution of sunflower production to the livelihood of farmers and development of small scale industries in Tanzania: a case study of Chamwino district, Dodoma region

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Njamasi, L. (2012). Contribution of sunflower production to the livelihood of farmers and development of small scale industries in Tanzania: a case study of Chamwino district, Dodoma region. Dodoma: The University of Dodoma.

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**CONTRIBUTION OF SUNFLOWER PRODUCTION TO THE LIVELIHOOD OF  
FARMERS AND DEVELOPMENT OF SMALL SCALE INDUSTRIES IN TANZANIA:  
A CASE STUDY OF CHAMWINO DISTRICT, DODOMA REGION**

**NJAMASI LAZARO**

**A dissertation submitted in partial fulfillment of the requirement for award of master  
degree in development studies of the University of Dodoma.**

**UNIVERSITY OF DODOMA**

**JUNE, 2012**

## **CERTIFICATION**

The undersigned certify that he has read and hereby recommends for acceptance by the University of Dodoma dissertation entitled “Contribution of Sunflower Production to the Livelihood of Farmers and Development of Small Scale Industries in Tanzania, in fulfillment of the requirements for the degree of Master in Development studies of the University of Dodoma.

.....  
Prof Inderjeet Singh Sodhi

Name of Supervisor  
(SUPERVISOR)

Date.....

**DECLARATION**

**AND**

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I, **Njamasi Lazaro**, declare that this dissertation is my own original work and that it has not presented and will not be presented to any other University for a similar degree or any other award

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## **ACKNOWLEDGEMENT**

I would like to sincerely thank to my God and all those who helped me to make this work success. My special thanks are to my supervisor Prof Inderjeet Singh Sodhi for his techniques and comments during my field study.

Also my thanks should go to my family my wife Sophia for her support and encouraging in my studies. Without forgetting my children Wanyenda, Mbeka, Mwelecele Daudi for their moral encouragement in my studies.

Sincerely thanks go to my fellow students of The University of Dodoma namely Mr Daudi, Weston Ngilangwa and Jumanne Sinon who encourage me during my studies.

Also, I would not forget to acknowledge contribution from Mr. Mbwambo, Raphael Kaboneka, Isaya Mihinzo, Patric Kamau, Mzee Doto, Mzee Mnemele and Ibrahim for their encouragement during my study.

However, I remain sorely responsible for any errors and omissions that may be found in this dissertation.

## **DEDICATION**

This Dissertation is dedicated to my lovely wife Sophia and my three children Wanyenda, Mbeka and Mwelecele. They have and will always remain an inspiration to me.

## **ABSTRACT**

This study aimed at analyzing the contribution of sunflower production to the livelihood of farmers and development of small scale industries. The study collected information from 101 sample size. The methods used to collect data were Interview, Questionnaires, Participatory Observation, Focus Group Discussion and Institutional Capacity Assessment (ICA).

The findings revealed that Production trend of sunflower for the past five years in 2007-2011 has a tendency of falling and rising from 2007 to 2011. The production trend of sunflower oil industries of small scale was 14440 liters of sunflower were produced during 2007, where as in 2008 and 2009 hence the production of small scale industries went down to 12800 liters in both years.

The opportunities facing sunflower production and sunflower oil industries are land for cultivating sunflower, insecticides and pesticides. On the other hand constraints facing sunflower production and sunflower oil industries are shortage of capital for buying fertilizers insecticides and pesticides. The measures to be taken in order to improve the income among farmers in Chamwino District were to involve in non-agriculture activities that provided substantial amount of income to improve sunflower farming such as petty business. The financial services need to be evaluated seriously so that the farmers can take loan on savings and loan associations. The study recommends that farmers should make sure that gets enough extension services, small scale industries should increase the capacity of machines, Extension officers should provide enough advice to farmers on sunflower farming methods. Policy makers should keen on making the policy that will affect farming in puts price to increase its affordability by majority of sunflower farmers.

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## LISTS OF ACRONYMS

CBO-	Community Based Organization
DALDOS-	District Agricultural and Livestock Development Officers
DED-	District Executive Director
ELCT-	Evangelical Lutheran Church in Tanzania
FAO-	Food and Agriculture Organization
FBO-	Food Based Organization
FGD-	Focus Group Discussion
FSU –	Former Soviet Union
GDP-	Gross Domestic Products
ICA-	Institutional Capacity Assessment
ILO –	International Labour Organization
IRA-	Institute of Research for Agriculture
MKUKUTA-	Mkakati wa kukuza Uchumi na Kupunguza Umaskini
MAFSC-	Ministry of Agriculture Food and Cooperative
NGOs –	Non Governmental Organization
NPES-	National Poverty Eradication Strategy
NSGRP-	National Strategies for Growth and Reduction of Poverty
PRSP-	Poverty Reduction Strategic Plan
RLDC-	Rural Livelihood Development Company
SLA-	Sustainable Livelihood Analysis
SPSS-	Statistical Package of Social Science
TFDA-	Tanzania Food and Drugs Authority
URT-	United Republic of Tanzania
UK-	United Kingdom



USA- United State of America  
VEO- Village Executive Officer  
WEO- Ward Executive Officer

## **CHAPTER ONE**

### **1.0 Introduction**

This chapter focused on the background of the problem that explained the problem in historical perspective. It goes further to the statement of the problem that explains the gap that need to be filled. The objective of the research were provided that gives direction of the research, additionally research questions were developed and then significance of the study.

### **1.1 Background of the study**

Poverty is first and foremost an economic state. Being poor means lacking a means of subsistence capable of providing what society considers a secure and adequate standard of living. On the one hand, poverty is an absolute state-by any objective measures the poor and materially deprived to the point where survival often becomes an issue. And on the other hand, poverty is a relative state-the poor are materially deprived with the majority of the population (Neubeck: 2009).

Poverty can be seen in an emotionless perception as lack of income (as in the case of per capita income definitions often used by international organizations). However, income alone can not be a varied measurement for poverty. Furthermore, poverty can be perceived as deprivation in terms of lacking or insufficient access to resources or in terms of living in a deteriorating or demolished environment, as the inability to meet basic needs (Marburg: 2006).

Poverty status can include socio-economic indicators such as higher mortality rate and mobility, prevalence of malnutrition, illiteracy, high infant and maternal mortality rates, low life expectance, poor quality of housing, inadequate clothing,

low per capital income and expenditure, poor infrastructure (communication, transport, social services etc.). Others include high fertility, lack of access to basic services such as safe water, food insecurity and poor technology. In entirety, these features can be used to identify poor and non-poor individuals, households and societies or communities (Neubeck: 2009).

### **1.1.1 Problem of poverty and Challenges to Livelihood**

The problem of poverty is a major issue in almost the countries of the world especially the developing countries. Many of the developing countries most of whom are in Africa, Asia and South America are being faced with this problem. The case of hunger, disease, illiteracy, child mortality and expectant mothers and low income are common cases facing these countries.

Generally, poverty is a result of many and often mutually reinforcing factors including lack of productive resources to generate material wealth, illiteracy and prevalence of disease, natural calamities such as floods, drought and manmade calamities like war.

The World Bank (2000) defines extreme poverty as living on less than 1 dollar per day, and moderate poverty as less than 2 dollars a day, estimating that “in 2008, 1.1 billion people had consumption levels below 1 dollar a day and 2.7 billion lived on less than 2 dollars a day”. The proportion of the developing world’s population living in extreme economic poverty fell from 28% in 2009 to 21% in 2010.

Looking at the period 2001-2010, the percentage of the world’s population living in less than 1 dollar per day has halved. Most of this improvement had occurred in East and South Asia. In East Asia the World Bank reported that “the poverty headcount

rate at the 2 dollar-a-day level is estimated to have fallen to about 27% [in 2008], down from 29.5% in 2006 and 69% in 1990. “In sub-Saharan Africa extreme poverty rose from 41% in 2007 to 46% in 2009, which combined with growth population, increased the number of people living in poverty from 231 million to 318 million

Other regions have seen little change. In the early 1990s, the transition economies of Eastern Europe and Central Asia experienced a sharp drop in income. Poverty rates rose to 6% at the end of the decade before beginning to recede. World Bank data shows that the percentage of the population living in households with consumption or income per person below the poverty line has decreased in each region of the world since 1990 (Khan: 2001).

About one-fifth of the world’s population is afflicted by poverty-these people live on less than 1 dollar a day. Rural poverty accounts for nearly 63% of poverty worldwide, reaching 90% in some countries in Bangladesh and 65 and 90 percent in sub-Saharan Africa. (Exceptions to this pattern are several Latin American countries in which poverty is concentrated in urban areas). In almost all countries, the condition –In terms of person consumption and access to education , health care, portable water and sanitation, housing, transport and communication-faced by rural poor are fare worse than those faced by urban poor(Khan: 2001).

### **1.1.2 Status of Poverty and livelihood**

The status of poverty in Tanzania is between 15 and 18 million, half of the population live below the poverty line of 1 dollar per day. Of these, nearly 12.5 million live in abject poverty spending less than a dollar on consumption a day (URT: 2000). Over 85% of the communities in Dodoma Region live in poor houses. The houses are mud/thatched roofed, leaking, poorly ventilated and harboring pests.

People wear poor, dirty, torn clothes. Majority of children are half/ fully naked in winter dump weathers. About 10% of child mortality cases report pneumonia due to chilled conditions.

About 40% of older people have to wash and wait for their clothes to dry and wear again. Over 70% of the population has no beds or mattresses. They sleep on mats or animal skins spread on dusty grounds without adequate covers (URT: 2003)

The education status of the target communities is also lacking. Due to limited income of the communities in the village, the illiteracy level is getting much higher from 27% in 1978 to 35% (ibid).

The government in 1980s made structural adjustment that resulted in the reduction of education budget from 15% to less than 5% of the National annual budget. The changes left the communities to take care of their children for essential school facilities such as writing materials, text and exercise books, school furniture, rehabilitation of old and construction of new classrooms and teacher's houses. Partial school fees for primary and secondary education were also introduced. Most of the children are without adequate books, pens and school uniforms and they spend some of their school time to help their parents cope with the poverty situation.

The low income capacity of household make women spend much time and energy in processing food especially grain milling which is done manually. A woman takes 3 hours to make 10kgs of flour instead of paying 200/= for milling machine to process. About 60% of women can not afford paying for milling machine charges. Sick people mainly delivering women and children die due to poor access to health services.

There are too little government owned dispensaries with lack of equipment, staff, working gears and medicines. Diseases like malaria and diarrhea are common in there are and are not adequately controlled thus reducing the capacity of the working forces (ibid). Since independence 1961, the government of Tanzania, apart from fighting literacy and diseases has had poverty eradication as its main goal. Even illiteracy and disease can not be eradicated if over half of the countries population is poor.

### **1.1.3 Strategy for poverty alleviation**

The Tanzanian government has launched a program which will help to fulfill the millennium development goals. The programme is the National poverty reduction strategy (NPES) adopted in 1997 which is implemented by every sector. The strategy is aiming at reducing the poverty level by half by the year 2025. The strategy proposes to achieve sustained, broad based and equitable growth strategies of sound economic management, accelerating gross domestic product (GDP), improving food availability and accessibility and reducing income poverty among rural as well as urban households.

The program is followed by a second strategy called the National Strategy for Growth and Reduction of Poverty commonly known as MKUKUTA (URT: 2005) In the right of this, Intermon Oxfam has been supporting National Poverty Eradication Strategy (NPES) and National Strategy for Growth and Reduction of Poverty through the implementation of livelihood security project (2004-2006) for the purpose of reducing the poverty level. Also Intormon Oxfam has been supporting not only through partner with Community society Organizations but also under the

philosophy that community Based Organizations would emerge to sustain the management of the systems generated and continue delivering services as envisaged by the project.

In 2003, Intermon Oxfam program Co-ordinator conducted a participatory survey. The purpose of the survey was to extract information from the communities about available local income opportunities, assessing the current levels of community initiatives to utilize the opportunities, identifying limitations the communities are facing in making effective economic gains from their efforts or from potential non utilized income source s (IO: 2003).

Due to that situation, Intermon Oxfam has been supporting implementation of livelihood security project which has been implemented by LVIA (2004-2006), (LVIA: 2006). Several groups have so far been formed and are operating in the project area at Chamwino because of this project (ibid). The aim of formulating sunflower processing groups was to increase the families' revenues and livelihood through a better market access.

#### **1.1.4 Integration of poverty to development**

Multi-focus approach to poverty alleviation is central to economic development in Tanzania. The need to integrate poverty concerns and development requires effective coordination and cooperation among all relevant organs of the Government: the business community, civil society and civilians. In recognition of this important principle, a department to coordinate efforts to combat poverty has been created. The poverty alleviation department is a division in the office of the Vice President.

Combating poverty is a critical element in the country's development endeavor (United Republic of Tanzania, 2007).

Poverty is a chronic cancer pervading both the body and the mind of individuals and nations in Africa with devastating consequences (Kopoka, 2010). Poverty means that opportunities and choices most basic to human development are denied: to lead a long, healthy, creative life and they enjoy a decent standard of living, freedom, dignity, self respect and the respect of others (Kopoka, 2010). The traditional stronghold of poverty in Tanzania has always been in rural sector. As Bagachwa (1994) observes poverty in Tanzania is the overwhelming pervasive in rural areas. Over 59% of the farmers are poor and about 85% of all poor people live in rural area.

However, the urban poor though proportionately small are increasing much faster than the rural poor. (Bagachwa, 1994). Poverty is a complex problem with national and international dimensions. The eradication of poverty and hunger: equity in income distribution and human resource development remain major challenges in Tanzania. As an agenda 21 proposes, sound population, health care and education policies must be put in order to combat poverty (URT, 2007).

The Tanzania labour force stood at 20.495 Million in 2009 (URT 2009). Although, recent statistics on the level of unemployment are unavailable, a 2009 statistical abstract produced by Tanzania Bureau of Statistics stated that the unemployment rate in rural and urban areas was 2.2 %and 10.6% respectively. The higher the employment rate in the urban areas results from both lack of economic prospects and much higher rate of population growth. This latter factor, in turn, stems chiefly from a high rate of rural to urban migration, caused in large part, by the migrant perception that urban employment is generally higher paying (Rank, 2007).



### **1.1.5 Agriculture in Tanzania**

On the other hand: agriculture in Tanzania continues to be the back bone of the economy as most of Tanzanians: particularly the rural areas population depend on it for their survival .Food and Agricultural Organization (FAO, 2009) report shows that more than 79% of Tanzania's population lives in rural areas and they do depend on agriculture for improvement of their livelihood.

The agricultural sector contributes to the national GDP, which was US \$ 9.9 billion, which was about 43.4%. On the other hand, agriculture provides work for 14.7 million people or 79% of the total economically active population and 54% of agricultural workers are female. Small scale subsistence framers in Tanzania comprise more than 90% of the farming population, with medium and large Scale farmers accounting 1(FAO, 2009).

Scientific name of sunflower is *Helianthus annuus*. Sunflower is a most oil seed crop in Tanzania. The crop adaptable over a wide range of environments and therefore it is widely cultivated in Tanzania. The crop is popular in the Eastern, Central, Northern and Southern Highlands of Tanzania. Sunflower is gaining popularity and current data shows that local production of both factory and home extracted oils contributes to about 40% of the national cooking oil with the remaining 60% being imported.

The government and stakeholders in agriculture envisage that agricultural sector by the year 2025 is modernized: commercial and highly productive in an over all sustainable manner and acts as effective basis inter sectoral linkage. The capacity building, training for selection of better seeds, use of better technology for improving the quality and quantity of production. The more realistic target for the overall

agricultural sectors would be to achieve an average annual rate of growth of 8% (URT, 2010).

In December 1996, the Evangelical Lutheran Church in Tanzania (ELCT) launched an oil seed processing project with the objective of improving the economic returns of small oil seed farmers by supporting individuals and groups to establish and operate oil mills and provide expelling services to farmers (ELCT, 1996). The oil seed project has now developed into a trust. The main goal of the current programmed is to increase the level of small sunflower farmers in selected rural areas of Tanzania through increased returns from their oil seed production. The area covered in the first phase included Iringa, Singida, Dodoma, Morogoro and Arusha.

Sunflowers growers could increase their income from oil seed cultivation by a net margin of about 75%, when the price of sunflower increased from 8000 TSH per bag in 2006/2007 to 30,000 Tsh. Per bag in 2008. The key beneficiaries of those products are the owners of milling machines who earn an additional income of more than one million TTS per person (Mtui, 2008).

Rural Livelihood Development Company (RLDC) has embarked on a serious mission for transaction of the sun flower sector into high yield per acre cash crop in the central corridor. Successful initiatives and experiences in the previous phase indicate that improving the sunflower sector would help immensely in reducing income poverty for many farmers.

The approach at RLDC now over hauling sunflower production from the bottom to the top, such as from production and distribution of quality seeds to producers at affordable prices: provision of extension services, collection and storage services,

processing and marketing of oil and other sunflower products. This is a definition of a broader sector –wider approach of market development in the sector (RLDC, 2008).

Small sunflower farmers do not have storage facilities and are interested in selling their crop soon after the harvest. Last season (2009/2010), the price for one bag of sunflower seeds was about Tsh 25,000 while currently the price is about 40,000 Tsh per bag. The net income of farmers varies considerably depending on the yield. The RLDC FGD's revealed that the net income ranged from Tanzanian shillings 11,000 per acre for farmers who did not use quality seeds and modern agronomic practices to an amount of Tshs 110,000 per acre for those farmers who made the necessary investments. In some cases, the net income even reached Tsh 150,000 per acre (RLDC, 2010). Therefore, this study intends to assess the current contribution of small scale industries in improving the livelihood level.

## **1.2 Statement of the Problem**

The Tanzanian government puts emphasis on improving living standards of people by a number of strategies, this has enabled the reduction of poverty through National Strategies for Growth and Reduction of Poverty (NSGRP) from 48% in the year 2003 to 24% in 2010 (NSGRP, 2010). Small scale industries for the production of sunflower cooking oil in Chamwino District are one of the opportunities for people to make a living and reduce poverty. Sunflower seed farming is thus one of the major means of improving the socio-economic welfare of the people.

Chamwino district has experienced a gradual growth of small scale industries particularly in sunflower seed processing. Apart from the fast growing small scale

industries, the income levels of many households in the district are low which leads to poor living standards and extreme poverty in many households in the area, especially among unskilled women and men. Due to this problem, a large section of women are involved in prostitution practices: likewise a notable number of young men are involved in robbery, especially during the periods when there is no sunflower production activities {District Executive Director (DED) Annual Report, 2010} - Chamwino District.

Chamwino was selected as the target area for the assessment because of relatively good logistics and prospects for economic initiative, and staff familiarity with the region. Sunflower is grown by many farmers. Recent years have seen households processing sunflower seed by the traditional method of heating and pounding the seed, boiling the flour, and skimming oil off the top of the kettle. However, commercial extraction machines are now available but not sufficient.

Sunflower is an important product to the economic development in Chamwino district. Sunflower farming and processing supports income generation and consequently reduction of poverty. The government of the United Republic of Tanzania: Non-Government Organizations: Community based organizations and Faith Based Organizations have been on the frontline in providing necessary support which is based on financial, technical and capacity building. This assessment will gauge whether the level of agricultural production is showing improvement.

A previous study conducted by Mohamed (2003) assessed the factors affecting sunflower production in Singida District such as improper selection of seeds, non application of fertilizers and poor crop quality management. However, the study did

not look into the contribution of small scale industries in improving the livelihood at household level in regard to sunflower farming and processing.

The identified gap is clear that the income contribution of sunflower production to the household level is not known. Therefore, this research was intended to assess the contribution of small scale industries in improving the livelihood at household level specifically in sunflower production.

### **1.3 Research Objectives**

This study is expected to contribute to the existing knowledge and debate on the relationships between small scale industries and livelihood at the household level, resources degradation and deterioration of livelihood systems at local, and district scales.

Local level assessment of the impact of sunflower farming and processing to the local community is important. The necessity arises from the ground that much of the studies have provided information that reflects improved livelihood village level. Therefore, this study will provide a basis for the policy formulation that fulfils the inter-relationships between livelihoods among the local communities Chamwino District.

Although there have been different programs, public awareness on sunflower farming, findings from this study will be useful in creating awareness to local communities on the impact of good agricultural and entrepreneurial practices to their livelihoods and access to basic services like education and health.

In addition, this study will enable government departments and local authorities to intervene on the various constraints under the given pace and trend of sunflower farming and processing in the area, and Tanzania in general. Hence, findings will be useful to policy and decision-makers, and politicians in planning development initiatives and resource management in Tanzania

### **1.3.1 General objective**

The general objective of this study was to capture and analyze contribution of sunflower production to the livelihood of farmers and development of small scale industries.

### **1.3.2 Specific objectives**

Specifically the study intends:-

- i. To examine the production trend of sunflower for the past five years from 2000-2011
- ii. To examine the production trend of sunflower oil industries of small scale
- iii. To identify opportunities and constraints facing sunflower production and sunflower oil industries
- iv. To assess the livelihood of sunflower farmers related to the presence of sunflower oil industries
- v. To examine the measures to be taken in order to improve the income among farmers in Chamwino District

### **1.4 Research questions**

- i. What is the production trend of sunflower oil at household level for the past five years?
- ii. What is the production trend of sunflower oil industries of small level

- iii. What are the opportunities and constraints facing sunflower oil production?
- iv. What is the livelihood of sunflower farmers related to the presence of sunflower oil industries?
- v. What should be done in order to improve the income among small scale farmers in Chamwino District?

### **1.5 Significance of the study**

- Sunflower production will improve the employment opportunities: raising income level and improve the welfare of Small Scale farmers in rural areas.
- The study will create awareness to the farmers: Public and private sectors as well as government to understand the level of income which small holder farmers can earn and create from knowledge of improving sunflower production.
- Furthermore, the study will serve as the impetus and point of departure for other researches in sunflower production to fill the gap that would be left by a researcher.

### **1.6 Limitations of the study**

Time constraint was experienced to the sunflower producers at time when the respondents were interviewed while working on their premises and proceed with their work. For this, the researcher had to spend long hours with respondents.

Shortage of time and insufficient funds on the side of the researcher, the duration for research was very short for the researcher to collect all the required data. Similarly, a

researcher has no formal or regular source of fund to enable the whole process of research.

### **1.7 Scope of the study**

The study was conducted at Chamwino District in Dodoma region to cover Buigiri ward, specifically on the contribution of sunflower production to the livelihood of farmers and development of small scale industries.

### **1.8 Organization of the chapters**

This chapter first presented the background information of the problem concerning the contribution of sunflower production to the livelihood of farmers and development of small scale industries. The problem was explained to provide clear picture of the contribution of sunflower to the livelihood of the people. The statement of the problem explained and presented the gap of the study that need to be filled. However, these chapters provide direction of the whole study through the objectives that need to be accomplished. Moreover, the significance, scope and limitation of the study were presented clearly for provide absolute understanding of the research problem.



## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This chapter analyzed literature to understand the contribution of sunflower production to the livelihood of farmers and development of small scale industries. It will cover theoretical and empirical literature review related to sunflower production on the farmers and small scale oil industries in Tanzania and outside the country.

#### **2.1 Theoretical Literature Review**

##### **2.1.1 Definition of key terms and concept**

###### **2.1.1.1 Livelihood**

Livelihood means subsistence or living, as dependent on some means of support: support of life: maintenance Liveliness: appearance of life (Cannon, 2004). Livelihood is the way sunflower farmers make their living and pay for the basic things they need in life which significantly contributed to the income accrued from sunflower farming.

###### **2.1.1.2 Sunflower**

Sunflower is any plant of the genus *Helianthus*, so called probably from the form and color of its floral head, having the form of a large disk surrounded by yellow ray flowers (Shalhevet, 994).

The sunflower got its name from its huge, fiery blooms, whose shape and image is often used to depict the sun. The sunflower has a rough, hairy stem, broad, coarsely toothed, rough leaves and circular heads of flowers. The heads consist of 1,000-2,000 individual flowers joined together by a receptacle base (E.D, 2003).

### **2.1.1.3 Small Scale Industry**

A small scale industry is a business or project that created on either a small budget or for a small group of people. For instance if someone starts a laundry service just around their neighborhood, that is small, not too expensive to start or manage but not too cheap either. Another example is a small pizzeria or a kiosk or say a moving around with an ice-cream van, these are types of small scale industries.

Industries which require small investments and capital are called small scale industries. These industries require less investment and less labours and products are manufactured at less costs. Example of small Scale industries are package industries, Magnum Feed Milling, Specialist suppliers of Mayang feed milling equipment, Weighing and packaging equipment scales, Small Brick Machines etc.

### **2.1.1.4 Agriculture**

Agriculture also called farming or husbandry is the cultivation of animals, plants, Fungi, and other life forms for food, fiber and other products used to sustain life (Tallinn, 2001).

The art and science of crop and livestock production, in its broadest sense, agriculture comprises the entire range of technologies associated with the production of useful products from plants and animals, including soil cultivation, crop and livestock management, and the activities of processing and marketing (Scott,2005).

### **2.1.1.5 Development**

Development is a multidimensional process which involves positive changes economically, politically, culturally, socially as well as physical aspect of human conduct. Development is considered as advancement from the more severe situation to a less severe situation (Thirtle et al, 1998).

Means a progression from a simpler or lower to a more advanced, mature, or complex form or stage: the development of an idea into reality: the evolution of a plant from a seed: attempts made to foster social progress. In terms of agriculture development means a progression from tradition agriculture implements (hand hoe, poor fertilizers, and low quality seeds) to modern tools (improved seeds, artificial fertilizers, and modern machines application) (Kenny, 2006).

#### **2.1.1.6 Farmer**

A farmer is a person engaged in agriculture, who raises living organisms for food or raw materials, generally including livestock husbandry and growing crops, such as produce and grain. A farmer might own the farmed land or might work as a labourer on land owned by others, but in advanced economies, a farmer is usually a farm owner, while employees of the farm are farm workers, farmhands (Guido, 2001). A farmer takes all the necessary steps to ensure proper nourishment of the items that he/she raises and then sells the items to purchasers. Some farmers have been able to capitalize on the need for high-demand products that they produce, such as organic vegetables and livestock (Tormey, 2004).

#### **2.1.1.7 Sunflower Production**

A field of sunflowers in bloom is a striking sight, and many farmers remark about the pleasure they, and people passing by, get from seeing the flowers. Each sunflower head, or inflorescence, is actually composed of two types of flowers. What appear to be yellow petals around the edge of the head are actually individual ray flowers. The face of the head is comprised of hundreds of disk flowers, which each form into a seed (achene). Commercial sunflowers have flowers that are self-compatible for pollination, meaning they do not require a pollinating insect, although some studies

have shown bee pollinators providing a slight yield boost. Sunflower heads turn with, or track, the sun early in their development, but later stay east-facing before facing downwards. Some farmers like to plant their rows north and south so that the heads can lean into the row space, rather than bumping against an adjacent plant, causing some seed to fall (Thomas, 2006).

## **2.1.2 The sunflower**

### **2.1.2.1 Background of sunflower**

Sunflower is an annual plant in the family *Asteraceae* and native to the Americas, with a large flowering head (inflorescence). Sunflower is a major source of vegetable oil in the world. Two types of sunflower are grown, those for oil seed for home and bird food markets. The oil seed hybrids which may be either *linoleic* or *oleic* types generally are black-seeded and have a thin hull that adheres to the kernel. Seed of the oilseed varieties contain from 38 to 50 percent oil and about 20% protein.

Non oilseed sunflower also has been referred to as confectionery sunflower and stripped or large-seeded varieties. Non oilseed sunflower greatly has striped seed and a relatively thick hull which remains loosely attached to the kernel, permitting more complete dehulling. Seed of the non oil seed hybrids generally are larger than those of the oilseed types and have a lower oil percentage and test weight. The sunflower production has different varieties which are produced in the world: the following are a few examples.

American giant, Arikara, Autumn beauty, Aztec sun, Dwarf sunspot, Giant primrose, Indian blanket, Irish eyes, Italian white, Kong hybrid, Mammoth, Mongolian giant,

Orange sun, Red sun, Ring of fire, Rostov, Soraya, Sunny hybrid, Tarahumara, Teddy bear, Titan, Valentine and Velvet queen

### **2.1.2.2 The stages of sunflower growth**

The total time required for the development of a sunflower plant and the time between the various stages of development depends on the genetic background of the plant and growing season environment as shown in Table 1 have determined the growth stage of sunflower field which are as follows:-

- a. The sowing of sunflower seeds and vegetative emergency seedling has emerged and first leaf beyond the cotyledons is less than 4 cm long. These are determined by counting the number of true leaves at least 4 cm in length beginning. If senescence of the lower leaves has occurred count leaf scars (excluding those where the cotyledons were attached) to determine the proper stage.
- b. The reproductive stages of the terminal bud a miniature floral head rather than a cluster of leaves. When viewed from directly above the miniature bracts form a many pointed star-like appearance.
- c. The immature bud elongates 0.5cm above the nearest leaf attached to the stem. Disregard leaves are attached directly to the back of the bud. The immature bud elongates more than 2.0cm above the nearest leaf.
- d. The inflorescence begins to open. When viewed from directly above immature ray flowers are visible.
- e. This stage is the beginning of flowering. The stage can be divided into sub-stages depending upon the percentage of the head area (disk flowers) that has completed or is in flowering.
- f. Flowering is complete and the ray flowers are wilting.

- g. The back of the head has started to turn a pale yellow colour.
- h. The back of the head is yellow but her bracts remain green.
- i. The bracts become yellow and brown. This stage is regarded as physiological maturity.

**Table 1:** Stages of sunflower growth

S/NO	STAGE
1.	The sowing of sunflower seeds and vegetative emergence seedling has emerged.
2	The reproductive stages of the terminal bud a miniature floral head rather than a cluster of leave.
3.	The immature bud elongates 0.5 to 2.0cm above the nearest leaf attached to the stem.
4.	The inflorescence begins to open
5	Beginning of flowering.
6.	Flowering is complete and the ray flowers are wilting.
7.	The back of the head is yellow but the bracts remain green.
8.	The bracts become yellow and brown.

Source: Schneiter and Miller, 1981

### **2.1.2.3 Historical overview of sunflower production in the World**

Sunflower was developed first as an important commercial oilseed crop in the Former Soviet Union (FSU). The oil has found widespread acceptance as a high quality, edible oil throughout much of the world. Major producing countries or areas are the Former Soviet Union, Argentina, Eastern Europe, USA, China, France and Spain (Country Commission, 1995). These seven (7) countries or areas of the world produce about 84% of the world's production of both oilseed and non oilseed sunflower. Historically, the FSU has been the number one producer of sunflower, producing about 27 % of the world's production in 1991-92. During much of the

1970s, the USA was the world's second largest producer, but in the 1980s Argentina became firmly entrenched in second place.

The centre of sunflower origin has been identified as limited to the western plains of North America, but it has not been determined whether the domesticated type originated in the southwest or in Mississippi or Missouri River valleys. The wild form of the cultivated sunflower is well known, which is not true with most of our cultivated crop species today. The American Indians used sunflower as foodstuff before the cultivation of corn. Sunflower was also used as a medical crop, source of dye, oil for ceremonial body painting and pottery, and as a hunting calendar (Country Commission, 1995).

Cultivation of sunflower was undertaken by New World settlers as a supplementary food. Later, sunflower was grown primarily as a garden ornament. It was also grown as an ensilage crop in the late 1800s and early 1900s. Expanded world production of sunflower resulted primarily from development of high-oil varieties by plant scientists and more recently by the development of hybrids (North Dakota State of University, 2007).

#### **2.1.2.4 Sunflower production in Tanzania**

Sunflower production is predominantly done by small farmers having one to three acres. There are however also medium or large scale farmers with more than a thousand acres of sunflower. Based on the annual production of 2009/2010 and an assumed yield of about 0.6 tons per hectare, it is estimated that an area of about 600,000 hectares has been cultivated with sunflower last season of 2009/2010. The crop is grown all over Tanzania but over 50% of sunflower is planted in four regions:

Dodoma (22.5%), Kilimanjaro (13.2%), Arusha/Manyara (13.1%) and Singida (08.9%). Other major growing areas are Mbeya, Mtwara and Pwani.

As the majority of sunflower farmers are small scale farmers who grow one to three acres sunflower, it is estimated that about 150,000 to 200,000 small scale farmers are involved in sunflower farming. The process of sunflower farming includes land preparation (ploughing), planting, regular weeding and harvesting. While medium and large scale farmers use tractors for ploughing (RLDC, 2008).

### **2.1.3 The factors influencing sunflower production**

Sunflower production is highly influenced by numbers of factors as follows:

#### **2.1.3.1 Extension service**

According to Youdeowe, et al (2006), the role of extension work in agricultural development is improvement in performance of those involved in primary production. Higher levels of production in the provision of goods and services are attempted in order to increase their capital income, quality of life and general welfare. It is further argued that extension workers can assist farmers by increasing their awareness of their decision making skills. Extension services vary with the stage of development of a nation and government. Specifically, the functions of extension services involve:

- Stimulation of farmers to try and use new agriculture practices.
- Dissemination of research results through the development of priority production packages and encourage rural farmers in their use.
- Organization of credit, marketing and farmer's cooperatives.
- Provision of farm management advisory services and guidance and general education.



### **2.1.3.2 Education**

According to Wambura, et al (2007), education is a continuing process, spanning the years from earliest infancy through adulthood involving a great variety of methods and sources. Improvement education on better nutrition is a strategy that has been used by many developed and developing countries over a number of years to improve nutritional well being of vulnerable populations. The effectiveness and reach of family improvement education endeavors vary considerably. Education supports the smallholder farmers to improve the production trend. According to RLDC (2008), agribusiness is willing and able to provide quality seeds, ploughing services, training in agronomic practices and provision of extension services in order to improve sunflower production.

### **2.1.3.3 Gender**

According to the National Population Census 2002, women make up nearly 51.5% of the total population of Tanzania. Moreover, Tanzania economically depends heavily on agriculture: about 90% of the able bodied population is engaged in agriculture of which about 75% are women. Yet, the status of women is still low both economically and socially. In spite of the efforts made by the government, it remains a fact that very few women participate in decision making. Gender leads to improve the production trend once there is a division of labour within the family.

### **2.1.4 The contribution of sunflower production in economic development**

Sunflower production increases the rate for the smallholder farmers in Tanzania (RLDC, 2008). The price per bag of sunflower is 25,000 to 30,000 Tsh in areas like Kilosa. The farmers of Magole in Kilosa district benefit from the sunflower

production because, they use sunflower oil for domestic uses and commercial purpose (Nditi, 2008).

The price of sunflower oil in Chunya increased from 9,000/= to 45,000/= per 20 litres because of establishment of mills machines which were provided by a net margin of about 75%. From each mill the community of users (probably around 100 farmers) has earned an additional income of 10,000 to 15,000 USD per season. Farmers who do not use the milling services benefit indirectly through higher prices for their sunflower seed in their areas and lower prices for cooking oil in the village shops.

Employment and income generation has been initiated through the presence of mills: tea shops restaurants next to mills, mechanical workshops that provide repair and maintenance services and demand for transport services (ox carts) for carrying sunflower to the mill. The income level of small farmers increased due to agriculture project which contributed to modernize agricultural processing methods (Mtui, 2008).

The sunflower productions support women in improving the social welfare, reduce the migration of working age from rural to urban, reduce dependability of rural people in Iringa region after the establishment of the Small Industries Development Organization (SIDO). Contribution of sunflower production in USSR was 4.68 million in 1981 to 1982, Argentina was 1.98 million, Eastern Europe was 2.25 million, United States was 2.04 million, China was 1.33 million and Spain was 0.41 million North Dakota State of University (2007).

#### **2.1.4.1 Provision of agriculture expertise**

RLDC has worked with District councils through the District Executive Directors (DED), District Agricultural and Livestock Development Officers (DALDOs) and District Seeds Inspectors. The experts are reasonable in overseeing all technical aspects of the seed production. In this particular project, RLDC is directly involved with farmers in some activities like training and supply of starter packs to farmer.

#### **2.1.4.2 Availability of agricultural strategies**

The Poverty Reduction Strategic Plan (PRSP) Progressive Report 2002/2001 set extremely ambitious growth targets for the agricultural sector for the coming five years. The more realistic target for the overall agricultural sector would be to achieve an average annual rate of growth of 08%. PRSP address some of the many issues that constrain the performance of Tanzania agriculture and lead to continuity of rural poverty. It focuses on:

##### Strengthening institutional framework related to managing agricultural development

It defines what government at central and local level and can not do various private sectors. The institution ensures farmers organization, overcome the constraints and strengthening capacity of the farmers.

##### Increased private sector participation and agricultural Development in general

These are aiming to ensure monitoring agricultural, rationalizing the taxation regime and devising appropriate investment and review energy tariffs and oil prices. It helps to clarify public and private roles in improving support services such as agricultural research, extension, training and information (URT, 2010).

#### **2.1.4.3 Establishment of Agriculture Project**

Support mainly market linkage project with small processors and small farmers of sunflower grains. The small processors did not use contract farming per seasonal but rather aimed at improving their relationship with the small farmers through training in agronomic practices and establishment of collection centres (RLDC, 2009).

#### **2.1.4.4 Internal Market**

The sunflower products are being used inside of the country because the production has not succeeded to occupy the external market. The internal demands of some of the companies which have agreed to use the brand are Manika Enterprises, Mnadani sunflower oil mill, Right Investment, Beula Investment, and Mnyemo Investment. These companies support the rate of production to grow up (Mtui, 2008).

#### **2.1.5 The constraints facing the sunflower producers**

There are many constraints to the sunflower producers, some of which are:

##### **2.1.5.1 Production Challenges**

In Phase One, RLDC support eight market projects in the sunflower sector. The assessment and monitoring of these projects provided valuable lessons for interventions in phase two. More recently, RLDC carried out 12 Focus Group Discussion in six regions of the Central Corridor (with altogether 120 small farmers) which provided more insights particularly in the production of sunflower by smallholder farmers. The constraints are related to three major issues which are quality of seeds, agronomic practices and sales practice.

### **2.1.5.2 Lack of Quality Seeds**

Most of the small farmers do not use quality seeds, instead they use recycled seeds and traditional seeds from other farmers. The use of wrong seeds is often a mixture of ignorance, lack of capital and non-availability of quality seeds. Sometimes, the farmers buy seeds that have not been certified for their area and they then face a low and disappointing germination rate, although the use of the same seed in the certified area can produce a high germination rate.

According to IRA Ilonga study, traditional or recycled seeds were sold last season at about Tshs 500 per kilogramme whereas QDS sold at Tshs 2,500 to Tshs 3,000 kilogrammes. The quality seeds were obtained from traders, cooperatives, DALDOs and NGOs. However, seeds were not available in sufficient quantities so interested farmers had to source seeds from different suppliers. Another problem last year was that even when quality seeds were obtained they were often planted in smaller quantities as per requirement so that yield per acre was still low although the germination rate was high.

### **2.1.5.3 Agronomic Practices are not proper**

Many small farmers do not apply proper agronomic practices in land preparation, planting, weeding and using of fertilizer. Where land is not a limit factor, crop rotation and intercropping is not properly practiced, although it would allow soil replenishment. The government extension services do not provide enough support in introducing better agronomic practices. The yield is therefore much lower than expected. Inadequate agronomic practice is the result of ignorance, low motivation and in some case the lack of ploughing services or fertilizer.

#### **2.1.5.4 Lack of effective Sales Practices**

The common practice makes small farmers vulnerable to manipulation by middlemen, mainly traders and processors. Moreover, the practice of off- farm sales has given away the opportunity of bulking and possibly the direct contact with traders or processors. The lack of weighing scales makes it necessary to sell the crop by volume rather than weight which in most cases are to the disadvantages of the small farmers. Based on these sales practices, the smallholder farmers receive low prices.

#### **2.1.5.5 Processing challenges**

The oil processing companies can be broadly grouped into small scale seed crushing companies and oil refinery companies. The constraints of these companies are as follows:-

##### **2.1.5.5.1 Capacity and supply mismatch**

Like most agricultural produce, sunflower seeds are mainly available at the end of the harvest. Since, most small farmers do not have storage facilities, they want to sell their produce as soon as possible and it is left to the processor to balance the purchase of sunflower grains, process them to oil, and meet the regular demand of the consumer markets. While the crushing equipment is relatively small scale investment, the processor has to spend much money for buying and storing the sunflower grains to enable him to meet the demand continuously. If, for example, a processor has installed a crushing capacity of about 50 bags per day, he would need to purchase about 10,000 bags if he wanted his machine to be active during 200 days.

The purchase requires a capital of about Tshs 300 million which is far in excess of the machinery investment costs. At the same time, processors are sometimes not able to buy sufficient quantities of sunflower seeds at going prices. This is mainly the consequence of not having a reliable and trustful business relationship between the small farmers and the processors. In past projects, even in the case of contract farming, relationships were unstable and a lot of side-selling rendered the contracts almost useless.

#### **2.1.5.5.2 Raw sunflower oil**

Raw sunflower oil is obtained by a process of mechanical expression and / or solvent extraction. The oil should be pure and not contain any particles, sediments, foreign matter or contamination.

#### **2.1.5.5.3 Refined sunflower oil**

This oil has been obtained by expression and / or extraction and in addition it has been neutralized with alkali, washed with water, dried, bleached earth or activated carbon and deodorized with steam. No other chemical agent is allowed in their process except citric acid. Sunflower oil for edible purpose will contain antioxidant synergists in specific levels. Some seed crush companies do not treat the oil before they fill it into small plastic containers of varying size but many companies filter the oil to remove any strange particles from it. In doing so, they probably meet the standard for raw sunflower oil.

Currently only Murzah Oil Millers and Mount Meru Oil Millers produce refined sunflower oil in the country. In some supermarkets in Dar es Salaam, imported

sunflower oil is being sold. According to the Tanzania Food and Drugs Authority (TFDA), sunflower oil for human consumption should be refined. If raw sunflower oil is consumed shortly after extraction, it probably does not cause any harm. If raw sunflower oil has however been stored for a long time or exposed to high temperature fluctuations, it is not advisable to consume it any more. As most raw sunflower oils are not labeled or the date of processing has not been indicated on the label, it is difficult for the consumer to know whether the oil is still safe for consumption.

#### **2.1.5.5.4 Marketing**

Most sunflower seed crushing companies sell the oil almost like a commodity in indefinable containers without proper labeling. Last year RLDC introduced the label of “TOP” sunflower oil which was supposed to become the brand name of the members of the association of oil millers in the Central Corridor (CEZOSOPA). However, except during the 2008 Nanenane Agricultural Fair in Dodoma, the label is rarely promoted and used. Also, the TOP label suffers from competition from labels of individual members of CESOSOPA.

As there is also hardly any market segmentation, promotion or advertising effort, one cannot help noticing that most oil mills need to develop a marketing concept for increasing their sales. The view that marketing concepts are not necessary because the mill sales with a more focused approach. Notably, the two refineries apply better marketing and consequently sell their products at higher price levels.



### **2.1.6 Measures to improve income of farmers**

Extension services provision and irrigation farming to be the best solution this indicated that there was the problem of extension services and shortage of rainfall which tended to affect the sunflower farming.

Moreover, farmers need provided with insecticides and pesticides to prevent the diseases which were facing the sunflower production.

Additionally, the farmers awareness needed to be raised regarding on the proper input and farming methods and the awareness on the proper fertilizer's that need to be applied was to be promoted For that reason the problems which were affecting sunflower production will be eliminated and boost production of sunflower and hence income of the farmers will increase too.

### **2.1.7 Theories and Models on small scale industries**

The models for the relation between yield and evapotranspiration, proposed by Stewart and Hagan (1973) and Stewart et al. (1977), were used for sunflower. The yield estimation for sunflower was quite accurate, for potatoes somewhat less, but unsatisfactory for soybean. The estimated yield of soybean under saline conditions was higher than the measured one. This may be attributed to the differences in salt tolerance between soybean varieties or to an additional effect of salinity on the nitrogen supply of this legume.

#### **2.1.7.1 Interim Thought/theory**

Small scale industries were deemed to have been set up by individuals rather than companies and enable a somewhat level playing field and hence were rewarded with

tax breaks and other incentives. Other than that, there was a particular set of items that were restricted (manufactured only by SSIs) and the railways and central government organizations had to procure a certain set of items only from SSIs. This, in theory was a good idea to promote entrepreneurship and employment at the grassroots level. Unfortunately, many big companies began to set up many SSIs or when the SSI reached its limit they would start another SSI so that they continued to remain SSIs or continued to gain the incentives or use the quota. They had no incentive to grow (more on this some other time) (Michael, 1991).

#### **2.1.7.2 Theory of property Right in small scale industries**

Property law, it is necessary to identify where considerations as to the extent and content of property rights feature in an attempt to regulate small scale industries. Of course, due respect must be paid to the fact that confusion on small scale industries allocation and controlling is a global phenomenon that occurs in places that are socially, culturally and legally very diverse. However, the existence of property right law that will govern the allocation and operation is paramount on the development of small scale industries. The property right theory controls and governs the ownership of particular technology or innovation in particular small scale industries. This theory is a cornerstone of small scale industries development particularly for developing countries where the law of property right is not respected (Jonathan, 2004).

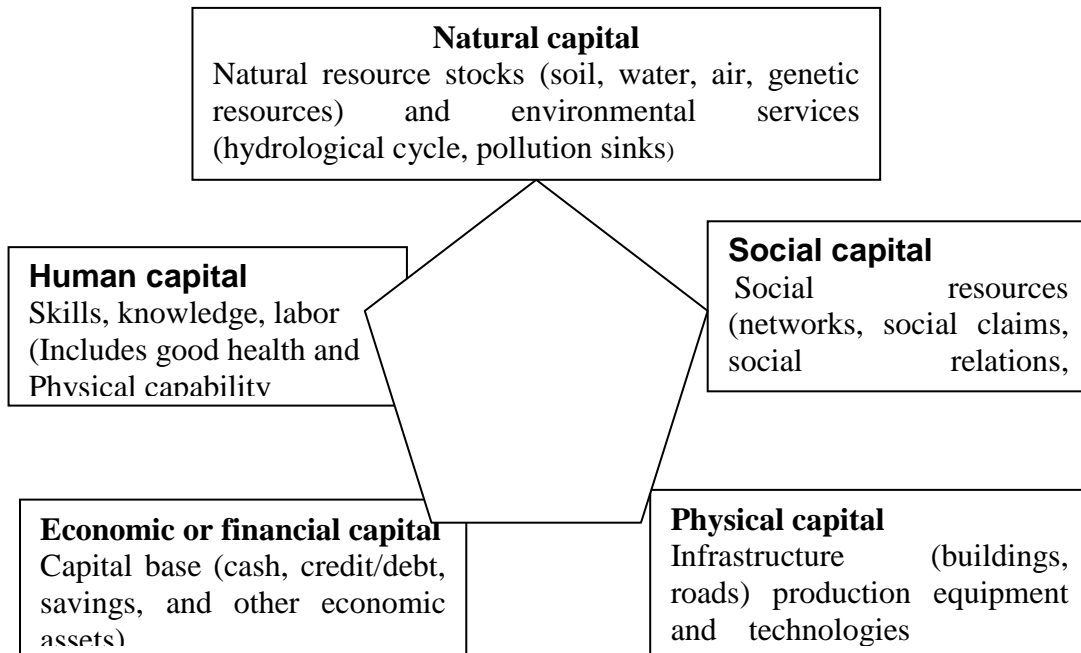
## **2.1.8 Theories/Models/ Approaches on Livelihood**

### **2.1.8.1 Models on Livelihood**

#### **2.1.8.1.1 Sustainable Livelihood Analysis (SLA)**

Sustainable Livelihood Analysis (SLA) is an example of the multiple capital approach where sustainability is considered in terms of available capital (natural, human, social, physical and financial) and an examination of the vulnerability context (trends, shocks and stresses) in which these assets exist.. Five principal assets (or capitals) are suggested as important to livelihood and they are presented as a pentagon (Scoones, 1998)

Some of the capitals are straightforward example. Buildings, machinery, land, cash and so on while some are less immediately obvious social networks, knowledge and good health are examples. All are important although clearly the balance will change from household to household and over time. Some of the assets may change little over time (e.g. land and buildings) while others such as cash and social networks can be volatile and depend upon movement of people into and out of the household. Vulnerability to shocks can also vary. A drought for example will impact upon natural capital and in turn reduce crop yields, but may have little if any effect on other capitals. In the longer term, of course, a severe drought could impact on a wide range of capitals, including social and human as people emigrate. Similarly, flooding may damage physical and natural capital while having little impact on the others. Thus the capitals will vary in terms of their resilience to different types of shock and the intensity of that shock (Scoones, 1998).



**Figure1. The five capitals of sustainable livelihood (Scoones 1998)**

#### **2.1.8.1.2 Sustainable Livelihood Approach**

Andrew Pearce (1980) first employed a ‘livelihoods approach’ to study the impact of green revolution innovation on rural farming. In his study, he attempted to provide a holistic way of evaluating the introduction of new technology on rural people’s welfare. Chambers (1987) made reference to livelihoods, but it was only in the 1990s that the term began to be used more generally, usually in the context of ‘coping’ with new production constraints and welfare shortfalls. At first, this tended to be in the context of drought or natural disaster, but later it was applied to the duress of structural adjustment, subsidy removals and cutbacks, as well as increased market competition associated with economic liberalization. Stress was translated into a process of occupational re-ordering. Arguably, the underlying principles of the SLA are already being attempted within transport. However, the focus for intervention in the transport sector remains limited primarily to the economic benefits that road construction and maintenance generates. The potential in this research an emphasis

on sunflower production is preferred because it is concerned directly with behaviour of the farmers. This is more in keeping with the decisions that must be made to ensure, enhance and sustain livelihoods. Moreover, farming, activity systems, and welfare can be conceptually

## **2.1.9 Theories/models/Approaches on sunflower**

### **2.1.9.1 Models on Sunflower**

#### **2.1.9.1.1 Engineering cost model**

The engineering cost model was developed by Landell Mills in 1950. This commodities study is also based on a system of "technical blueprints". On the production costs for sunflower,

For sunflower crop, the production process is divided into a number of distinct sub-processes, such as land preparation, fertilizer application, plant seeding, cultivation, harvesting, and transport and so on. For each such sub-process, various options or technologies are distinguished. These typically include a range from labour intensive to capital intensive methods for performing the same task. For each commodity and country a particular combination of processes is chosen. Weighted averages of the different technologies are determined to provide a hybrid technology which represents the national average (Goldin, 1990).

The accuracy of the production cost estimates derived from engineering cost models reflects the underlying cost data and technology assumptions. An advantage of the engineering cost approach is that, in general, costs assembled for the analysis of one crop are applicable to other applications, so that the extension of the analysis to

additional crops requires the estimation of new technological coefficients and an extension, but not laborious re-determination, of the cost data. A further advantage of the engineering cost approach is that it lends itself to sensitivity and time series analysis. It is a relatively simple matter within the model to change either the technical coefficients or the input prices, and to pose hypothetical questions regarding the application of new technologies or changes in different input prices on production costs (Goldin, 1990).

Furthermore, because costs are determined on the basis of sub-processes, the analysis of costs may be segmented to provide international comparisons of discrete elements within the cost structure. In this way, it is possible to simply compare field costs, harvesting costs or any other sub-process or group of sub-processes defined in the cost model. A further advantage of the engineering cost approaches is that they lend themselves to linear programming and therefore could be used to determine optimum patterns of technological transformation (Goldin, 1990).

#### **2.1.9.1.2 Model for drought condition**

The model for drought condition was proposed by Stewart and Hagan (1973) and Stewart et al. (1977). The model observed long-term experiment on the use of saline water on check whether models developed for drought conditions are valid for yield prediction in case of salinity. The models further provided the relation between yield and evapotranspiration, on sunflower. The yield estimation for sunflower was quite accurate; the estimated yield of sunflower under saline conditions was higher than the measured one. This may be attributed to the differences in salt tolerance between

sunflower varieties or to an additional effect of salinity on the nitrogen supply of this legume (Katerji et al, 1996).

## **2.1.9.2 Theories on sunflower**

### **2.1.9.2.1 The Theory of Comparative Advantage**

The theory of comparative advantage which is developed by Ricardo (1940) is perhaps the only proposition in all of the social sciences which is both true and non-trivial. It provides an explanation of specialization of sunflower production which yield positive predictions about the direction and the terms of trade. Ricardo placed emphasis on physical and natural influences over competitiveness, technological and human factors were given weight by later economists. The theory explains that a country can specialize in production of sunflower if it has more resources on producing it, rather than concentration on production of other crops. Such specialization resulted into increasing production and terms of trade that could otherwise not obtained (Knudsen, 1990).

## **2.2 Empirical Literature Review**

### **2.2.1 Studies conducted in Developed Countries**

#### **America (U.S.A)**

According to the study conducted by Abel (2001) in America on sunflower growth The “sunflower oil” portion of the study encompassed oil sunflower seed exports, elevator handling margins, crushing, oil refining, oil and meal exports, and domestic consumption of sunflower oil and meal. It revealed that in America the industry produced about 384,335 tons of crude sunflower oil annually during 1991-93, along with 448,270 tons of sunflower meal each year. Exports averaged 42,300 tons of oil-

type sunflower seed, 249,300 tons of sunflower oil and 42,100 tons of meal. Annual direct impacts for the sun oil sector averaged \$255 million, with an additional \$488 generated in secondary economic impacts, for a total of \$743 million (Bernstein, 1999).

The study conducted by Jolly (1969) in USA indicated that the USA produces sunflower acreage averaged 2.58 million, with average yield of 1,140 per planted acre and overall production of 1.5 million tons. Total annual direct impacts (expenditures and returns) from sunflower production were estimated at \$316.8 million (about \$123 per acre), with that amount generating another \$482 million in secondary economic impacts. It enabled the farmers to increase income and partly to be exported. However, the export to other countries like the USA and Canada significantly increases the farmers earning (Abel et al, 2001).

## **UK**

The study conducted by Gary E. Schwartz (2012) on the Effects of Grounding (Earthing) on Sunflowers in UK is significantly increasing over the past years from 2000 to 2008, but from 2009 to 2011 there is a slight decline due to global economic downturn effects which experienced on the reduction of prices and lowered the demand of sunflower oils. This provides experience low sunflower production resulted to economic shock. The sunflower productions were funded by the banks and other financial institution in UK, the experience of financial crisis resulted into decline in production over the proceeding years. However sunflower decline did not experienced immediately but took a certain time to be manifested. The study concluded that sunflower production will increase if the Government assist in terms



of capital small producers so that to cope with increasing cost of farm operation as a result of economic shock whose effects experienced currently.

### **2.2.2 Studies conducted on sunflower in Developing countries**

Studies indicated that sunflower is relatively unknown in the Philippines. It is grown in academic institutions to showcase the crop and its potential for confectionary purposes. In such respect the, small scale farmers are significantly low and not recognizing its potential productivity.

### **2.2.3 Studies conducted on sunflower in Africa**

#### **South Africa**

Study conducted by Lekunze J, in 2011 on socio-economic constraints to sunflower production revealed that very few young people below 30 years of age are engage in sunflower production in the Bojanala Region. On gender, 69.5% of all the sunflower producers were male, 51% of the farmers had household size of 4 to 6 children, while 59.8% were married, and 58.5% were with less than three dependants. Farmers with educational levels from standard 8 to 10 constitute 34.10%. Also, 59.7% had 1.1-1.5 tons as output per hectare. Sunflower farmers who had access to the extension services constitute 70.7%. Significant determinant of the socio-economic constraints include number of plantings per year, storage costs, price, income, access to market and farm size. The study additionally connected the socio-economic factors on affecting livelihood of the farmers hence constrained income from sunflower production.

The price per ton of sunflower has dramatically increased from approximately R1800, 00 per ton in 2005 to over R4500, 00 per ton based on forward contracts in 2008. This act as an incentive for emerging sunflower growers to expand production and increase output levels. However, sunflower production and output levels has not grown as fast as its demand.

### **Ethiopia**

The study conducted by FAO in 2003 revealed that Sunflower contributed to income increase and employment creation of the rural Ethiopian whose livelihood was constrained by poverty and insufficient needs. It further indicated that farmers were employed in sunflower farming faces the difficulty in capital especially on buying necessary sunflower farming implements like seeds, fertilizers and insecticides.

### **Uganda**

In Uganda, for instance, they have started using successfully hybrid seeds from South Africa. This contributed to more production of sunflower that is recently not absorbed by the domestic operating industries especially of the small scale levels. Costs of sunflower production and the risk of production with respect to drought in Uganda in general are still relatively high as compared to their sunflower producers who are subsidized in Europe, America and Argentina. This result to unfair trade competition and drastically reduced the profit margin obtain by Ugandan sunflower growers. Based on the current market price per ton of sunflower, the profit margin that can be obtained from sunflower production is higher relative to other dry land crops. This relatively affected the farmer's livelihood (RLDC, 2008).

### **Kenya**

The study revealed that Unfavorable Weather Conditions, Poor storage facilities, Lack of Education, Poor Knowledge, Low Technology Innovation and Lack of

extension service are the major challenges facing sunflower production. In addition the extent of sunflower production has given low, of which has affected the household income and ability to finance other social services. The study therefore recommends that

Decision makers should ensure availability of farming tools at cheap and affordable price Policy makers should make agriculture policy that will favour sunflower production in terms of pesticides and insecticides supply should be taken as measures to improve sunflower production (Odulaja, 1996).

#### **2.2.4 Studies conducted in Tanzania**

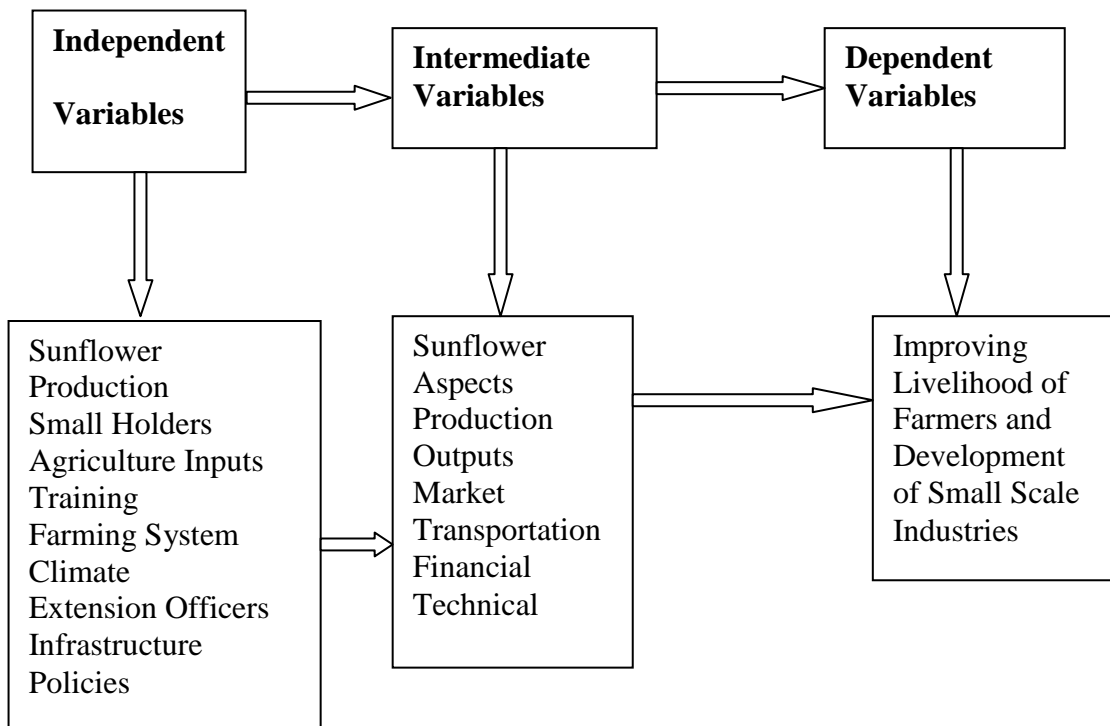
The research conducted by Mariamu (2003) on factors affecting sunflower production indicated that Sunflower production in Dodoma is still ranking at significant variation with 22.5% production which is higher than Kilimanjaro (13.2%), Arusha/Manyara (13.1%) and Singida (08.9%). Mariamu concluded that Dodoma has higher Sunflower potential productivity than other regions in Tanzania. Nonetheless, sunflower milling industries increasing dramatically such fact revealed that sunflower production is not considered in isolation but sunflower farmers and small scale industries is paramount importance. Therefore, the sunflower production in Chamwino District is highly potentially and farmers are cultivating at small scale and small scale industries produces at small amount therefore intervention is needed to improve sunflower production.

Sunflower oil seeds in Tanzania was varying between 75,000 to 100,000 tons from the year 2001 to the year 2005, increased in the season of 2007/2008 dramatically to more than 350,000 tons (MAFSC, 2010). The corresponding sunflower oil production increased to almost 90,000 tons of oil per year (MAFSC, 2010).

### **2.3 Conceptual Framework**

Improvement of sunflower production is influenced by agriculture facilities such as good seeds, draught animals or tractors. Training better farming systems, Climatic conditions etc. The provision of knowledge and skills by agricultural extension officers improve the technical know-how in agricultural improvement. Infrastructure systems improve the transporting of outputs to market centre. Policies and guidelines in agricultural sectors play an important part and role in agricultural activities especially in assisting the investors and provision of loans to smallholder sunflower farmers.

The study has shown well how the sunflower can support the welfare of the rural farmers to be sustainable in the sense of income level, social services, re-investment and improvement of housing conditions. It is assuming that the independent variable was acted upon intermediate variables in influencing the improvement of sunflower oil production. Such intermediate variables include the availability, production output, market, finance, farming system, extension officers and infrastructure polices in respectively which affect the sunflower oil production at Chamwino district as figure 1 shows.



**Figure 1: Conceptual Frame Work**

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 Introduction**

This chapter sets out to explain methodology that was used during data collection to obtain information about small scale industries in improving the livelihood at household level in the study area. The chapter indicated methods used in data analysis, study area where the study was conducted, sample size and sampling method that was used to get the required respondents about the study. Furthermore the chapter indicated relevant categories of respondents from who required data was collected.

#### **3.1 Research Design**

The research design is the plan for collecting and utilizing data so that desired information can be obtained (Andersen, 1993). The case study design has been selected for major reasons to allow studying sunflower farmers and small scale industries owner in the course of sunflower oil production to improve living standard of individual household owner. The research design used was case study, because the method is flexible in the sense that many methods of data collection were used to gather the information that allows conducting the research smoothly.

#### **3.2 Study Area**

Study area is the area where research intended to gather and relate data on various aspects of a geographical region and its inhabitants, as natural resources, history, language, institutions, or cultural and economic characteristics (Taylor, 2002).

The study was conducted at Chamwino district in Dodoma region. Chamwino district is among the six districts in Dodoma region. The district has been selected to be the study area because there is still acute problem of poverty among the people regardless of differences in development strategies which have been implemented to eradicate poverty. Chamwino was formed in 2005 by His Excellency, President Benjamin William Mkapa while he served as President.

The headquarters of Chamwino district is about 37 km from Dodoma Municipality, for the time being only the district Commissioner is found at Chamwino. Other important offices such as District Executive Director (DED) and other officials are still centered at Dodoma town according to DED's annual report (2010). Chamwino district consists of four divisions namely Chilonwa, Itiso, Makanghwa and Mvumi. The district also has 32 wards. Apart from those wards, it has 78 villages with 773 streets (DED, 2010).

Therefore, the study aims at assessing the small scale industries in improving the livelihood at household level, a case of sunflower production in Chamwino district.

### **3.2.1 Geographical Location**

The district is boarder to Kondoa to the North, Dodoma Municipality to the East, Kongwa to the South East and Mpwapwa and Bahi to the West. The area is semi arid with an annual rainfall of about 700mm to 1200mm.

### **3.2.2 Population**

The population represents a group that need to generalize in research which can be in terms of demography, geography, occupation, time, care requirements, diagnosis, or some combination of the above (Berinsky, 2008).

According to DED's annual report (2010), the population of Chamwino is about 289,950 people in which female are about 151,091 and male are about 138,868. The total number of households is 67,038.

### **Socio-Economic activities**

Main economic activities in the district are farming and livestock keeping (Agriculture). Arable land is 572,115 hectares but the utilized land is about 268,894 hectares only, which is about 47 percent of the total land conducive for farming activities. The area suitable for livestock keeping is 370,135 hectares.

Because of poor rain patterns, the main crops cultivated in this area are sorghum, pad, maize, cassava, sweet potatoes, sesame, peanuts/ groundnuts, sunflower and vegetables (DED 2010).

### **3.3 Types and sources of Data**

The study employed two sources of data, the primary data source from the survey method and secondary data source from documents review. Survey method is relevant in collecting data from the community in the study area and secondary data was obtained from ward, village leaders and documents review.

#### **3.3.1 Primary Sources Data**

Primary sources are original materials. Generally, primary sources are not accounts written after the fact with the benefit of hindsight. Information for which the writer has no personal knowledge is not primary, although it may be used by historians in the absence of a primary source (Sreedharan, 2004). Primary Data were obtained from the study area (from the selected sample). Data was obtained through Interview,



Observation and Focus group discussions. The data was collected from individuals, household, extension officers, village executive officers and operators and operators of processing and production.

### **3.3.2 Secondary sources of Data**

Secondary sources involve generalization, analysis, synthesis, interpretation, or evaluation of the original information. *Primary* and *secondary* are relative terms, and some sources may be classified as primary or secondary, depending on how it is used (Benjamin, 2003).

The assignment was involved a rigorous desk work research. In this case I reviewed all important secondary information related to the assignment i.e. a review of reports on poverty mapping, census, local government annual plans and budgets, local quarterly annual reports and were reviewed any documented studies and interventions done by government and other non Governmental players. I also reviewed methodologies used by other researchers/ stakeholders in producing village socio-economic baselines/ profiles under similar conditions.

### **3.3 Fieldwork and consultations**

Fieldwork is practical work, study, or research carried out in the real world away from the desk. In a marketing context, field work forms primary market research and involves obtaining customers views and opinions on a face-to-face basis or through mail questionnaires or telephone surveys. Consultation is seeking and giving of advice, information, and/or opinion, usually involving a consideration (Roger, 2006).

The assignment was also requiring an intensive field work whereby the researcher was set consultative meetings with key stakeholders at different levels i.e. district,

ward and village. Field work conducted with the purpose of validating information from secondary sources and collect primary information such as access to education, health and other services, economic activities and net value of production, social-cultural and ethnic characteristics, dependence and pressure on natural resources, access to natural resources and control and ownership of resources.

Others included social organization, wealth and poverty, livelihood security, trading and marketing characteristics, migration and demographic trends, attitude to the environment and environmental management initiatives and activities. This information desegregated by gender wherever possible and produce a socio-economic profile for the six pilot villages.

During the field work the researcher endured to collect geo-referenced information (coordinates) which was used to produce thematic maps. The thematic maps assisted in describing the characteristics of various socio-economic zones, explaining the differences and similarities in relation to the actual agro-economic zones in Chamwino district. Participatory methods was used in data collection such as Opportunities and Obstacles to Development (O&OD) and/or PRA and other tools used were in the form of a semi-structured questionnaire and a checklist based on the objectives of the assignment.

### **3.4 Collection of Data**

#### **3.4.1 Interview**

Interview is a purposeful interaction in which one person tries to obtain information from another (Gay et al, 2006).

Data through this method included face to face conversation between the researcher and the respondents where by different questions were asked by the researcher to

interviewees. Both structured and unstructured questions were used to explore more information based on the objectives of the study.

### **3.4.2 Questionnaires**

Questionnaire method is the research instrument that gathers data over a large sample (Kombo & Tromp 2006).

The field work was conducted mainly as follows: prior to the main fieldwork, a pre-testing of guide questions were conducted in one village. The objectives of this survey were to: pre-test the questionnaires in order to validate the relevance of the questions to the intended respondents. After pre testing the questions, the researcher was refined the questions and continue to collect data in the remaining villages. A participatory method was used to collect data and information using a semi-structured questionnaire and a checklist based on the objectives of the assignment. The questions targeted to the local people (household) in the study are female, male, ward leaders and Village leaders.

### **3.4.3 Participatory Observation**

Observation method is a technique in which the behavior of research subjects is watched and recorded without any direct contact (Gay et al, 2006).

Direct observation was adopted for collecting evidence that could be captured without necessarily asking a respondent. This was made possible by visiting some selected areas/ sites. Observations was used to compliment some of the respondent's responses captured related to the objectives of the study. The information gathered using this technique was counter checked information provided by respondents.

#### **3.4.4 Focus Group Discussion**

A focus group is a form of qualitative research in which a group of people are asked about their perceptions, opinions, beliefs, and attitudes towards a product, service, concept, advertisement, idea, or packaging (Naomi, 2009).

A structured interview checklist was used for Focus Group Discussions (FGD). The guide checklist was established a set of issues for the group to discuss and was used to channel the discussion towards accomplishing the assignment objectives. The guide was useful in introducing and probing consistently for specific types of information on the themes under study.

For every theme, the focus groups were stratified into mixed adults of men and women and mixed youth groups. Each group consisted of 8-10 respondents. In total, 24 focus groups (4 FGDs in each pilot village) were established for discussions.

Important information to be generated from this tool include: access to education, health and other services, economic activities and net value of production, social-cultural and ethnic characteristics, dependence and pressure on natural resources, access to natural resources and control and ownership of resources. Others include social organization, wealth and poverty, livelihood security, trading and marketing characteristics, migration and demographic trends, attitude to the environment and environmental management initiatives and activities among others.

#### **3.4.5 Interviews with key informants**

An open-ended discussion guided with a checklist was used to collect data from key informants. The key informants were selected purposively. In this study, a key informant is considered to be an individual who is accessible, willing to talk and has

a greater knowledge based on the objectives of the study. Key informants were included: Small entrepreneurs living in Chamwino District, farmers/peasants: men and women, youths (between 15 and 25 years). Other sources of information and data will be from FBOs, CBOs, NGOs, The District Council, and Local Business Clubs.

#### **3.4.6 Institutional Capacity Assessment (ICA)**

Assessment of the facilitative institutions such as Government departments, CBOs, FBOs and NGOs were carried out in order to determine the capacity of the institutions to deliver and influence the dynamics of various socio-economic parameters of the residents in Chamwino District. This assessment was enabled the consultants to establish strengths: weaknesses, opportunities, and challenges (SWOT) of these institutions in assisting Local Sunflower and Economic Development initiatives.

### **3.5 Sampling procedures**

A sampling procedure contains rules that specify how: the system calculates the sample size and an inspection characteristic must be valued (Adèr, 2008). Researchers rarely survey the entire population for two reasons (the cost of a census is too high, and the population is dynamic in that the individuals making up the population may change over time. The three main advantages of sampling are that the cost is lower, data collection is faster, and since the data set is smaller it is possible to ensure homogeneity and to improve the accuracy and quality of the data.

Each observation measures one or more properties (such as weight, location, color) of observable bodies distinguished as independent objects or individuals. In survey sampling, survey weights can be applied to the data to adjust for the sample design. Results from probability theory and statistical theory are employed to guide practice. In this sunflower farming research, sampling was widely used for gathering information about the population in Chamwino district.

The target groups of this method were different actors at different levels i.e. village and district. These include small entrepreneurs living in Chamwino district, farmers/peasants, men and women: youths (between 15 and 25 years): FBOs, CBOs, NGOs, District Councils, and Regional Business Councils these were interviewed using a semi-structured questionnaire. It is from these populations that sample respondents were interviewed. A multistage sampling technique was used. The first stage was involved the selection of hamlets and sub-village from each village using purposive sampling technique. The choice of hamlets and sub-village was based on consultation with respective Local Government Officials. The second stage was involving selection of respondents using both purposive and simple random sampling techniques.

The techniques which was used for sampling by the researcher are probability and non- probability. These were used in order to get appropriate information.

### **3.5.1 Probability Sampling**

Through probability sampling every element of the population has a known probability of being included in the sample in which one in which every unit in the population was having a chance (greater than zero) of being selected in the sample,

and this probability can be accurately determined. The combinations of these traits were made it possible to produce unbiased estimates of population totals, by weighting sampled units according to their probability of selection (Linda, 2006).

### **3.5.1.1 Simple random sampling**

A simple random sample is selected so that all samples of the same size have an equal chance of being selected from the entire population (Frerichs, 2008).

Each element of the frame thus was having an equal probability of selection: the frame is not subdivided or partitioned. Furthermore, any given *pair* of elements has the same chance of selection as any other such pair (and similarly for triples, and so on). This minimized bias and simplifies analysis of results. In particular, the variance between individual results within the sample is a good indicator of variance in the overall population, which was in turn make it relatively easy to estimate the accuracy of results. The used simple random sampling to select sunflower farmers and smaller scale industries respondents that were selected randomly at Chamwino District.

### **3.5.2 Non-probability sampling**

3.5.2.1 Non- probability sampling is any sampling method where some elements of the population have no chance of selection (these are sometimes referred to as 'out of coverage'/'under covered'), or where the probability of selection can't be accurately determined (Linda, 2006).

### **3.5.2.1.1 Purposive Sampling Method**

Here the study used purposeful sampling to select officers such as agriculture extension officers and ward leaders whom were required to provide information on the contribution of sunflower production to the livelihood of the farmers and small scale industries producer.

It involves the selection of elements based on assumptions regarding the population of interest, which forms the criteria for selection. Hence, because the selection of elements is nonrandom, non-probability sampling does not allow the estimation of sampling errors. These conditions give rise to exclusion bias, placing limits on how much information a sample can provide about the population. Information about the relationship between sample and population is limited, making it difficult to extrapolate from the sample to the population.

### **3.5.3 Sample frame**

A sampling frame is the source material or device from which a sample is drawn. It is a list of all those within a population who can be sampled, and may include individuals, households or institutions (Raymond, 1978).

The study covered three villages from the study area namely Chamwino, Buigiri and Chinangali. The study was involved the sample of the entire population in three villages. The study covered different recipient groups such as government leaders (VEO and WEO). Extension officers, leaders of no government Organizations (NGOs) Community Based Organizations (CBOs) Cooperative office and sunflower processors which were helped to collect data and provide reliable information



### 3.5.4 Sampling Unit

The sampling unit was selected from head of households WEO, VEO, Executive officers from NGOs, CBOs and owner of processing unit.

### 3.5.5 Sample size and Structure

Sample size is the number of observations used for calculating estimates of a given population (Freedman, 2007).

The study was covered different groups which are sunflower producers, small scale industries operators, leaders (WEO, VEO), and NGOs CBOs Cooperative Officers and Extension officers.

### 3.5.6 Population Sample

**Table 2:** Respondents categories

<b>Nature of Respondents</b>	<b>Sample size</b>
Sunflower producers (farmers)	80
Small scale industrial Producers	10
Village Executives Officers (VEO)	03
NGOs and CBOs	02
Cooperative officers	02
Extension Offices	04
<b>Total</b>	<b>101</b>

### 3.6 Data processing and Analysis

Collected data was processed both by using computer programs such as statistical package for social sciences (SPSS) and Ms- Word. Processing of the data was involved editing, coding, classification, graph representation and tabulation of the collected data. To examine the characteristics of the study, both quantitative and qualitative methods was used by applying various statically techniques.

### **3.7 Data Presentation**

Data after being processed and analyzed was presented by using various tables, graphs and charts. The finds was used to generalize and summarize the study observation from the field in a descriptive model.

### **3.8 Reliability and Validity of Data**

#### **3.8.1 Reliability**

Reliability is the degree of consistency between two measures of the same thing. (Mehrens and Lehman, 1987). The measure of how stable, dependable, trustworthy, and consistent a test is in measuring the same thing each time (Worthen et al., 1993)

The issue of liability ensured by the use of different methods and tools during data collection including: questionnaires, interviews, focus group discussion, and review of secondary data. Also reliability was ensured by the use of appropriate sampling techniques including random sampling and purposive and selection of appropriate sample size.

#### **3.8.2 Validity**

Validity refers to the degree to which study accurately reflect or assesses the specific concepts the researcher is attempting to measure. Also in relation to(Fidel,2007) who recommended that validity is a measure of accuracy and whether the instruments of measurement are actually measuring what was intended to measure. Therefore, to ensure validity interviews, questionnaire surveys, was conducted.

### **3.8.3 Measures to maintain Reliability and validity**

The reliability and validity was checked according to Patton (2001) as suggested that, reliability and validity are the two most important quality control objects in research design. Therefore, it is important the research results be reliable and valid. Kvale (1996) proposed that : validity and reliability are the two factors which any qualitative researcher should be concerned about while designing a study, analyzing results and judging the quality of the study.

## **CHAPTER FOUR**

### **DISCUSION OF RESEARCH FINDINGS**

#### **4.1 Introduction**

This chapter presents the findings and discussion of the research results which is organized into three main sections based on the main objectives of the study, these are: (i)To examine the production trend of sunflower for the past five years in 200-20011(ii)To examine the production trend of sunflower oil industries of small level(iii)To identify opportunities and constraints facing sunflower production and sunflower oil industries(iv)To assess the livelihood of sunflower farmers related to the presence of sunflower oil industries and (v)To examine the measures to be taken in order to improve the income among farmers in Chamwino District.

#### **4.2 Demographic Characteristics of the Respondents**

This section describes social and economic characteristics of the respondents who participated on providing information. The researcher examined the characteristics of the respondents in terms of social and economic to whether have an influence on the contribution of sunflower production to the livelihood of farmers and development of small scale industries.

##### **4.2.1 Respondents Distribution by sex**

In that respect the study involved about 54(53.5%) of the female respondents this is because female were highly involved in sunflower farming activities. The study also considers about 47(46.5%) of the male respondents for providing more experience regarding sunflower production.

**Table 3: Sex of the respondents**

<b>Sex</b>	<b>Frequency</b>	<b>Percent</b>
Male	47	46.5
Female	54	53.5
<b>Total</b>	<b>101</b>	<b>100.0</b>

#### 4.2.2 Education Level of Respondents

The study involved respondents in terms of education level which considered being very significant in terms of view and suggestions provided. In that respect the study involved 54.5% of the respondents with primary education. The respondents with primary education is accounted more than half of respondents because is the level mostly attained by the majority of Tanzanian. The involvement reflected the view contribution of sunflower production to the livelihood of farmers and development of small scale industries of all primary education level at the study area. The study also involved respondents with No formal education (6.9%), Secondary education (27.7%) and Collage education (10.9%) respectively. This indicates that respondents with education can answer questions precisely and more accurate than illiterate.

**Table 4: Education Level of Respondents**

<b>Category</b>	<b>Frequency</b>	<b>Percent</b>
No formal education	7	6.9
Primary education	55	54.5
Secondary education	28	27.7
Collage education	11	10.9
<b>Total</b>	<b>101</b>	<b>100.0</b>

**Source: Field findings, 2012**

However, the study for the sake of avoiding educational biasness incorporated respondents with no formal education since the view provided is based on experience of sunflower production and how is related to the life of the farmers and small scale industries in that respect respondents with no formal education were paramount. Additionally, respondents with secondary and collage education were involved in order to capture further experience related to their education levels on the contribution of sunflower production to the livelihood of the farmers.

#### **4.2.3 Marital status of Respondents**

Respondents consideration in terms of marital status were very significance because the contribution of the sunflower production to the farmers livelihood and small scale industries can be traced at the family level, in that respect the study involved overall, 72.3% of the married respondents. The views provided regarding sunflower production to farmer's livelihood were traced easily with respondents with family responsibilities. Married respondents were easily to provide the answers related to the sunflower production on their family like buying, food, obtaining school (Human capital development) and constructing own houses. Nevertheless, the study involved Separated,

Single, Widow and Divorced with percentage responses of 7.9%, 6.9%, 10.9% and 2.0% respectively in order to be free from biasness of data which relied on the married respondents only in that respect

**Table 5: Marital Status of respondents**

<b>Category</b>	<b>Frequency</b>	<b>Percent</b>
Married	73	72.3
Separated	8	7.9
Single	7	6.9
Widow	11	10.9
Divorced	2	2.0
<b>Total</b>	<b>101</b>	<b>100.0</b>

**Source: Field findings, 2012**

#### **4.2.4 Distribution of Respondents by age**

The age group of respondents were highly considered respondents reported that 51.5% were from 37-45 age group, this is because is the active labour force involved in sunflower production. The researcher is at the position of tracing the contribution of the sunflower production in farmer's livelihood, as farmers were highly relied in this age group. The sunflower farmers were found in other age group such as 19-28, 29-36 and 46 and above years. The study required respondents from different age group in order to obtain different views on the contribution of sunflower production to farmer's livelihood as respondents of various age group is required to analyze matter on the sunflower production. The sunflower farmers were reported to be in the active age group for that respect sunflower production is expected to contribute more in farmer's livelihood through increasing production.

**Table 6: Age Group of respondents**

<b>Category</b>	<b>Frequency</b>	<b>Percent</b>
19-28	14	13.9
29-36	19	18.8
37-45	52	51.5
46 and above	16	15.8
<b>Total</b>	<b>101</b>	<b>100.0</b>

**Source: Field findings, 2012**

### **4.3 Objective One: The production trend of sunflower for the past five years in 2007-20011**

The first task under this study sought to examine the production trend of sunflower for the past five years in 200-20011. The field study findings are presented in the following subsections:

#### **4.3.1 Production trend of sunflower for the past five years in 2007-20011**

The production trend of sunflower has a tendency of falling and raising in 2007 the production were 722 tons which exposed at the dealers at small price in that respect farmers can not manage proper farming due to small capital. 2008 the production fall 640 tons per year, because of shortage of fertilizers, lack of improved seeds and low farmers capital. Such production was maintained up to 2009. However, in 2010 there is a slight decrease to 632 as a result of sunflower farmers lack capital which limited them not applying modern farming instead embark to poor farming methods. In 2012 the sunflower production start rising as a result of increasing pressure on the demand of sunflower oil people start producing at large scale and recognizing it a source of



income. However, sunflower farmers were obtaining small amount of capital from other non agriculture activities like selling livestock and Petty business.

**Table 7: The production trend of sunflower for the past five years in 2007-2011**

<b>Years</b>	<b>Sunflower Production in tons</b>
2007	722
2008	640
2009	640
2010	632
2011	640
<b>Total</b>	<b>3274</b>

**Source: Field findings, 2012**

#### **4.3.2 Reasons for less production of sunflower**

Table 8 Indicates that poor farming methods accounted for 76(84%) of the respondents. This revealed that sunflower farmers are having less awareness on the proper farming methods, simply because of lack of extension services which is increasingly a problem in Buigiri ward hence lower production of sunflower. Overall, 85(94%) indicated that lack of improved seeds is a reason which resulted to lower sunflower production. The local seeds are easily destroyed by pest and diseases than improved one. However, as a result of lower sunflower farmers capital that could enable purchasing improved seeds there is increasing incidence of lower sunflower production in different years.

**Table 8: Responses on the Reasons for less production of sunflower**

<b>Categories</b>	<b>Frequency</b>	<b>Percentage</b>
Pest and diseases	26	28
Poor farming methods	76	84
Lack of fertilizers	14	15.5
Less acre cultivated	25	27.7
Drought	36	40
Lack of improved seeds	85	94
<b>Total</b>	<b>262</b>	<b>289.2</b>

**Source: Field findings,2012**

**Note: Total is more due to multiple response**

#### **4.3.3 Motive for starting sunflower farming**

Views of the farmers were reported as being motivated for seeking person income and better life concerning the production of sunflower farming. However, other farmers were reported that being motivated by better climatic condition that allows the production of sunflower farming. The demand for sunflowers is increasing almost in every place this also were other factors that triggered farmers in starting sunflower farming.

Overall, 48(53.3%) of the Sunflower farmers reported to be motivated in starting sunflower farming for increasing family income, which were highly needed to meet basic needs of life such as food, cloth and school fees for children. However, 31(34.4%) of the respondents said to be motivated in sunflower farming due to increase in sunflower prices which triggered by increasing demand of sunflower oil.

**Table 9: Motivating factors for starting sunflower farming**

<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
In order to fulfill family needs	21	23.3
Enough rainfall	12	13.3
To increase family income	48	53.3
Increasing in sunflower price	31	34.4
Increasing needs of sunflower oil	11	12.2
To sell sunflower as business	21	23.3
Total	144	159.8

**Source: Field findings, 2012**

**Note. Total is more due to multiple responses**

Farmers were reported to be induced high with obtaining more income which could provide basic family requirement to achieve better living standard. Sunflower farmers were reported to be living below standard because of the discrimination in terms of prices of sunflower seeds offered by dealers which is absolutely lower compared to the increasing need of sunflower oil. Additionally, sunflower farmers were motivated to start sunflower farming In order to fulfill family needs 21 (23.3%), enough rainfall 12(13.3%), Increasing needs of sunflower oil 11(12.2%) and to sell sunflower as business 21(23.3%).

Motive for starting sunflower farming views of officials were being motivated were being motivated by seeking income and needs freedom as a result of increasing in both sunflower demand and pricing almost every where in the country. The farmers on the way of seeking more income motivated to engage in sunflower production.

#### **4.4 Objective Two: Production trend of sunflower oil industries of small level**

The second objective of this research was to examine the production trend of sunflower oil industries of small level.

##### **4.4.1 Production trend of sunflower oil industries of small scale**

**Table 10: The production trend of sunflower oil industries of small level**

<b>Years</b>	<b>Sunflower oils industries of small level production (Liters )</b>
2007	14440
2008	12800
2009	12800
2010	12640
<b>2011</b>	<b>12800</b>

**Source: Field findings, 2012**

The production trend of sunflower oil industries of small level reported to be 14440 liters during 2007, because the production of sunflower were high and sunflower oil were not recognized as potential products in many places, this allowed to be produced by small industries at Buigiri ward, dealers from other places were not high in numbers. During 2008 and 2009 the sunflower oil demand start tom increase from different places which trigger increase in price as a result the production of small scale industries fall to 12800 liters in both years. In 2010 the sunflower oil production tends to fall to 12640 liters, this is a result of urban sunflower dealers which purchasing at high price compared to the local producers.

##### **4.4.2 Sunflower small industry processing means**

The sunflower small scale industries at Buigiri ward were reported by 43.3% of the respondents to process sunflower product highly by tradition methods which do not allow increasing in capacity of sunflower oil production. The quality of sunflower oil

was absolute lower compared to production by using powerful machines. Some of the small scale industries producers were using power machines hired which tend to increase the cost of production as a result required to purchase sunflower seeds at lower price to compensate on increasing production cost.

**Table 11: Means for processing the sunflower product**

<b>Category</b>	<b>Frequency</b>	<b>Percent</b>
Hand pressing machine (own)	11	12.2
Hand pressing machine (hired)	01	1.1
Power Machine (Own)	15	16.7
Power Machine (hired)	24	26.7
Traditional methods	39	43.3
<b>Total</b>	<b>90</b>	<b>100.0</b>

**Source: Field findings, 2012**

The traditional method for processing sunflower was regarded a cheap method which allows majority of the small scale producers to afford. On the other hand affects the quality of sunflower oil hence reduce its competitive edge on the market.

Only 16.7% of the respondents were reported to own power machine used in processing sunflower seeds for oil production. This indicates that the production requirement is still increasing while the production mechanism affects the level and amount of sunflower oil production. The production of sunflower oil at Buigiri ward is required to satisfy the needs and demand of sunflower oil in other places for increasing livelihood of both sunflower farmers and small scale industries producer, currently which are in most cases tend to shrink.

#### 4.4.3 Reasons for low production of sunflower oil

Table 12 indicated that overall, 61(67.7) % of the responses suggested that less sunflower is one of the factors that contributed to decline of sunflower oil production. The small scale oil industries depend on sunflower production, during the period of lower production sunflower oil is likely to be lower. Other reasons were Low processing capacity 44(48.8%), Lack of enough capital 34(37.7%) and Lack of improved machines 30(33.3%) respectively were the reasons that lower production of sunflower oil at small industries. However, the sunflower oil production tends to fluctuate from 2007 to 2011 years. This is increasingly because the factors that lower sunflower production are changing.

**Table 12: Responses on the reasons for low production of sunflower oil**

Categories	Frequency	Percentages
Low processing capacity	44	48.8
Lack of enough capital	34	37.7
Less sunflower production	61	67.7
Lack of improved machines	30	33.3
<b>Total</b>	<b>169</b>	<b>187.5</b>

**Source: Field findings, 2012**

**Note: Total is more due to multiple response**

#### 4.5 Objective Three: The opportunities and constraints facing sunflower production and sunflower oil industries

Objective three on the opportunities and constraints facing sunflower production and sunflower oil industries was obtained through questionnaires circulated to 80 sunflower producers (Farmers) and 10 Small scale industrial Producers. The

respondents were requested to provide their views on the opportunities and constraints facing sunflower production and sunflower oil industries.

#### **4.5.1 The opportunities facing sunflower production and sunflower oil industries**

The sunflower cultivation opportunities which are available at Buigiri ward indicated by overall, 76(84.4%) suggested that there is land for cultivating sunflower, this opportunity once utilized effectively and efficiently expected to increase sunflower production, 62(88.8%) of the respondents reported that insecticides and pesticides were available, it means that sunflower farmers were not accessing pesticides and insecticides. Sunflower farmers need insecticides and pesticides for controlling pest and diseases that limited the growth of sunflower farmers. The availability of the opportunities does not mean that it is accessible to all farmers. In that respect majority of the sunflower farmers were not accessible due to shortage of financial resources. Moreover, sunflower production is expected to be increase by high quality seeds 28(31.1%) and sunflower farmers 14(15.5%) this once utilized effectively and efficient sunflower production will increase for livelihood improvement.

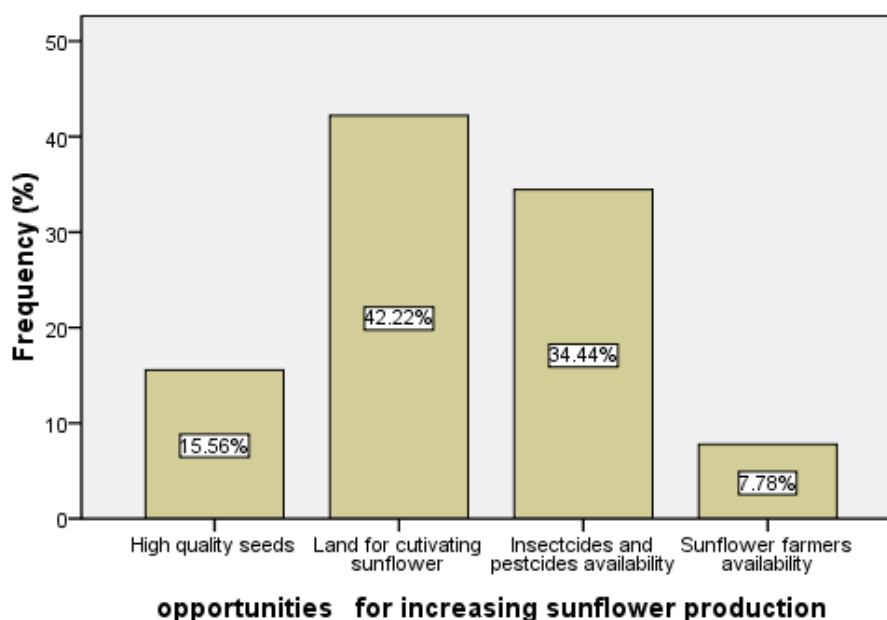
Views of the farmers regarding the opportunities of sunflower farming were provision of improved seeds that expected to increase sunflower production. Farmers suggested that traditional seeds are highly used currently because of lack of money for purchasing modern seeds. The farmers also provided their views that there is need for increasing pesticides and insecticides accessibility to sunflower farmers at low price.

**Table 13: Opportunities for increasing sunflower production**

Categories	Frequency	Percent
High quality seeds	28	31.1
Land for cultivating sunflower	76	84.4
Insecticides and pesticides availability	62	68.8
Sunflower farmers availability	14	15.5
<b>Total</b>	<b>180</b>	<b>199.8</b>

**Field findings, 2012**

**Note: Total is more due to multiple responses**



**Figure 2: Opportunities for increasing sunflower production**

#### **4.5.2 Opportunities- Views of officers**

The officers provided their views that sunflower production is likely to increase in the near future if the land available will be effectively and efficiently utilized. This However will be accompanied with the insecticides and pesticides availability.



Moreover, officers suggested that sunflower industries is having significant number of farmers who once empowered will effectively utilize the available opportunities.

#### **4.5.3 Constraints facing sunflower production and sunflower oil industries**

Overall, 70(77.7%) of the respondents were reported to be resisted in sunflower production by the shortage of capital which is needed in buying sunflower farming implements such as fertilizers and insecticides and pesticides. Despite of the available opportunities of improved seeds, insecticides and pesticides sunflower farmers were constrained by the shortage of capital. Unreliable rainfall is another factor which constrained sunflower production at Buigiri ward 33(36.6%) of the respondent's rainfall is unreliable at the study area, which sometimes impedes the sunflower cultivation. Moreover, lack of money for buying seeds 37(41.1%), lack of awareness of farming methods 19(21.1%), pest and diseases 22(24.4%) and shortage of sunflower market 5(5.5%) respectively. Sunflower production tends to be low due to infections of diseases and cultivation at small scale because of lack of capital for operating lack scale production.

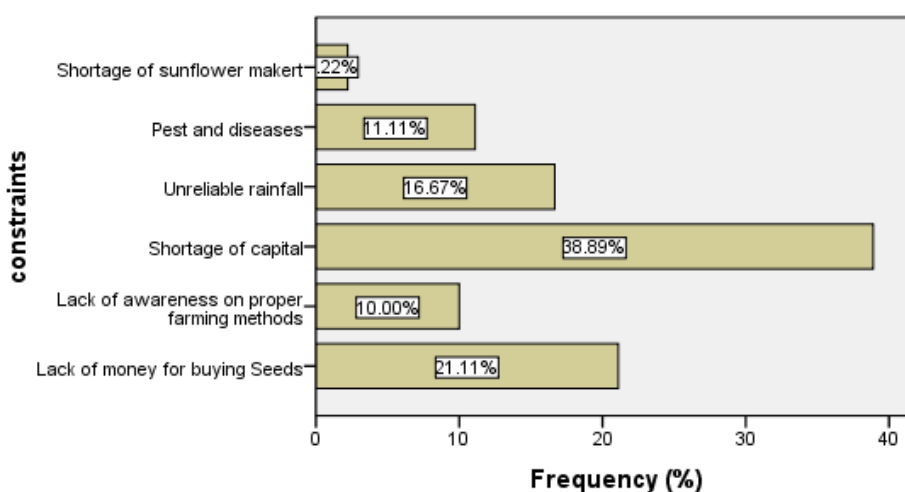
**Table 14: Constraints facing sunflower production and sunflower oil industries**

Categories	Frequency	Percent
Lack of money for buying Seeds	37	41.1
Lack of awareness on proper farming methods	19	21.1
Shortage of capital	70	77.7
Unreliable rainfall	33	36.6
Pest and diseases	22	24.4
Shortage of sunflower market	5	5.5
<b>Total</b>	<b>186</b>	<b>206.4</b>

Source: Field findings,2012

Note: Total is more due to multiple responses

**Figure 3: Constraints facing sunflower production and sunflower oil industries**



Source: Field findings, 2012

#### 4.5.4 Constraints- Views of officers

Officers responded that major constraints that are facing sunflower farming at Buigiri ward were shortage of capital that limited the production of sunflower and hence small amount of sunflower ready for processing, lower rainfall and poor awareness

on proper farming methods is lacking in most farmers mind. The processing capacity of small scale industries is lower this contributed to poor sunflower oil produced and at lower quality.

#### **4.6 Objective Four: Livelihood of sunflower farmers related to the presence of sunflower small scale industries.**

The study has found that the presence of sunflower small scale industries do not contribute to farmer’s livelihood improvement:

##### **4.6.1 Sunflower production leads to the development of sunflower small industries**

Overall, 76.7% of the respondents suggested that sunflower production leads to the development of small industries, this is indicated by the fact that farmers normally sell sunflower to dealers at lower price who are the owner of small industries. On the other hand about 23.3% of the respondents rejected. This does not refute the fact that sunflower production lead to development of small industries. The owner of the small industries sends dealers to collect sunflower seed at lower price for their benefit and not sunflower farmers.

**Table 15: Responses on whether sunflower production leads to the development of sunflower small industries**

<b>Category</b>	<b>Frequency</b>	<b>Percent</b>
Yes	69	76.7
No	21	23.3
<b>Total</b>	<b>90</b>	<b>100.0</b>

**Source: Field findings, 2012**

#### **4.6.2 Sunflower production in each seasons satisfy the requirement and production capacity of SSI**

Overall, 66.7% of the respondents suggested that the sunflower production in each season satisfy the capacity of small industries at Buigiri ward. The sunflower produced at the area is normally taken to other places like Dodoma town for being processed at small industries. Only 33.3% of the respondents rejected nevertheless this does not deny the fact that sunflower production satisfy the production capacity of small industries.

**Table 16: Responses on whether the amount of sunflower production in each seasons satisfy the requirement and production capacity of SSI**

<b>Responses</b>	<b>Frequency</b>	<b>Percent</b>
Yes	60	66.7
No	30	33.3
<b>Total</b>	<b>90</b>	<b>100.0</b>

**Source: Field findings, 2012**

#### **4.6.3 The form in which sunflower is sold**

The sunflower farmers about 78.9% reported to sell sunflower in form of sunflower seeds which lowered the price, this indicated by the majority of the sunflower farmers to sell their products as seeds. The dealers from different places were normally paying lower price. In the production process the owners of small scale industries tend to benefit through processing the sunflower seeds which resulted to many products like poultry meals, sunflower oils which are sold at higher price. Only, 21.1% of the respondents were reported to sell Processed Oil, cake and residue who are in most cases farmers and own processing machines.

**Table 17: The form in which sunflower is sold**

<b>Category</b>	<b>Frequency</b>	<b>Percent</b>
Sunflower seeds	71	78.9
Processed Oil, cake and residue	19	21.1
<b>Total</b>	<b>90</b>	<b>100.0</b>

**Source: Field findings, 2012**

#### **4.6.4 The sunflower labour force**

The Responses on Table 17 Shows that 91(101.1%) that the whole family takes care for sunflower farmers. This implies that sunflower farming is depending on family labour force and large percentage. However, only 76(84.4%) of the respondents reported that hired labour is used in sunflower farming. The family labour can not manage to cultivate and prepare the farm ready for sunflower farming still need hired labour.

**Table 18: Responses on who takes care on sunflower farm**

<b>Category</b>	<b>Frequency</b>	<b>Percent</b>
The whole family	91	101.1
Father	6	6.6
Mother	6	6.6
Children	5	5.5
Hired labour	76	84.4
<b>Total</b>	<b>184</b>	<b>204.2</b>

**Source: Field findings, 2012**

**Note: Total is more due to multiple response**

#### 4.6.5 Distance from the farm to the farmer's residential place

The distance from the farm to residential places of the farmers reported by 35.6 of the respondents as 2 Km and only 27.8% of the respondents reported as 3 Km from farmers residence. This has more impact on the farmer's livelihood.

**Table 19: Distance from the farm to the farmer's residential place**

<b>Distance in KM</b>	<b>Frequency</b>	<b>Percent</b>
1	21	23.3
2	32	35.6
3	25	27.8
4	2	2.2
5	7	7.8
8	1	1.1
10	1	1.1
12	1	1.1
<b>Total</b>	<b>90</b>	<b>100.0</b>

**Source: Field findings, 2012**

The farmers were required to walk daily on foot, and the cultivation is conducted mostly by the poor farming methods which resulted into more effects to sunflower farmers such as body tiredness and constrained livelihood. Moreover, only 23.3% of the respondents suggested that distance is one kilometer from residential place to farm.

#### **4.7 Objective Five: The measures to be taken in order to improve the income among farmers in Chamwino District**

The measures that need to be taken on improving the income of the sunflower farmer were presented in subsection as follows:

##### **4.7.1 Non-agricultural household income generation**

Sunflower farmer reported of getting additional income obtained from non agricultural household income generation such as petty business reported by 86(95.5%) of the respondents and Livestock keeping reported by 72(80%). This indicated that sunflower production in the sides of farmers do not satisfy to improve their livelihood. The sunflower farmers from assisting their family on obtaining needs engaged in other non agriculture activities for obtaining supplementary income.

**Table 20: Other non-agricultural household income generation**

<b>Category</b>	<b>Frequency</b>	<b>Percent</b>
Business	86	95.5
Livestock keeping	72	80
Poultry keeping	31	34.4
Others (specify)	3	3.3
<b>Total</b>	<b>192</b>	<b>213.2</b>

**Source: Field findings survey, 2012**

**Note: Total is more due to multiple response**

#### 4.7.2 Financial services

**Table 21: Financial services available at Buigiri ward**

<b>Category</b>	<b>Frequency</b>	<b>Percent</b>
Bank account	9	10
Rural finance and credit	16	17.7
Savings and loan associations	83	92.2
Others (specify)	15	16.6
<b>Total</b>	<b>123</b>	<b>136.5</b>

**Source: Field findings, 2012**

Sunflower farmers proposed about 83(92.2%) of the respondents that saving and loan associations as an effective measures to improve sunflower farming which will enable the farmers taking loan and solve the problem of shortage of capital which is increasingly affecting Buigiri ward sunflower production.

#### 4.7.3 Sunflower farmers sell their products

The study revealed that about 75(83.3%) of the respondents at Buigiri ward sell their sunflower to dealer at lower and discriminating price. This resulted to low sunflower farmers capital base and consequently limited expansion of small industries in processing sunflower. However, only 42(46.6%) were reported to sell their sunflower to sunflower oil industries where they face lower price while the demand of sunflower oil is increasing in many places of the country.



**Table 22: Responses on where sunflower farmers sell their products**

<b>Category</b>	<b>Frequency</b>	<b>Percent</b>
To the dealer	75	83.3
To sunflower oil industries	42	46.6
To the agent	18	20
<b>Total</b>	<b>135</b>	<b>149.9</b>

**Source: Field findings, 2012**

**Note: Total is more due to multiple response**

#### **4.7.4 Government initiative to provide, support to ensure the availability of seeds**

Response to whether sunflower producer know any government initiative to provide, support to ensure the availability of seeds. Revealed that 77(85.6%) of the responses were found on the disagreement side that government is not providing seeds. This indicates that farmers use own local means to obtain seeds. That, limited with the quality and timely availability. On the other hand about 13(14.4%) of the responses were on the agreement side. This is still compared to the responses on the disagreement side. This indicates that government do not provides seeds to sunflower farmers.

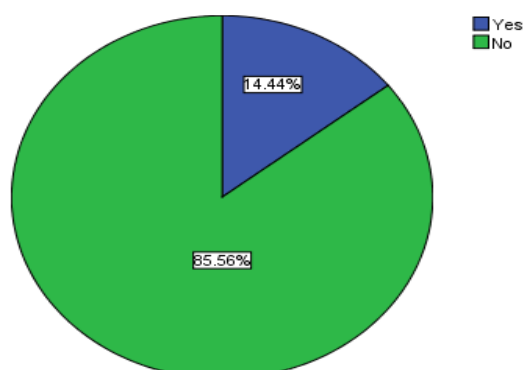
**Table 23: Responses on whether government ensures availability of seeds**

<b>Category</b>	<b>Frequency</b>	<b>Percent</b>
Yes	13	14.4
No	77	85.6
<b>Total</b>	<b>90</b>	<b>100.0</b>

**Source: Field findings, 2012**

**Note: Total is more due to multiple response**

**Figure 4: Government initiative to provide, support to ensure the availability of seeds**



**Source: Field findings, 2012**

#### 4.7.5 Price for 5kg sack of sunflower seeds

**Table 24: The price paid for purchasing a 5kg sack of sunflower seeds**

Category	Frequency	Percent
1750	22	24.4
3500	53	58.9
2500	10	11.1
5000	5	5.6
<b>Total</b>	<b>90</b>	<b>100.0</b>

**Source: Field findings, 2012**

Overall 53(58.9%) of the respondents reported that 3500/= is the common price paid for 5kg of sunflower seeds. This price is high compared to the ability of sunflower farmers in that respect affects the size of farm to be cultivated and hence sunflower production. Moreover, 22(24.4%) of the respondents suggested that 1750/= is paid for 5kg of sunflower seeds.

#### **4.8 Discussion**

The study on the contribution of sunflower production to sunflower farmers and small scale industries mostly stress emphasis that production trend of sunflower declining over the past five years, this directly affected the production of small scale sunflower industries that depend on seeds of sunflower for production. The contributing factors for such discouraging phenomena were low processing capacity and less sunflower production. In response to such situation the sunflower processing resulted into decline in production. There is increasing constraints to sunflower production that were discouraging the production such as the situation of shortage of capital that resulted into triple effects as low production, poor expansion and hence shortage of sunflower seeds that are required by small scale industries. In response to such situation the livelihood of both farmers and sunflower industries were constrained. Mostly farmers were affected as little produce were purchased by dealers at small price. There is a need for Government through the ministry of agriculture appreciate the expected contribution of sunflower farming for both farmers and small scale industries, providing support in terms of seeds that are improved to boost the production. Loan from saving association has to be provided at cheap cost that ensures accessibility to farmers specifically on boosting sunflower farmer's capital which is currently low.

## **CHAPTER FIVE**

### **CONCLUSION AND RECOMMENDATIONS**

#### **5.0 Introduction**

This chapter presents the main conclusion and recommendation of the study: later on propose the area for further research.

#### **5.1 Summary**

##### **5.1.1 Summary of the Major findings**

Production trend of sunflower for the past five years in 2007-2011 has a tendency of falling and rising from 2007 to 2011. That mostly happened due shortage of fertilizers, lack of improved seeds and low farmers capital.

The production trend of sunflower oil industries of small level were falling whiles the sunflower oil demand increasing which triggered price. On the other hand, the production of small scale industries is falling due to shortage of sunflower seeds and low processing capacity.

Land for cultivating sunflower, insecticides and pesticides were recognized to be the major opportunities that were available for sunflower production. Nevertheless, Majority of the sunflower farmers were not accessible to the insecticides and pesticides due to shortage of financial resources.

Shortage of capital for buying sunflower farming implements such as fertilizers and insecticides and pesticides, lack of money for buying seeds and lack of awareness of farming methods were the constrained factors that limited sunflower production and sunflower oil industries.

It has been summarized that sunflower small scale industries do not contribute to farmer's livelihood improvement because farmers normally sells sunflower to dealers at lower price who are the owner of small industries. This refutes the fact that sunflower production contributes the livelihood of the farmers.

Non-agriculture activities were recognized as the measures that can supplement farmer's income that were expected to be obtained from sunflower farming. The financial services need to be evaluated serious hence the farmers to take loan on Savings and loan associations.

## **5.2 Conclusion**

The findings revealed that production trend of sunflower have a tendency of falling and rising from 2007 to 2011. In 2007 the production were 722 tons, 2008 the production fall 640 tons per year, as a result of shortage of fertilizers, lack of improved seeds and low farmers capital.

The production trend of sunflower oil industries of small level the findings revealed that 14440 liters of sunflower were produced during 2007, because the production of sunflowers were high and sunflower oil were not recognized as potential products in many places. During 2008 and 2009 the sunflower oil demand start to increase from different places which trigger increase in price as a result the production of small scale industries fall to 12800 liters in both years. In 2010 the sunflower oil production tends to fall to 12640 liters, this is a result of urban sunflower dealers which purchasing at high price compared to the local producers.

The opportunities facing sunflower production and sunflower oil industries were land for cultivating sunflower, insecticides and pesticides: it means that sunflower farmers were not accessing pesticides and insecticides. Sunflower farmers need insecticides and pesticides for controlling pest and diseases that limited the growth of sunflower farmers. Majority of the sunflower farmers were not accessible to the insecticides and pesticides due to shortage of financial resources.

The Constraints facing sunflower production and sunflower oil industries were shortage of capital which is needed in buying sunflower farming implements such as fertilizers and insecticides and pesticides, Unreliable rainfall, lack of money for buying seeds, lack of awareness of farming methods, pest and diseases and shortage of sunflower market respectively were the constrained that limited sunflower production and sunflower oil industries.

Livelihood of sunflower farmers related to the presence of sunflower small scale industries The study has found that the presence of sunflower small scale industries do not contribute to farmer's livelihood improvement because farmers normally sells sunflower to dealers at lower price who are the owner of small industries.

The measures to be taken in order to improve the income among farmers in Chamwino District were to involve in non-agriculture activities that provided substantial amount of income to improve sunflower farming such as petty business. The financial services need to be evaluated serious hence the farmers to take loan on Savings and loan associations.

### **5.3 Recommendations**

#### **5.3.1 Recommendations for farmers**

To Sunflower farmers, to make sure get enough extension services from specialized person especially on the proper seeds and fertilizers that need to be adopted. That will expect to boost sunflower production which is currently lost because of farmer's lack of extension services.

#### **5.3.2 Recommendations for Small Scale Industry**

The small scale industries should increase the processing capacity of machine through finding new and improved machines that could process sunflower seeds. Small scale industries have to improve machine with higher processing capacity of sunflower seeds for better production.

#### **5.3.3 Recommendations for officers**

Officers like agriculture extension officers need to provide advice to farmers especially on the application of proper farming methods such as applying fertilizers and insecticides. In most cases, farmers especially those residing in rural areas lack proper instructions from specialized officers. This is highly contributed to shortage of extension services in rural areas.

#### **5.3.4 Recommendations for policy makers**

The policy makers should make the policy that will affect sunflower farming hence ensure farming implements at cheap and affordable price. This will enable sunflower farmers to buy fertilizers, sunflower seed and insecticides. Additionally, the policy should specify the prices of sunflower to dealers should be prevented to buy

sunflower at lower price instead the policy should indicate support to farmers during needs so that to avoid selling sunflower at lower price.

#### **5.4 Areas for further research**

The researcher suggested other areas that will need to be conducted by either Non Governmental Organization, Government and research Institution related to the contribution of sunflower production to the livelihood of farmers and development of small scale industries on the following areas:

- The effects of small scale industries to the livelihood of the farmers
- The presence of urban dealers and sunflower farmers income
- The challenges associated with decline in sunflower production



## REFERENCES

Abel, G.H., Mackenzie, A.J., 2001 . Salt tolerance of soybean varieties during germination and later growth. *Sunflower Crop Sci.* 4, 157-161.

Ayers, R.S. Westcot, D.W. 2003 Water quality for Agriculture. FAO Irrigation and drainage paper 29, Rev. 1, Rome, 174 pp.

Bagachwa (1984): *Poverty Alleviation in Tanzania. Recent research issues*: DUP, Dar es Salaam, Tanzania.

Bernstein, L., Ogata, G., 1999. Effects of salinity on nodulation, nitrogen fixation, and growth of soybeans and alfalfa. *Agron. J.* 58, 201-203. de Wit, C.T., 1958. Transpiration and crop yields. *Versl. Landbouwk. Onderz.* 64.6, Pudoc, Wageningen, 88 PP.

Blaikie P., Cannon T., Davis I., Wisner B. 2004, *At Risk: Natural Hazards, People's Vulnerability, and Disasters*. New York, NY: Routledge,

Chawe, M. (2008), *Contribution of sunflower oil seeds to community income level*, Morogoro, Tanzania

Doorenbos, J., Kassam, A.H., 1996. Yield response to water. FAO Irrig. Drain. Paper No. 33, Rome, 193 pp. Feddes, R.A., 1985. Crop water use and dry matter production: state of the art. In: Perries, A., Riou, Ch. (Eds.), *Crop Water Requirements*, pp. 221-233.

Frerichs, R.R. Rapid Surveys (unpublished), © 2008. Not For Commercial Distribution

John Nditi, Daily news: *Tuesday, September 2<sup>nd</sup> 2008*.

Guido van der Hoeven (2001) Farm, Farming and Who's a Farmer for Tax Purposes\* , Extension Specialist/Senior Lecturer Department of Agricultural and Resource Economics, NC State University

Hamdy, A., Abu Zeid, M., Lacirignola, C., 1995 Water crisis in the Mediterranean: agricultural water demand management. *Water Int.* 20, 176-187.

Henderson, Naomi R. (2009). *Managing Moderator Stress: Take a Deep Breath. You Can Do This!*. Marketing Research, Vol. 21 Issue 1, p28-29.

Hofstede, A. J., (1988), *Culture in community organization*, London, UK.

Ian Goldin 1990 Comparative Advantage: Theory And Application To Developing Country Agriculture OECD Development Centre Working Paper No. 16 (Formerly Technical Paper No. 16)

Jolly (1969), *Planning education for manpower perception*. New York, USA  
Rural Livelihood Development Company (RLDC), 2008 Sunflower Market  
Development Strategy

Jules R. Benjamin, 2003) *A Student's Guide to History*

Gary E. Schwartz, Ph.D. January 19, 2012 A Study on the Effects of Grounding  
(Earthing) on Sunflowers

Goldin and O. Knudsen (1990) Agricultural Trade Liberalisation: The Implications for Developing Countries, OECD and World Bank, Paris and Washington.

Katerji, N., van Hoorn, J.W., Hamdy, A., Karam, F., Mastrorilli, M., 1996. Effect of salinity on water stress, growth and yield of maize and sunflower. *Agric. Water Manage.* 30, 237-249.

Kenny, A., & Kenny, C. (2006). *Life, Liberty and the Pursuit of Utility: Happiness in Philosophical and Economic Thought*. Exeter: Imprint Academic.

Kopoka (2010): *Poverty and development, a Development studies leader*

Linda Westfall (2006) Sampling Methods Excerpt from *The Certified Software Quality*

Lekunze J, Antwi 2011 Socio-economic constraints to sunflower production in Bojanala farming community of the North-West province, South Africa *Life Science Journal*

Leslie Kish (1995). *Survey sampling*. Wiley. [ISBN 978-0-471-10949-5](#). Retrieved 11 January 2011

Lindlof, T. R., & Taylor, B. C. (2002). *Qualitative Communication Research Methods, 2nd Edition*. Thousand Oaks, CA: Sage.

Manders, Jonathan. (2004). Sequencing Property Rights in the Context of Development. *Cornell International Law Review*, 37, 179

Mariamou, M. M. (2003). *Factors affecting sunflower production in Singinda District Council, Institute of Rural Development Planning*.

MAFS, (2005) *Budget speech for the year 2005/2006 presented at the National Assembly by the Minister for Agriculture and Food Security*. July, 2005, Dodoma.

Mgongolwa, M. A. L (2004), *An assessment of the contribution of sunflower oil production to household income in Kongwa District*, Institute of Rural Development Planning.

Mtui F. (2008) *VYAHUMU Trust, Strengthening Rural Oilseed Processing*, Morogoro, Tanzania.

Merali Chawe: *Daily News*, Tuesday, October 21<sup>st</sup> 2008

National Sunflower Research Program (2008): *Division of research and development programs, Tanzania*.

Nkdikumana, S. M., (2000) *Culture and development*, Dar es Salaam, Tanzania

Odulaja, A and Kiros, F.G. (1996): Modeling agricultural production on small-scale farmers in Sub-Saharan Africa: A case study in Western Kenya. *Agricultural Economics* 14, pg 85-91.

Peter L. Bernstein (1998). [\*Against the gods: the remarkable story of risk\*](#). John Wiley and Sons. pp. 118-. ISBN 978-0-471-29563-1. Retrieved 2 January 2011.

Shalhevet, J., (1994). Using water of marginal quality for crop production: major issues. *Agric. Water Manage.* 25, 233-269.

Rank, J (2007): *Tanzania working conditions*, Dar es Salaam, Tanzania

Schneither, A. A. and J. F. Miller: (1981) *Description of Sunflower Growth Stages*, *Crop Science*

Raymond James Jessen (1978). [\*Statistical survey techniques\*](#). Wiley. Retrieved 2

January 2011

Roger Sapsford: Victor Jupp (29 March 2006). [\*Data collection and analysis\*](#). SAGE. pp. 28-. ISBN 978-0-7619-4363-1. Retrieved 2 January 2011.

Shashi R (2001): *Modern Agriculture Implements in Singida Rural Districts*

Shalhevet, J., (1994). Using water of marginal quality for crop production: major issues. *Agric. Water Manage.* 25, 233-269.

Scott, John (2005). *Industrialism: A Dictionary of Sociology*. Oxford University Press.

Sreedharan, E. (2004). [\*A Textbook of Historiography, 500 B.C. to A.D. 2000\*](#). Orient Longman. p. 302. [ISBN 81-250-2657-6](#)

Tanzania. ARI, (2008), *oil seeds research sub program*, Iringa, Tanzania

Tallinn, Estonia (2001) Investment Activities / Point Source Pollution And Non-Point Source Pollution HELCOM Programme Implementation Task Force (HELCOM PITF) PITF 18/2001 18th Meeting

Thirtle, T, Townsend, T.R. and Van Zyl, J. (1998): Testing the induced innovation hypothesis: An error correction model of South African Agriculture: *Agricultural Economics* 19: pg 145-157

Thomas Jefferson, 2006 Sunflower Production The Institute of Agriculture in West

Colombia Tormey, Simon. *Anti-Capitalism*. One World Publications, 2004. p. 10

[www.uchaguziTanzania.com-11/june/2011](http://www.uchaguziTanzania.com-11/june/2011)

Trebilcock, Michael. (1991). *Economic Analysis of Law* in R.F. Devlin, (Ed.), *Canadian Perspectives on Legal Theory*. Toronto: Edmond Montgomery.

URT (1982). *The Tanzania Agriculture Policy*

University of Cincinnati, (2008): *Ancient Sunflower Fuels Debate about Agriculture in America*. Cincinnati, America.

URT (2008) *The economic survey 2008 Dar es Salaam, Ministry of Finance and Economic Affairs*

Wambura, M. W, (2001), *Importance of education in community development*

Wilfred M. M. (2007), *Factory contributing to underutilization of irrigation scheme, Institute of Rural Development Planning*

## APPENDICES (I)

### Questionnaire for household heads who are involved in sunflower production, processing and marketing.

Questionnaire number: .....

Date: .....

District: .....

Ward: .....

Village: .....

Name of household head: .....

#### 1. Sex

A	Male	
B	Female	

#### 2. Age

A Between 19- 28	B Between 29- 36	C Between 37- 45	D 46 and above
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#### 3. Marital Status

A	B	c	D	E
Married	Separated	Single	Widow	Divorced

#### 4. Level of education attained

A	B	C	D
Not attended	Primary	Secondary	College/ University

#### 5. To whom you sell sunflower crops

A	B	c	D	E
To the dealer	To sunflower oil industries	Government	To the agent	Other (specify)

6. Are the seeds usually available: the required quantity, the right quality and at the right time?

A Required quantity	B Desired quality	C Timing
------------------------	----------------------	-------------

If no, explain:

Quantity:

.....  
 .....  
 .....

Quality:

.....  
 .....  
 .....

Timing:

.....  
 .....  
 .....

7. Do you know of any government initiative to provide, support to ensure the availability of seeds?

A	B
YES	NO

8. If NO above, how much do you pay to purchase a 5kg sack of sunflower seeds?

.....

9. Do you have enough land for sunflower farming?

A	B
YES	NO

10. If yes, how big is the area?

A	B	C
Below ½ an acre	Exactly one acre	Above one acre

11. How much do you harvest from one acre of sunflower?

A	B	C
Below 1 sack	Between 1- 10 sacks	Above 10 sacks

12. If below 10 sacks per acre above, what are the reasons?

A	Lack of Market	
B	Lack of seeds	
C	Pests	
D	It is laborious	
E	Other (specify)	

13. Do you often hire part of your land?

A	B
YES	NO

14. If yes above (13), what is your opinion about the hiring cost per acre?

A	B	C	D
Low	Moderate	High	Very high

15. What is the acreage of you sunflower farm?

A	B	C	D
Below 1 acre	Between 1- 5 acres	Between 5- 10 acres	Above 10 acres (specify)

16. In which form do you sell your products?

A	B
Sunflower seeds	Processed Oil, cake and residue

17. If (b) above (16) how do you process the products?

A	B	c	D	E
Hand pressing machine (own)	Hand pressing machine (hired)	Power Machine (Own)	Power Machine (hired)	Traditional methods

18. If (a) above (16), where do you sell the sunflower seeds that you grow?

A	B
Cooperative	Individual

19. How far is your farm(s) from your residence?

.....

20. Who takes care of your sunflower farm?

A	B	C	D	E
The whole family	Father	Mother	Children	Hired labour

21. What motivated you to start sunflower farming and (or) processing?

.....  
 .....  
 .....  
 .....

22. Whether sunflower production leads to the development of Sunflower Small Industries

Yes .....No.....

If Yes How many bags do you supply to SSI in each seasons .....

23 Are the amount of sunflower production in each seasons satisfy the requirement and production capacity of SSI

Yes.....No.....



24 What is the Sunflower production trend for the past five years

Years	Sunflower Production
2007	
2008	
2009	
2010	
2011	

28 Are you involved in other non- agricultural household income generation?

A	B	C	D
Business	Livestock	Poultry	Others (specify)

29. What are the inputs that you use in sunflower farming and (or) processing?

	Inputs	Yes	No
A	Improved seeds		
B	Artificial fertilizer		
C	Pesticides		
D	Manure		
E	Farming machinery		
F	Others (specify)		

30. If you do not use some/ all the above (25), can you please explain why?

.....

.....

.....

.....

.....

27. Do you have access to any of the following financial services?

A	B	C	D
Bank account	Rural finance and credit	Savings and loan associations	Others (specify)

28. What are the major constraints that face you in sunflower farming/ processing?

.....

.....

.....

.....

.....

29 Mention the opportunities which you have on increasing sunflower production

.....  
.....  
.....  
.....  
.....

29. Do you have any strategy to increase your acreage of sunflower farming/  
processing capacity?

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.....  
.....  
.....  
.....

30. What interventions would you recommend that would help you and your  
fellow farmers and (or) processors to achieve (29) above?

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31 Is there improvement of your livelihood related to the presence of sunflower oil  
industries?

Yes.....No.....

If yes mention

.....  
.....  
.....  
.....

**APPENDICES (II)**

**Questionnaire for extension officers, key informants and stakeholders (NGOs, CBOs and FBOs)**

Questionnaire number: .....

Date: .....

District: .....

Ward: .....

Village: .....

Name of respondent: .....

Line of work: .....

1. Sex

a	Male	
b	Female	

2. Age

A	B	c	D
Between 19- 28	Between 29- 36	Between 37- 45	46 and above

3. How do you contribute to the improvement of sunflower production in Chamwino district?

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4. What is your opinion on the value of sunflower farming/ processing in Chamwino District?

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5. What strategies do you use in community mobilization?  
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6. Are there factors that hinder some farmers from getting involved in sunflower farming and (or) processing? If yes, please share  
.....  
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.....  
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.....  
.....
7. How many households in Chamwino District/ area of operation (ward) grow sunflower for commercial purposes?  
.....  
.....  
.....
8. What is your opinion about the availability of land for farming in Chamwino District?  
.....  
.....  
.....  
.....
9. What is the total acreage under sunflower cultivation in the district?  
.....  
.....
10. Do you think the district has enough land to sustain growth in sunflower farming?  
.....  
.....  
.....
11. Why do you think most farmers in Chamwino District engage in sunflower farming and processing?  
.....  
.....  
.....  
.....  
.....

12. Is the trend of sunflower farming on the increase or decline?

.....

13. Please share the reasons for your answer to question (12) above

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.....

14. Do you have data about sunflower production trends for the past 5 years?

.....

15. If yes to (14) above, please share

Year Tons produced	2006	2007	2008	2009	2010

16. Could you please share the reasons behind the declining, escalating or waning trend in sunflower production in the district?

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.....  
.....  
.....

17. Do farmers in the district prefer to sell unprocessed seeds or processed sunflower oil plus cake?

A Sunflower seeds	B Processed Oil, cake and residue

18. Are there any reasons for your answer to (17) above? If yes, please share

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.....  
.....  
.....  
.....  
.....

19. What is the number of hand and engine processing machines in the district?

A	B
Hand pressing machine	Motor pressing machine

20. Who controls the price of sunflower products in the district?

A Farmer	B Buyer	c Cooperatives	D Supply/ demand
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21. What other crops are important for the improvement of livelihood among the population in Chamwino District?

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 .....  
 .....  
 .....  
 .....

22. Are farmers in the district involved in other non- agricultural household income generation?

A	B	c	D
Business	Livestock	Poultry	Others (specify)

23. What are the inputs that are used in sunflower farming and (or) processing in the district?

	Inputs	Yes	No
A	Improved seeds		
B	Artificial fertilizer		
C	Pesticides		
D	Manure		
E	Farming machinery		
F	Others (specify)		

24. If they do not use some/ all the above (23), can you please explain why?

.....  
 .....  
 .....  
 .....

25. Do sunflower farmers have access to any of the following financial services?

A	B	c	D
Bank account	Rural finance and credit	Savings and loan associations	Others (specify)

26. What are the major constraints that farmers face in sunflower farming/ processing in the district?

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 .....  
 .....  
 .....  
 .....  
 .....

27. Do you have any strategy to help farmers increase their acreage of sunflower farming/ processing capacity in Chamwino District?

.....  
 .....  
 .....

28. What interventions would you recommend that would help farmers and (or) processors to achieve (27) above?

.....  
 .....  
 .....  
 .....  
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