

**Market participation of smallholder sunflower farmers in Sekhukhune District  
of Limpopo Province, South Africa**

by

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## **DECLARATION**

I declare that the mini-dissertation hereby submitted to the University of Limpopo, for the degree of Master of Science in Agriculture (Agricultural Economics) has not previously been submitted by me for a degree at this or any other University; that it is my work in design and in execution, and that all material contained herein has been duly acknowledged.

\_\_\_\_\_  
**Surname, Initials (title)**

\_\_\_\_\_  
**Date**

## **DEDICATION**

I dedicate this study to my two younger brothers that I love whole heartedly, Mulweli Mathagu and Mueletshedzi Mathagu: the world is a tough place, but if you work hard and believe in God you will make it without doubt. Continue on from where I have ended. This is only just a yardstick for you.

Whatever you do, always remember what the Bible says in Matt 6:33 and Luke 1:37.

## **ACKNOWLEDGEMENTS**

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I would like to thank my supervisor Professor A. Belete for his diligent supervision, his perseverance and patience towards me and motivation; without him the study would not have been a success. My co-supervisors: Dr I Oluwatayo and Professor A.E Nesamvuni thank you for your outstanding encouragement, support and supervision, without them completion of this study would not have been possible.

My classmates who now I consider as family away from home: Usapfa Luvhengo, Ranga Roy Shoko, Florence Masha, and Humbulani Masikhwa for their encouragement and support throughout my research project. I appreciate all the valuable moments we spent together.

Above all, I cannot forget the one who created the spirit, soul and body: I thank my Saviour Jesus Christ who gave me the strength throughout the whole research process.

## **ABSTRACT**

*The study focused on the market participation of the smallholder sunflower farmers of Sekhukhune District in Limpopo Province of South Africa. A total of 100 smallholder sunflower farmers of Sekhukhune were randomly selected for the study. Data was gathered through the use of structured questionnaires with open-ended questions. The data was analysed using the Logistic Regression model on SPSS 26.0 (statistical package for social sciences).*

*The probability of the smallholder sunflower farmers participating in markets was determined significantly by gender of household head, farm size, level of education, marketing experience, distance to the market, ownership of vehicle and stakeholder availability.*

*Recommendations were made with regard to that of training, monitoring, funding, Government support, access to production land and the involvement of organizations with the smallholder sunflower farmers. Training should be provided for the smallholder sunflower farmers because farmers are always faced with new technology and market changes, there should be a budget that is put aside for the funding of the smallholder farmers, monitoring programs should be implemented in order to monitor the progress of the smallholder farmers, increased access to production land for farming, government support through financial and input support, smallholder farmers should get involved with organizations that can help them with training and funding, and the government should implement policies that are commodity based.*

**Key words:** *smallholder farmers, market participation, Logistic Regression Model, sunflower, Limpopo province*

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## **LIST OF ACRONYMS**

BC	Before Christ
DAFF	Department of Agriculture, Forestry and Fisheries
DoA	Department of Agriculture
NAFU	National African Farmers Union
NAMC	National Agricultural Marketing Council
PTO	Permission to Occupy
RLDC	Regional Leadership Development Conference
SAFEX	South African Futures Exchange
SHSF	Smallholder Sunflower Farmers
SNV	Netherlands Development Organisation
SPSS	Statistical Package for Social Sciences

# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction and background

South Africa forms part of the global economy that needs to maintain its standards in the world markets and also to compete in tougher world markets and for South Africa to keep its position in the world markets it needs to be competitive (Ivancerich et al. 1994). In order to achieve this objective the former minister of finance Gordhan (2012) in his budget speech of the 2012/13 indicated that there should be emphasis on the support for agriculture.

Sunflower plant is said to have originated from the Western part of North America, wherein the Native American domesticated the plant in around 1000 BC. In the year 1800 the sunflower plant which had been brought to Europe by the Spanish explorers in 1510 became a food crop, by then it had already been made known in the Russian Federation. The Russian farmers who were the largest producers of sunflower seeds in the year 1860 started to make improvements on the sunflower plant (Ivancerich et al 1994).

In 1984 sunflower became a source of food in Australia, Canada, and South Africa. At the time South Africa was still subjected to the marketing Act (Act 59 of 1968, as amended), with policies that were used to control or guide the marketing of commodities (Van Zyl, 2010) and it also excluded smallholder farmers. According to Van Zyl (2010), in 1996 the marketing Act (Act 59 of 1968) was replaced by the new marketing Act (Act no 47 of 1996). Such replacement now enables farmers to market their oilseeds locally and also in international markets with no regulations and smallholder farmers are able to own land. With the permission that is now available for smallholder farmers to market their products, there are questions regarding whether these farmers are able to access and participate in those markets. Sunflower seed is planted in eight provinces in South Africa, including the Limpopo Province. In Limpopo it is planted predominately in Sekhukhune and Waterberg district. The seed is produced by both commercial farmers and the smallholder farmers, though they have different sizes of land, markets, inputs, technologies and challenges (DAFF, 2010).

According to DAFF (2012), both commercial and smallholder farmers of South Africa cultivate oil crops and this makes sunflower crop to be the third largest crop that is produced in South Africa, with maize and wheat being the first and second respectively.

## **1.2 Definitions of terms**

### **1.2.1 Market**

A market is a place whereby buyers are able to purchase from sellers. According to Cain, Elevitch, and Milne (2012), a market is a group of buyers and sellers with same focus and needs, with each and every market having its own characteristics of how goods are sold and purchased.

### **1.2.2 Marketing**

This is a process of selling and buying at a market and it can also be defined as the distribution of goods and services to consumers.

### **1.2.3 Market participation**

Market participation is a process whereby sellers or producers partake or get involved in selling their produce to different markets; it could be partaking in the local and/or international markets.

### **1.2.4 Local markets**

This is a location of selling and buying of goods and services that involves only a small area in a particular country.

### **1.2.5 International markets**

A place of selling and buying that involves two countries or more.

### **1.2.6 Smallholder farmers**

Farmers that are still disadvantaged in producing, they do not have all the necessary resources and technologies but still manage to produce. According to DAFF (2012), smallholder farmers are farmers who own a small piece of land where they can grow one or two cash crops and subsistence crops with the help of family labour.

### **1.2.7 Sunflower**

It is a crop that produces blossoms that are yellow in colour; it is responsible for the production of oil, animal feed and also for the production of Bio-diesel.

### **1.2.8 Logistic regression**

Logistic regression is an econometric model that is used to measure the relationship between a dependent variable and one or more independent variable/s by using probability scores.

### **1.3 Problem statement**

To remain in the markets an enterprise must work towards continual improvement of the quality of its products (Ivancerich et al. 1994). Commercial farmers are able to improve the quality of their products, given that they are able to access capital and improved technologies in which smallholders are unable to access. According to Baloyi (2010), the major challenge that faces value chain economists is to find ways to increase the access of smallholder farmers to high-value markets and how to increase farmer participation in the process of adding value to their products and that they should be linked to high-value markets.

Furthermore, Bienade et al. (2004) cited by Baloyi (2010), maintains that smallholder farmers are unable to engage in profitable markets. As such, action should be taken to help smallholder farmers to increase their profits, have access to markets and be able to remain sustainable. The essence of the problem lies in determining strategies that can assist smallholder sunflower farmers to participate favourably and sustainably in markets. In light of this scenario, this study will analyse the issues of marketing infrastructure, market information, value adding infrastructure and strategies for smallholder farmers, and financial support.

### **1.4 Research objectives**

The objectives of this study were to:

- (i) Determine socio-economic characteristics of smallholder sunflower farmers in the Sekhukhune district of Limpopo Province.
- (ii) Profile their market participation based on socio-economic characteristics and farm size.
- (iii) Determine the constraints faced by the smallholder sunflower farmers in the study area.

## **1.5 Research questions**

These questions were generated in order to achieve the study's stated objectives:

- (i) What are the socioeconomic characteristics of smallholder sunflower farmers of Sekhukhune District?
- (ii) Do socio-economic characteristics and farm size of smallholder sunflower farmers of Sekhukhune District determine their participation in markets?
- (iii) What are the constraints that affect smallholder sunflower farmers of Sekhukhune District from participating in the markets?

## **1.6 Hypotheses**

- (i) Socio-economic factors affect market participation of smallholder sunflower farmers in Sekhukhune District.
- (ii) Marketing channels make it possible for smallholder sunflower farmers of Sekhukhune District to participate in markets
- (iii) The smallholder sunflower farmers in Sekhukhune District are faced with market participation challenges that hinder their farming activities.

## **1.7 Justification of the study**

This study mainly focuses on the smallholder sunflower farmers in Sekhukhune District of the Limpopo Province of South Africa. The study is an important tool that identifies challenges that are encountered by the smallholder sunflower farmers of Sekhukhune district with regard to market participation and the kind of relationship between the smallholder sunflower farmer and stakeholders. The study therefore uncovers the factors involved in market participation and provides useful information to the government of Limpopo Province as well as other development-oriented organizations in the province on how to assist smallholder sunflower farmers in increasing productivity and participating in markets which will in turn lead to increased income.

The policies that are now in place in South Africa are not commodity-based, meaning that there is no policy which is specific for sunflower production. The study is informative to the policy makers on how to formulate and implement sustainable commodity-based policy that will enable smallholder sunflower farmers to participate in both local and international markets. Sunflower is a major source of food, oil and oil cake that is used to feed domestic animals and in that regard it is important for a study of this nature to be conducted.

### **1.8 Outline of the study**

The study will comprise of five chapters, where chapter 1 will deal with the introduction to market participation of smallholder sunflower farmers in Sekhukhune District of Limpopo Province, using the Logistic Regression model. The next chapter, chapter 2 will involve the literature review, followed by chapter 3 which will outline the research methodology adopted for the study. Chapter 4 will present the data collected as well as analysis of such data. Lastly, chapter 5 and 6 will deal with the summary, conclusion and policy recommendations respectively.

### **1.9 Conclusion**

This chapter has provided the general introduction and the background of the study. It also highlights the problem statement of the research, the importance of the study and the study area where the study was conducted. The research objectives, research questions and hypothesis were outlined as the critical sections of the study. The ethical considerations are important guidelines for respecting human rights of the research participants. The structure of the study will serve to layout the research.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Introduction

Literature review is a way in which the researcher looks at past studies that have been conducted. The related literature of the study is reviewed in line with the previous studies on smallholder farmers in South Africa, market participation of the smallholder farmers in South Africa, relationship between smallholder farmers, and different stakeholders that are involved with smallholder sunflower farmers.

According to Ngemntu (2010), South Africa's agriculture is a dualistic sector that consists of a commercial sector that is mainly white farmers. The mainly white farmers are the commercial farmers who are market players whereas black farmers are the smallholders who struggle to participate in the markets.

Black smallholder farmers in South Africa are unable to participate in markets because they produce a small surplus that cannot be marketed in markets and cannot attract international markets. According to Moyo (2010), marketing is a process whereby there is a supply of goods and services to customers at a profit and a situation that involves both individuals getting what they want through the exchange of products and services at a certain value.

A market is a habitant or a place where there is the process of consumers buying goods and services from sellers or producers. The English Oxford dictionary (2010) describes the process of marketing as the actions and transactions that take place in a market, whereby it involves buyers and sellers in a market.

#### 2.2 Studies on Sunflower in South Africa and other African countries

According to Halford & Karp (2011) sunflower is an oil crop that produces oil which is for human consumption, sunflower also has the potential of producing bio-diesel. It is a crop that is cultivated under dry-land conditions with it being easy to manage and adaptable (Nesamvuni, 2003).

Sunflower seeds provide 40-50% of oil, which is mostly processed to cooking oil. It is also responsible for the preparation of margarine and spreads, pet foods and the production of bio-diesel (DAFF, 2010).

The extraction of oil from the sunflower seed involves pressing of the seed, in order to get crude oil which is then refined to get sunflower oil. The sunflower oil is used for cooking and baking. The sunflower seed also produces sunflower oil cake which is used for animal feed (DAFF, 2010).

### 2.3 Market of sunflower

According to Obi et.al (2012), in developing countries markets are the main drivers of smallholder farmers, the market allows smallholder farmers to participate in local, national and also international economies, which in turn generates economic development and reduces poverty in the rural areas through the income that is generated from the sales of farm produce.

Compared to other African countries, South Africa exports have a low percentage of sunflowers and European countries are not like African countries in the markets. Sunflower plant is produced in eight Provinces in South Africa; the table below indicates the supply and demand of sunflower seed that is produced in South Africa.

**Table 2.1: Supply and demand of sunflower seed in South Africa**

	Sunflower Seed	Sunflower Seed
Marketing season	Actual for 2013/14	Projection for 2014/15
	Tons	Tons
Production Crop Estimate	557 000	853 325
<b>SUPPLY</b>		
Opening stock (1 Mar)	81 302	47 116
Production deliveries	542 165	853 325
Imports	94 475	30 000
Surplus = Total supply- opening stock-Deliveries-Imports	4 689	3 500
<b>Total Supply</b>	<b>722 631</b>	<b>933 941</b>
<b>DEMAND</b>		
Processed	666 551	764 200

-human	1 162	1 200
-animal	2 777	3 000
-crush (oil and oilcake)	662 612	760 000
Withdrawn by producers	2 524	2 500
Released to end-consumers	2 923	3 200
Seed for planting purposes	2 903	2 850
Net receipts(-)/disp(+)	606	2 000
Deficit	0	0
Exports	8	10
<b>Total Demand</b>	<b>675 515</b>	<b>774 760</b>
Ending Stock (28 Feb)	47 116	159 181
- processed p/month	55 546	63 683
- months' stock	0.8	2.5
- days' stock	26	76

**Source: NAMC (2014)**

## **2.4 The concept of market participation**

According to Moyo (2010), who cited Key et al. (2000); Holloway & Ehui, (2002); Lapar et al. (2002), there are many different definitions that are used to describe market participation, whereby the authors see market participation as any market related activity which promotes the sale of produce. Market participation for smallholder farmers is the generation of marketable surplus which in turn depends on productivity of those farmers.

Moyo (2010) has maintained that, smallholder farmers are participating in local markets or both local and international markets. The local market is characterised by buyers who are within a given geographical area and where sellers can be allocated, for example a village, district, town, province, and a country. The international market is a set of actual and potential consumers beyond the borders of that particular country.

According to Kotler (2003), international markets include aspects such as tariffs and trade agreements that should also be taken into consideration.

## **2.5 Market participation of smallholder farmers**

Before reviewing past studies on the topic, firstly, it is important to elaborate on the findings of the market participation studies, which are relevant to this study. According to a study conducted by Mohamed and Van Averbeke (2006:137), South African smallholder farmers constitute a large group. Mohamed and Van Averbeke (2006:137) cited Nieuwoudt (2000) that on estimate there were about 2.1 million smallholder black farmers in South Africa in 1999.

According to Mohamed and Van Averbeke (2006) who cited Makhura et al (1996), Da Plessis et al (2000) and Essa and Nieuwoudt (2003) argued that a successful smallholder would be a farmer who is highly productive and who is an effective participant in the market and has enough income.

## **2.6 Smallholder sunflower farmers in South Africa**

Smallholder farmers are the driving factor for many economies of Africa, though their potential is not usually seen and they are viewed differently depending on the country.

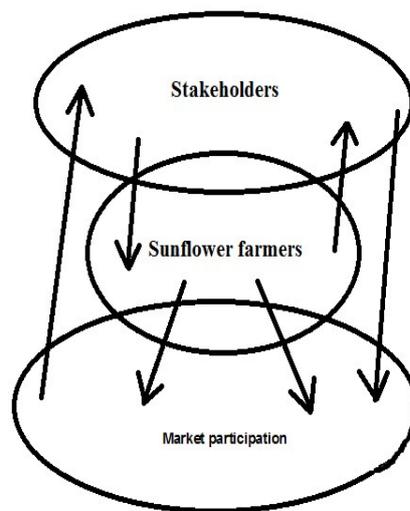
According to Machete & Mollel (2000) cited by Moyo (2010), smallholder farmers are defined with respect to a particular country. The smallholders that are in developed countries are different from those in developing countries because the challenges that they come across are different. The definition of smallholder farmers can also be based on the size of land allocated to farmers or a farmer.

Dent (1989) associated smallholder farmers in a South African context to those farmers that are not productive and are not commercial and that are found in the former parts of the homelands. Ngemntu (2010) asserted that smallholders' farmers in South Africa face difficulties in marketing, nonetheless they continue to produce and adapt in unfavourable situations.

Furthermore, Ngemntu (2010) maintained that smallholder farmers are significant in South Africa's economy and they also play an important role in improving agriculture but because of the constraints that they face their contributions go unnoticed and this<sup>1</sup> makes it difficult for them to compete with commercial farmers, with some of the smallholder farmers unable to participate in markets even after a profitable output.

## 2.7 Stakeholders involvement in sunflower production

It is important to underscore that if participation of smallholder farmers in the markets meant non-involvement of different stakeholders, it may exacerbate exclusion of them participating in markets and the development of rural communities. For farmers to participate in markets it also depends on how they link, network and communicate with different stakeholders. Below is a model that shows the linkage between the stakeholder and the smallholder sunflower farmers as to how it intermingled with market participation:



**Figure 2.1: Linkages that exist between the stakeholders, smallholder sunflower farmers, and market participation**

Stakeholders and smallholder farmers in the production of sunflower are closely intertwined and cannot be implemented in separation, one needs the other. Participation of smallholder sunflower farmers in the markets also depends on how smallholder farmers network and communicate with the stakeholders and if the relationship enables smallholder farmers to access and participate in profitable markets (Mwesige, 2008).

[1] The design of the model above was influenced by (Mwesige, 2008), whereby it was started that there is an intertwined relationship between the stakeholders and the smallholder farmers.

Stakeholders are influential in enhancing effectiveness and participation of smallholder farmers to participate and have access to profitable markets, though they are other factors that play a role as well.

## **2.8 Sunflower Production and its Value Chain**

The sunflower plant became known in the world whereby people in different countries started to use it (Ivancerich et al 1994). When the sunflower plant became known in the world, there were different methods of heating the sunflower plant that were used by various countries in the world, such methods included the use of fire, sun and ovens so that the sunflower plant can extract oil; the plant had to be roasted and beaten into a paste and boiled in the water, wherein the oil that rose up in the surface was skimmed off (Ivancerich et al 1994).

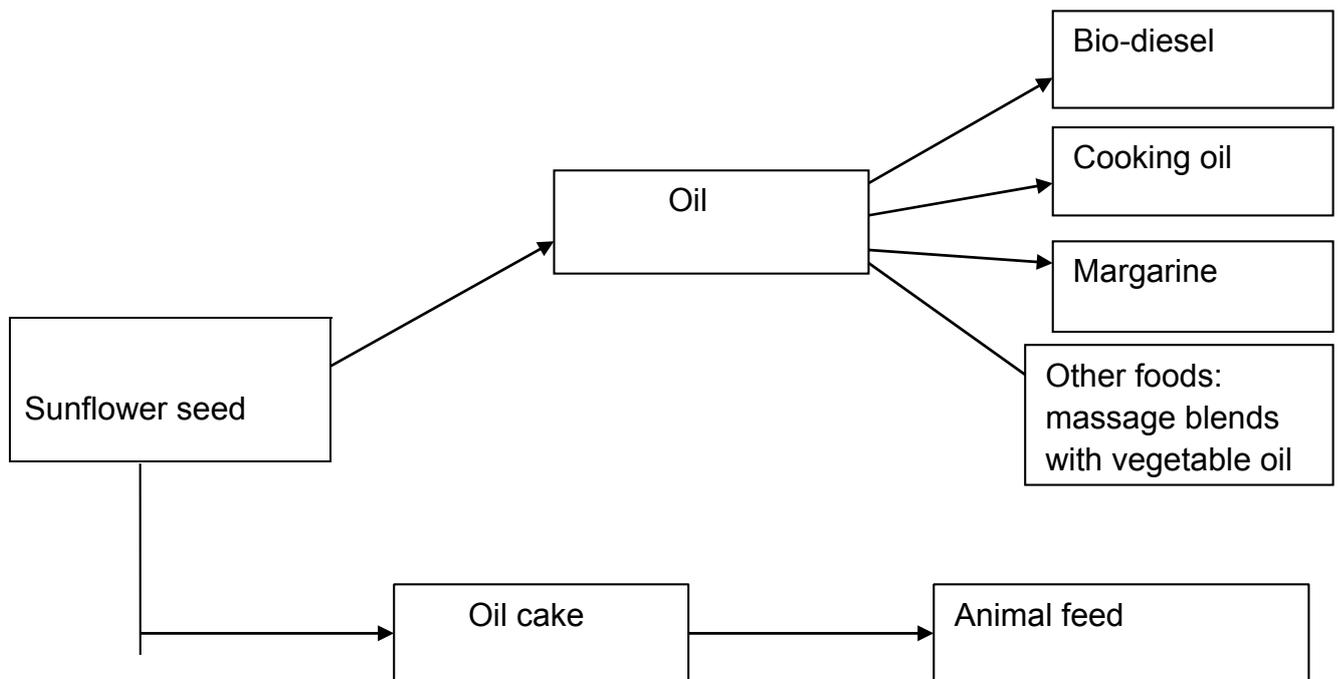
Porter (1998) asserted that a tool called the value chain analysis can be used to analyse how activities in and outside the firm can be integrated. According to Mwesige (2010), a value chain connects multiple actors and proper value chain analysis is important to improve the competence of smallholder farmers. Value chain analysis encompasses broader economic goals, with major emphasis on creating additional value, which in turn increases incomes, economic opportunities and helps reduce poverty.

This means given its broad viewpoint, it makes it easy to attract both public and private investment aimed at generating equitable linkages for the smallholder farmers. This will help to streamline critical limiting factors affecting the value chain of sunflower seed in smallholder farms.

According to RLDC (2008), value chain in the production of sunflower is hindered by different technical obstacles, that is from its input stages to the processing stages. This is because the sunflower sector constitutes of smallholder farmers with lack of technical capabilities.

Value chain can be used to analyse how activities in and outside the firm can be intergrated (SNV Rwenzori portfolio, 2010). Value chain is significant because it increases income gains by availing opportunities that will make products to improve and come up with efficient ways of producing sunflower. Value chain assists the growth and recognizes distribution of social and economic benefits to various groups (Inanga and Ugulumu, 2013).

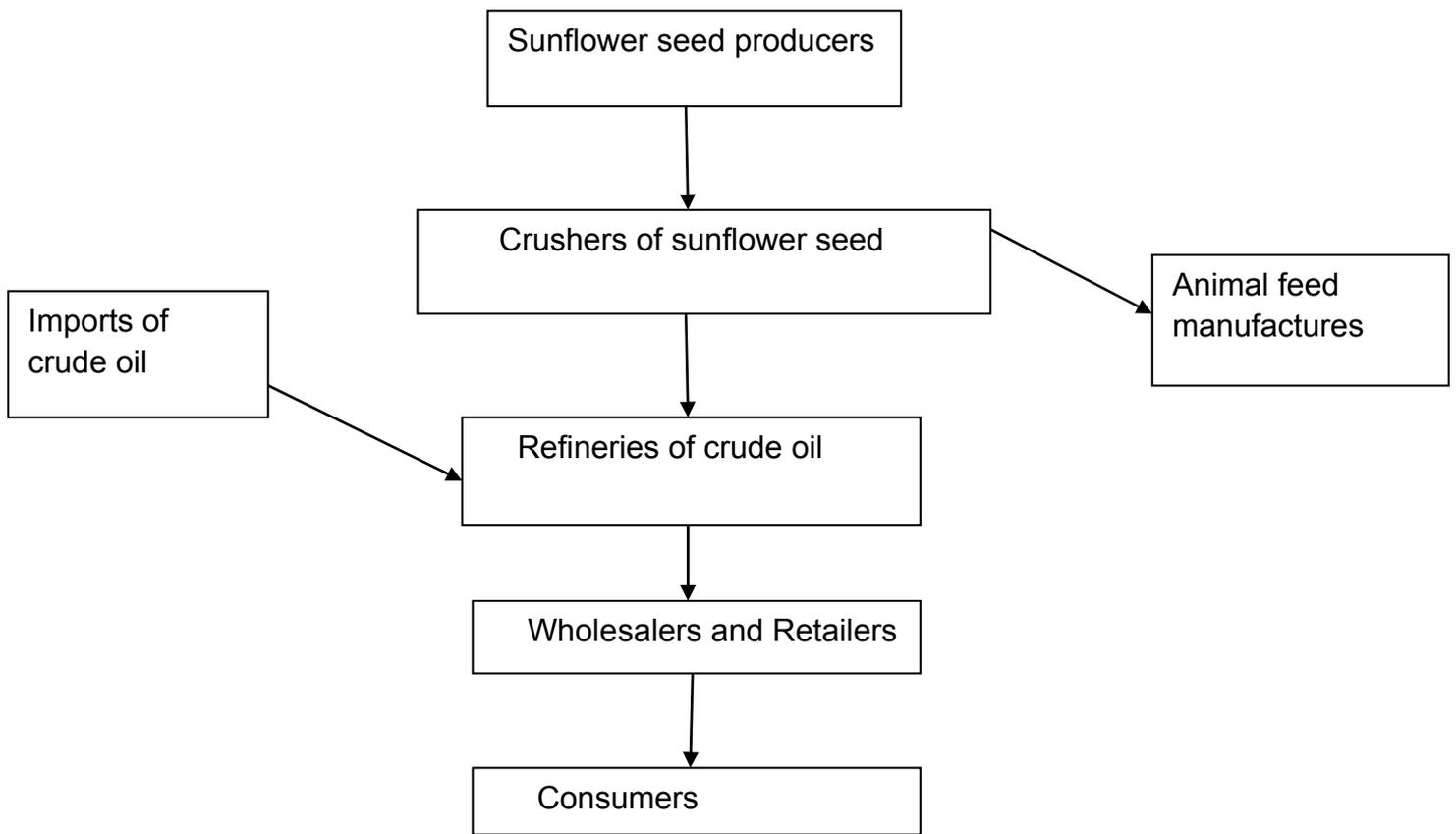
Sunflower seed can produce up to 40-50% of oil whereby the oil can be processed into cooking oil. This makes the sunflower seed important because of its cooking oil that is used daily by many people in the world. Apart from using sunflower oil for animal feeds the oil can be converted to diesel as a bio-diesel. Below is a diagram that shows what the sunflower seed is used for:



**Figure 2.2: The uses of sunflower seed**

**Source: Market value chain profile (2010-2011)**

There are five stages that the sunflower seed goes through until it can be sunflower oil in the value chain. The first stage involves the production of sunflower seed, the second is the crushing of the seeds, the third involves refining the crude oil, and the fourth involves the wholesalers and retailers, and lastly the consumers. The figure below shows the stages clearly:



**Figure 2.3: Sunflower seed market value chain Source: Market value chain profile (2010-2011)**

## CHAPTER 3

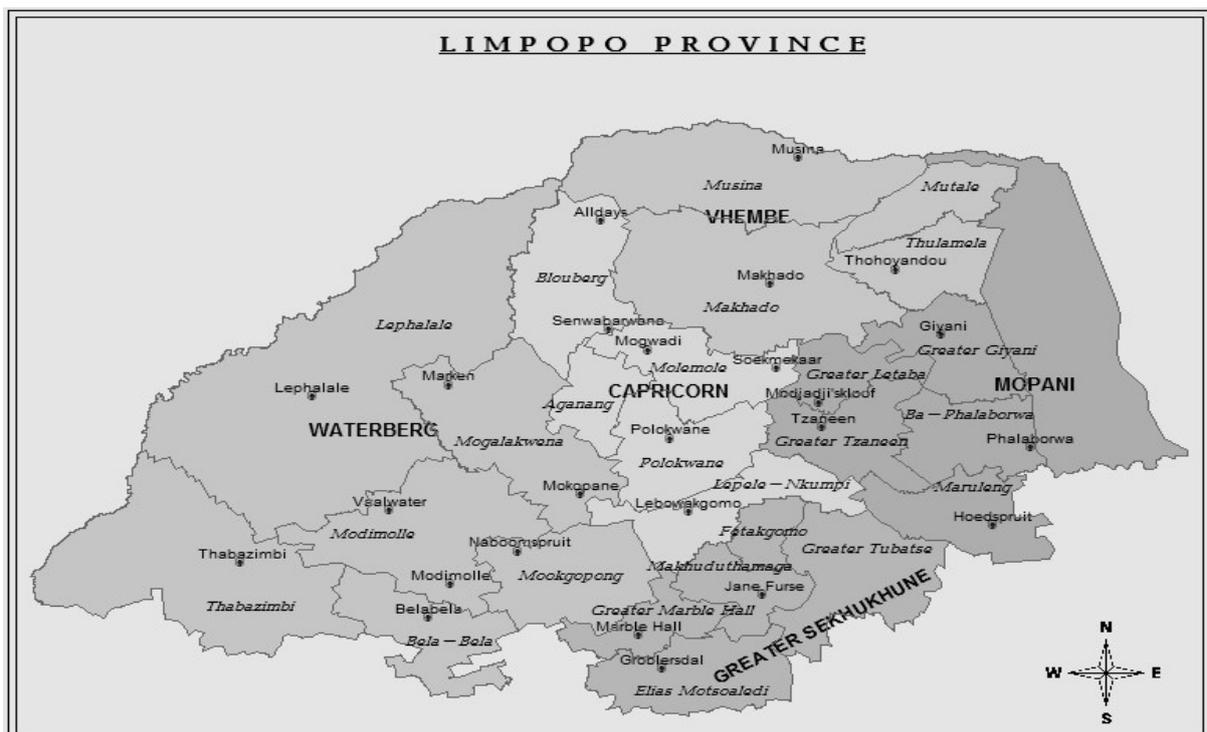
### RESEARCH METHODOLOGY

#### 3.1 Introduction

The chapter explains the methodologies used in the research, study area, collection of data (primary and secondary data), data analysis, description of model, limitations of the study and conclusion. The above mentioned methodological instruments were helpful in that they allowed the researcher to come up with or to draw conclusions about the research problem. This research involves both qualitative and quantitative methodologies.

#### 3.2 Study area

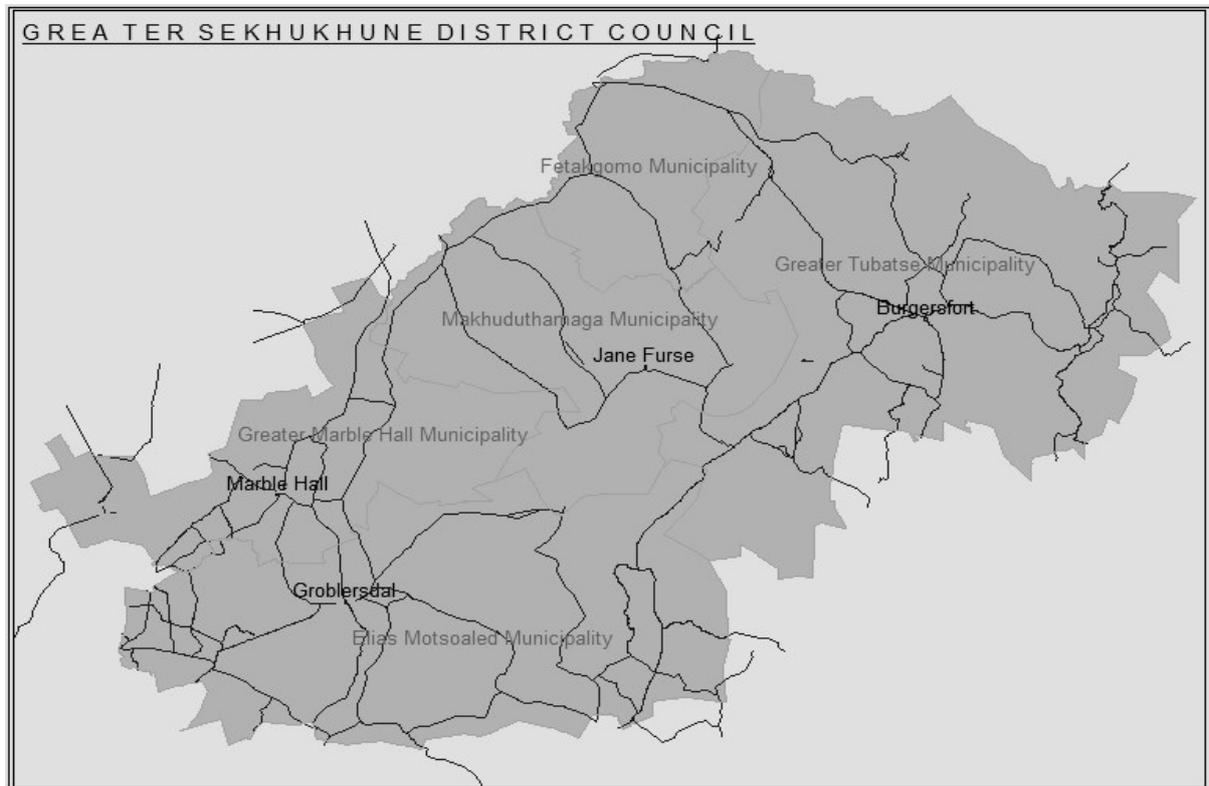
The study area is Sekhukhune District in Limpopo Province, South Africa. Below is a map of Limpopo Province, wherein Sekhukhune District is in the South Eastern part of Limpopo Province.



**Figure 3.1: Map of Limpopo Province Source: Sekhukhune Nodal Economic development profile (2005)**

Sekhukhune District is one of the five districts of Limpopo Province in South Africa, it is a landlocked District. It is a former cross-border district, which is now located entirely

in the Limpopo Province. The district is situated 200km North of Pretoria, 150km West of Nelspruit and 120km South of Polokwane. Below is a map that shows the Sekhukhune District and its Municipalities.



**Figure 3.2: Map of Sekhukhune District Source: Sekhukhune Nodal Economic development profile (2005)**

The district comprises of five local municipalities, that is Tubatse with a population of about 270 122, Makhuduthamaga with a population of 262 921, Groblersdal which has a population of 220 739, Marble Hall with a population of 122 323, and Fetakgomo with a population of 92 092. About 97% of the people live in rural areas with the main urban settlements being Groblersdal, Marble Hall and Burgersfort. Fetakgomo and Makhuduthamaga are rural and traditional areas. Most of the smaller roads in Sekhukhune are in poor conditions and there are undeveloped road networks in rural areas (Sekhukhune Nodal Economic Development Profile, 2005).

### 3.3 Research Design

The study comprises of a mixed method research approach, which is a method for collecting, analyzing and combining both quantitative and qualitative data within a single study (Tashakkori & Teddlie, 2003).

The study made use of the objectives that were stated and analysed market participation of smallholder sunflower farmers in Sekhukhune District. The researcher isolated factors that are presumed to have an effect on the participation of smallholder sunflower farmers of Sekhukhune District. The study identified the factors and chose the instruments which yield reliable and valid scores.

On the other hand, qualitative research is “an inquiry process of understanding” where the researcher develops a “complex, holistic picture, analyzes words, reports detailed views of informants, and conducts the study in a natural setting” (Creswell, 1998). In this approach, the researcher made claims based on the opinions and perspectives of the participating respondents (Mertens, 2003). In qualitative research, data was collected from those immersed in everyday life of the setting in which the study is framed, in this case the sunflower farmers. Data analysis was based on the values that these respondents perceive for their situation. Eventually it “produces a broader understanding of the problem based on multiple contextual factors” (Miller, 2000).

### **3.4 Data sources and sampling method**

The data was collected from both primary and secondary sources. Quantitative data was collected from primary data sources. The study focused on the smallholder sunflower farmers in Sekhukhune district of Limpopo province. The primary data was collected from responses by the smallholder sunflower farmers through a semistructured in-depth questionnaire with open-ended questions that was prepared and administered to the 100 randomly sampled respondents. The secondary data was collected from the literature on the participation of smallholder sunflower farmers in the markets, the farm records and textbooks, journal articles, and other online materials.

The population for this study comprised of the smallholder sunflower farmers of Sekhukhune District in Limpopo Province. The study made use of simple random sampling, wherein the researcher used the lottery technique. Every smallholder sunflower farmer had an equal chance of being included in the sample size of 100. The population of the study consisted of 145 smallholder sunflower farmers of

Sekhukhune District in Limpopo Province. These are farmers who are also participating in the bio-diesel pilot project. A sample of 100 smallholder sunflower farmers of Sekhukhune was randomly selected by the researcher.

### **3.5 Data Analysis**

For the first and second objectives, descriptive statistics was used for the quantitative data analysis while the third objective was analysed using the Logistic Regression Model. According to Archera et.al (2007), Logit model is used to estimate the effect that the behavioural and risk factor variables have on a dichotomous outcome. Sirak & Siegfried (2007) referred to the Logistic Regression Model as a powerful and flexible instrument that is used for predicting a dichotomous variable from a set of predictor variables.

#### **3.5.1 Logistic Regression Model**

The Logit model was introduced by Joseph Berkson in 1944, where the term was borrowed from a similar Probit model developed by Chester Ittner Bliss in 1934. This model is a non-linear estimation, where the dependent variable is continuous. According to Oni and Meliko (2010) Logit model is used in the prediction of a dichotomous outcome, because the dependent variable is not continuous, it takes the value 0 or 1. Logit model makes no assumption about the distribution of the independent variable; therefore the independent variables in Logit model can take any form.

According to Archera et.al (2007), Logistic Regression model is used to estimate the effect that the behavioural and risk factor variables have on a dichotomous outcome, in this case it was market participation. According to Kontogeorgos et.al (2008), Logistic Regression model is used to model the probability of the event in which the dependent variable has two possible outcomes, wherein the probability of the event lies between 0 and 1, that is if the smallholder farmers participates in markets or not.

The Logistic Regression Model is useful in instances whereby the dependent variable is qualitative and not satisfactory to the assumption of multivariate normality and the independent variables consist of both categorical and continuous variables. Such instances take place more often in Agricultural statistical data (The Indian Agricultural statistics research institute, 2010).

The Logistic Regression Model was used to analyse the third objective of the study. The model allowed the researcher to analyze the probability that the smallholder sunflower farmers participate in markets or not, where the response variables were "1" if smallholder sunflower farmers participate in markets and "0" if smallholder sunflower farmers do not participate in markets. The independent variables (age, farm size, education, income, distance to the nearest market, market information, price of sunflower, credit access, gender of household head, marketing experience, tons produced, training, stakeholders available, farming systems, ownership of vehicles, and land tenure arrangements) were used. The dependent variable is market participation. Quantitative data was captured in Microsoft excel package and statistically analyzed using the SPSS package (SPSS 26.0). The use the SPSS facilitated the generation of frequency tables and graphs.

The Logistic Regression model is expressed as follows:

$$\ln (\varnothing_i / 1- \varnothing_i ) = B_0 + \sum_{y=1}^n B_y X_{iy} + E_i \dots\dots\dots (1)$$

Where:

Y denotes the response category (1 or 0) i

denotes cases occurrences (1.2.3...n)

n denotes the number of independent variables in the model

$\varnothing$  denotes conditional probability

$B_0$  denotes the coefficients,

$B_y$  denotes the coefficient of the independent variable

$X_{iy}$  denotes the independent variables

$\varnothing_i$  denotes the odd variable/probability

1-  $\varnothing_i$

$\ln ( \frac{\varnothing_i}{1- \varnothing_i} )$  denotes the logarithm of the odd variable

1-  $\varnothing_i$

$E_i$  denotes unobserved random effects (error term)

Equation (1) will be manipulated to equation (2) below:

$(\emptyset_i / 1 - \emptyset_i) = \exp (B_0 + \sum_{y=1}^{x_y} B_y X_{iy}) \dots \dots \dots (2)$   
 The probability that smallholder sunflower farmers participate in markets will be analysed using equation (3) presented below:

$$\emptyset_i = \exp (B_0 + \sum_{y=1}^{x_y} B_y X_{iy}) / 1 + \exp (B_0 + \sum_{y=1}^{x_y} B_y X_{iy}) \dots \dots \dots (3)$$

The Logistic Regression model analyzed market participation of the smallholder sunflower farmers of Sekhukhune District. The independent variables were: age of household head, gender of household head, level of education, household size, income, distance to the market, stakeholder availability, ownership of vehicles, land tenure arrangements, market information, price of sunflower, training, credit access, market experience, and tons produced. Descriptive analysis technique was used in the study to analyse the responses from the smallholder sunflower farmers of Sekhukhune District.

The above equation function (3) was used to develop the equation below with the independent variables equated on the equation:

$$\text{Market participation} = B_0 + B_1 \text{ age} + B_2 \text{ gender} + B_3 \text{ level of education} + B_4 \text{ household size} + B_5 \text{ income} + B_6 \text{ distance to market} + B_7 \text{ stakeholder availability} + B_8 \text{ ownership of vehicle} + B_9 \text{ land tenure} + B_{10} \text{ market information} + B_{11} \text{ price of sunflower} + B_{12} \text{ training} + B_{13} \text{ credit access} + B_{14} \text{ market experience} + B_{15} \text{ tons produced} + E_i$$

**Table 3.1: Hypothetical variables table**

<b>Variables</b>	<b>Description</b>	<b>Unit Measurement</b>	<b>Expected Signs</b>
<b>Dependent Variable</b>			
Market Participation	1 if the household head participates in markets, 0 if otherwise	Dummy	
<b>Independent Variables</b>			
Age of household head	Number of years	Years	-
Gender of Household head	1 if the household head is female, 0 if otherwise	Dummy	-/+

Level of education	1 if the household head has passed grade 12,0 if otherwise	Dummy	-/+
Household size	Household size number	Number	+
Income	1 if the household head has a source of income, 0 if otherwise	Dummy	-/+
Distance to the market	1 if the distance to the market affects market participation, 0 if otherwise	Dummy	-/+
Stakeholder Availability	1 if there is availability of stakeholders, 0 if otherwise	Dummy	-/+
Ownership of Vehicle	1 if household head owns vehicles, 0 if otherwise	Dummy	-/+
Land Tenure arrangement	1 if household head is the legal owner of the production land, 0 if otherwise	Dummy	-/+
Market Information	1 if information on markets affects market participation, 0 if otherwise	Dummy	-/+
Price of Sunflower	Price of sunflower in the market	Rand	-
Training Availability	1 if household head receives training, 0 if otherwise	Dummy	-/+
Credit Access	1 if household head has access to credit, 0 if otherwise	Dummy	-/+
Market Experience	1 if household head has market experience, 0 if otherwise	Dummy	-/+
Tons produced	Number of tons produced	Tons	+

### 3.5.2 Chi-square analysis

According to Archera et.al (2007), when using the Logistic Regression Model the goodness of fit should also be examined especially if the purpose of the model is to

estimate probabilities of an event occurring given that the observations selected are independent.

The Chi-square analysis was used in order to show any differences between the expected results and the actual results. It was used to measure the goodness of fit, where it determined if the actual/ observed frequency matches the expected/ theoretical frequency at a significance level set at 0.05 (95%).

The Chi-square calculation:

$$X^2 = \frac{(O - E)^2}{E}$$

Where:  $X^2$  denotes the chi-square, O is the observed frequency, and E is the expected frequency.

To test the second hypothesis the study made use of a value chain mapping, where the researcher identified possible role players in the value chain of sunflower so as to determine if it contributes to the participation of SHSF in the markets. The Chisquare analysis will also be used in order to show any differences between the expected results and the actual results. According to Archera et.al (2007) when using the Logit model the goodness of fit should also be examined especially if the purpose of the model is to estimate probabilities of an event occurring given that the observations selected are independent.

### **3.6 Limitations of the study**

Some of the farmers had challenges with keeping records of their products regarding how much they plant, produce, and sell to the markets. The reason for this was that some of the farmers were old and they could not read and write. Some of the variables were found to be insignificant and only some were significant, this limited the researcher because the insignificant variables had to be excluded from the study.

## CHAPTER 4

### RESULTS AND DISCUSSION

#### 4.1 Introduction

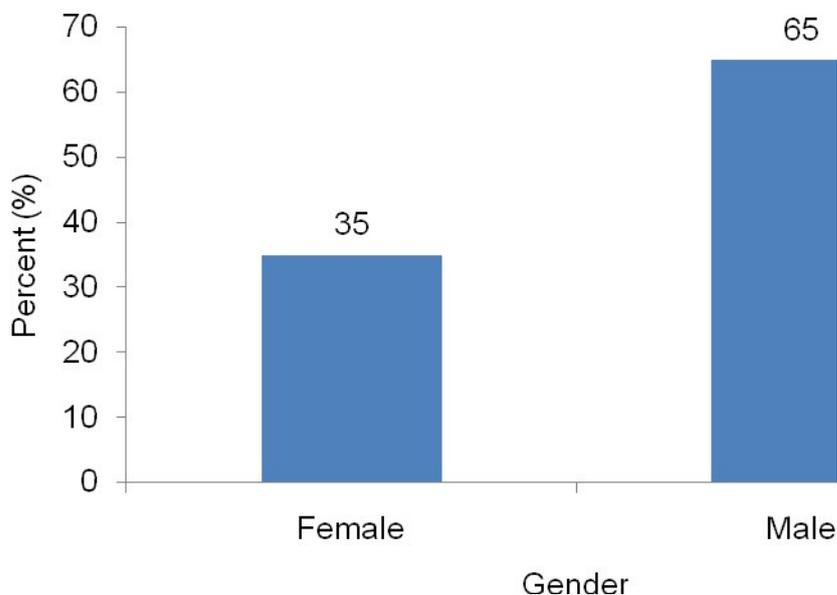
This chapter presents the results and findings related to the objectives of the study. The descriptive analysis of socio-economic variables and results of the logistic regression analysis are presented respectively.

#### 4.2 Descriptive analysis of socio-economic variables

The results from the descriptive statistic were analysed using percentage and graphs. The data that was collected from the farmers includes socio-economic and sunflower marketing of smallholder sunflower farmers.

##### 4.2.1 Gender of household head

Figure 4.1 indicate that the participants were mostly males, with a percentage of 65% and females with a percentage of 35%. Most female respondents stated that they had ventured into sunflower farming because they were unemployed and that it is more labour intensive. The female headed households were those whose husbands were deceased, divorced and never married.

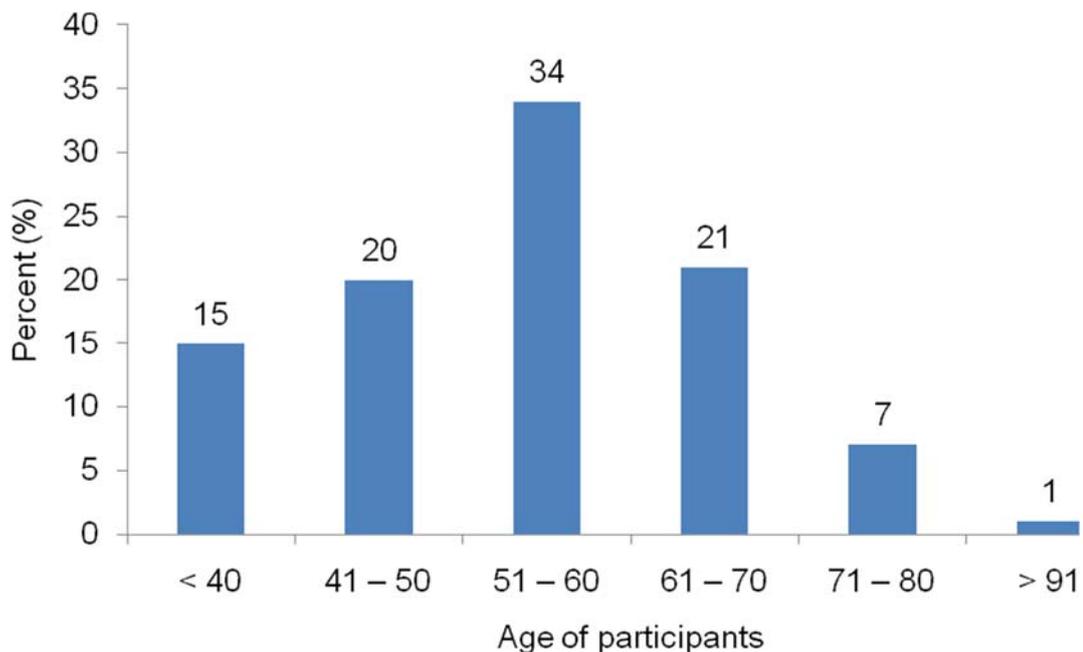


## Figure 4.1: Gender of household head

### 4.2.2 Age of household head in years

The majority of smallholder sunflower farmers in Sekhukhune District were mostly older people, which might mean that the older you get the more experience one might have with regard to farming and marketing. The participants' age was divided into six categories. Figure 4.2 shows the ages of the participants, 15% of the participants are less than 40 years of age, 20 % of the participants are between the ages 41-50, 34% between the age of 51-60, 21% between 61-70 years, 7% ranged from 71-80 years, and 1% of the participants was more than 90 years of age. Most of these participants were over the age of 50 years.

According to Baloyi (2010), the age of the farmer is an important factor of production and marketing in smallholder farming as older people tend to be resistant to technical efficiency, preferring to use old methods of planting. However, it is assumed that older farmers are more experienced in farming activities and are better able to assess the risks involved in farming than younger farmers.



## Figure 4.2: Age of the household head in years

### 4.2.3 Household size

Labour is the most important input for small farming and marketing. These include both hired labour and family labour. The household size plays an important role in sunflower market participation and most farmers depend mainly on family labour to market their sunflower. The household size of the interviewed participants was categorized into two, that is from 4 to 6 and from 7 to 9 individuals per household. Figure 4.3 shows that 59% of the participants were between the household size of 4 to 6 and 41% were between the household sizes of 7 to 9.

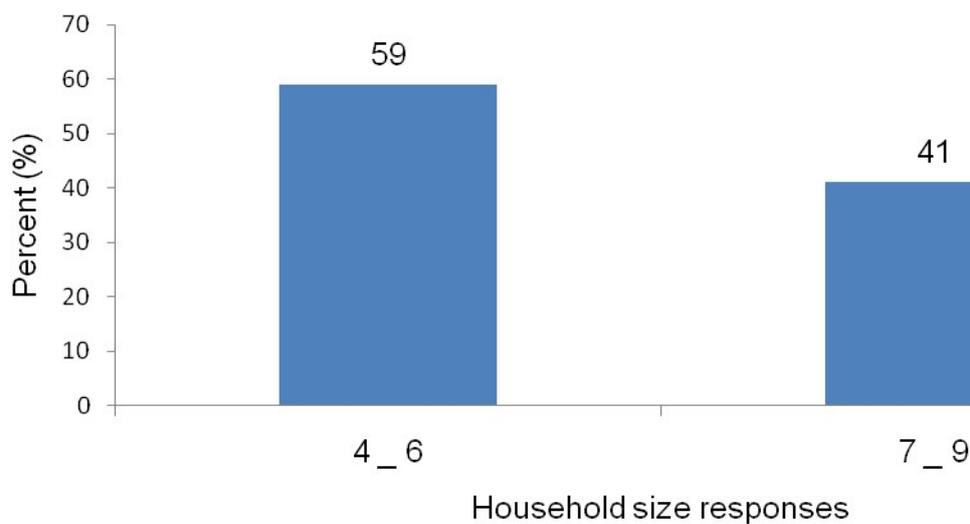
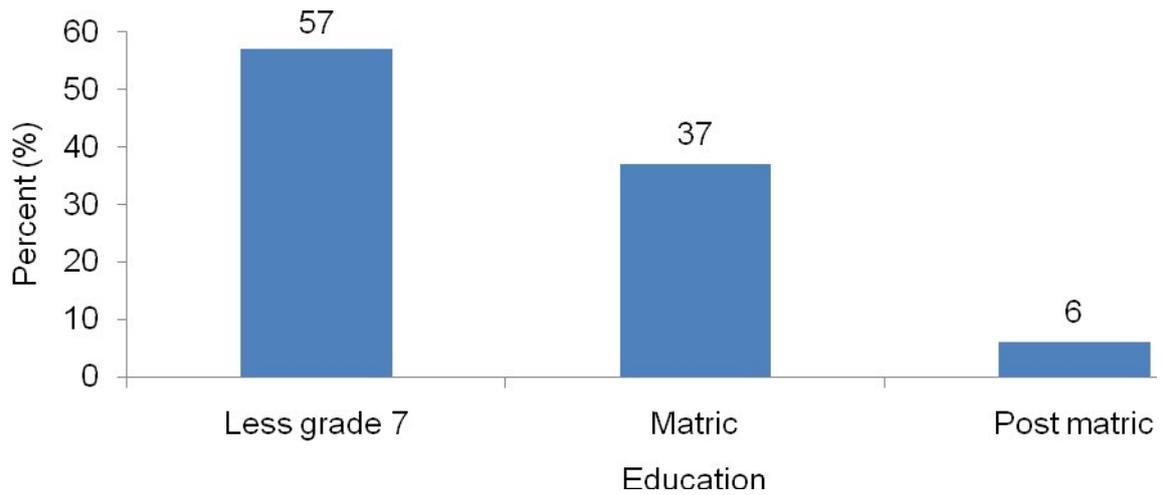


Figure 4.3: Household size

### 4.2.4 Level of Education

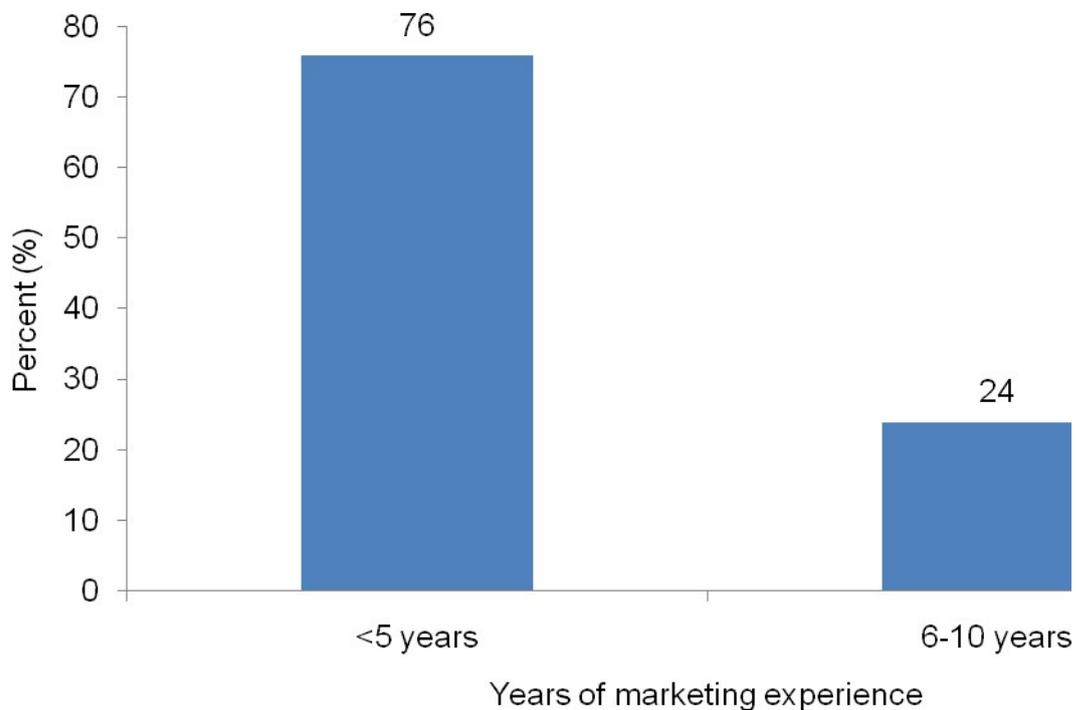
The level of education plays an important role by potentially enhancing farming efficiency and knowledge with regard to agricultural production and marketing. Educated farmers are able to apply better farming methods and they are also able to make well-informed marketing decisions. These help improve the level of market participation. The figure below that represents the level of education had three categories, which were less than grade 7, matric education and post matric. Figure 4.4 showed that 57% of the participants had less than grade 7 while 37% of the participants had indicated that they had passed grade 12 (matric education), and 6% of the participants had post-matric education.



**Figure 4.4: Level of education**

#### 4.2.5 Marketing experience

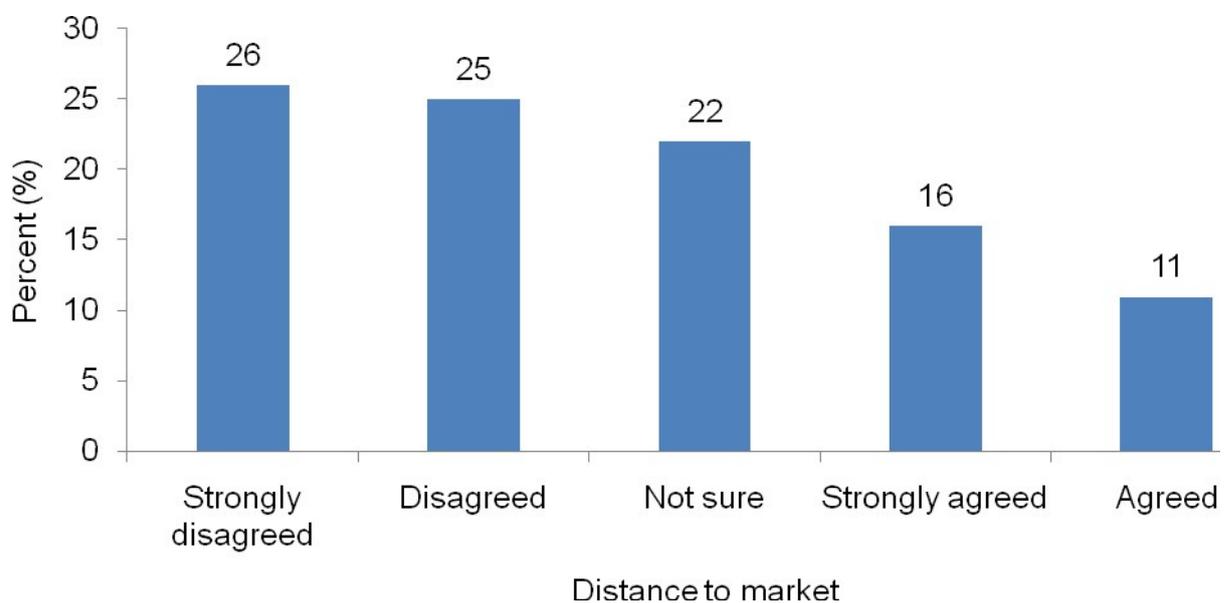
Figure 4.5 indicates the years of marketing experiences of the participants. Up to 70% of the participants had less than 5 years of marketing experience and 24% had 6 to 10 years of marketing experience.



## Figure 4.5: Marketing experience

### 4.2.6 Distance to the nearest market

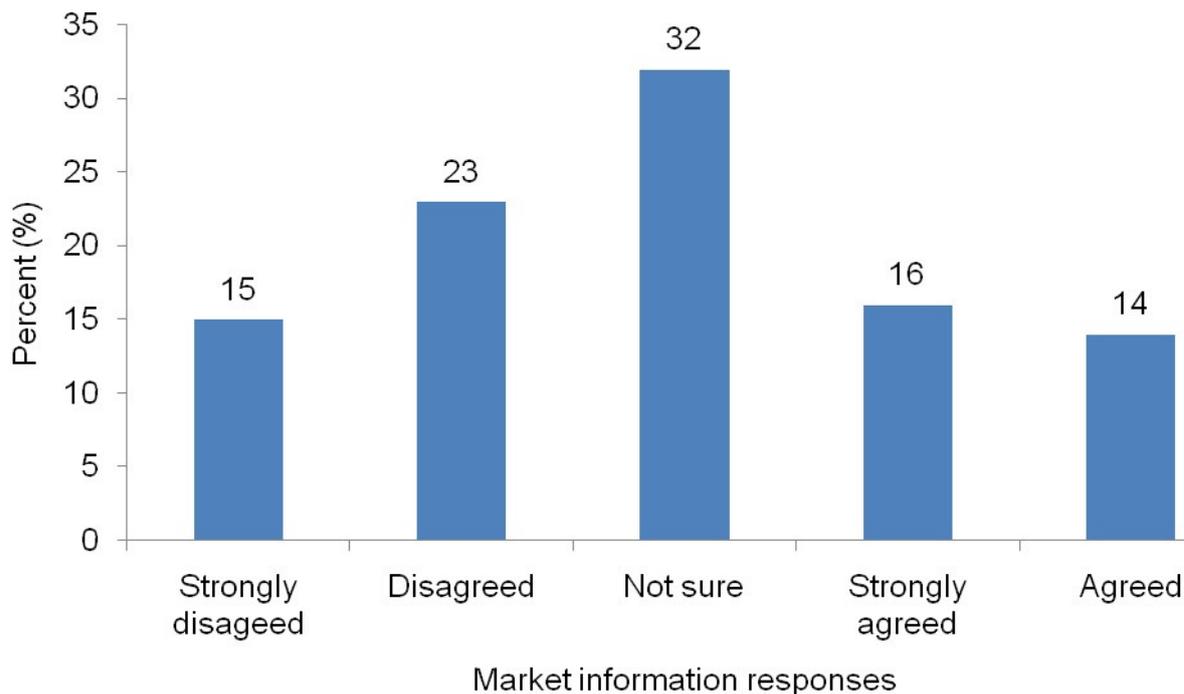
Figure 4.6 showed the participants' perceptions with regard to distance to the markets. As much as 26% of the participants strongly disagreed that distance to the market caused a decrease in market participation of sunflower crop, 25% of the participants disagreed while 22% of the participants were not sure if distance to the market caused a decrease in market participation of sunflower crop. Up to 16% of the participants strongly agreed that distance to the market caused a decrease in market participation and 11% agreed that market participation caused a decrease in market participation of sunflower crop.



## Figure 4.6: Distance to the nearest market

### 4.2.7 Market information

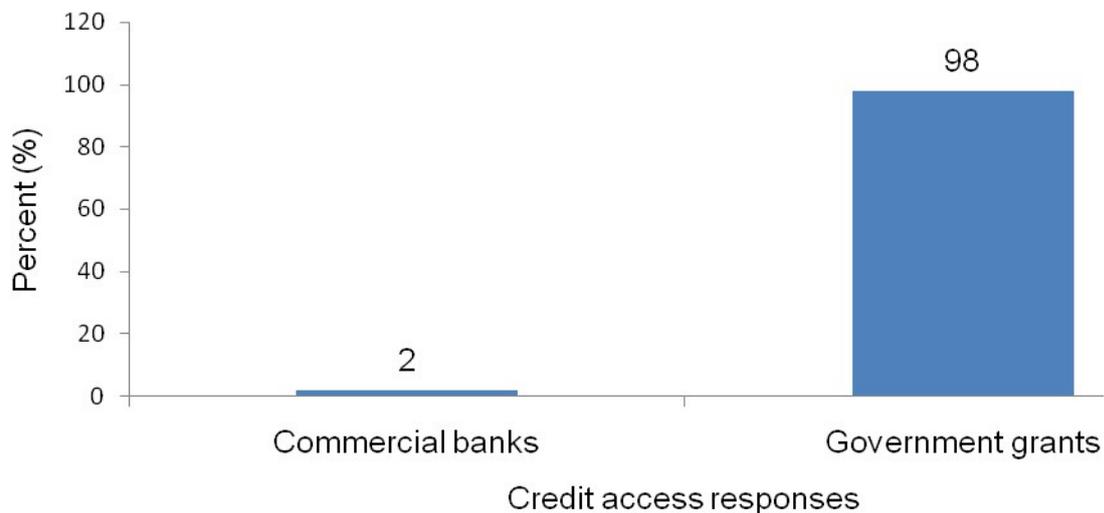
Figure 4.7 indicates the participants' perceptions on market information. It shows that 15% of the participants strongly disagreed that availability of market information caused a decrease in market participation of sunflower crop, 25% of the participants disagreed while 32% of the participants were not sure if availability of market information caused a decrease in market participation of sunflower crop. Up to 16% of the participants strongly agreed that availability of market information caused a decrease in market participation and 14% agreed that availability of market information caused a decrease in market participation of sunflower crop.



**Figure 4.7: Market information**

**4.2.8 Credit access**

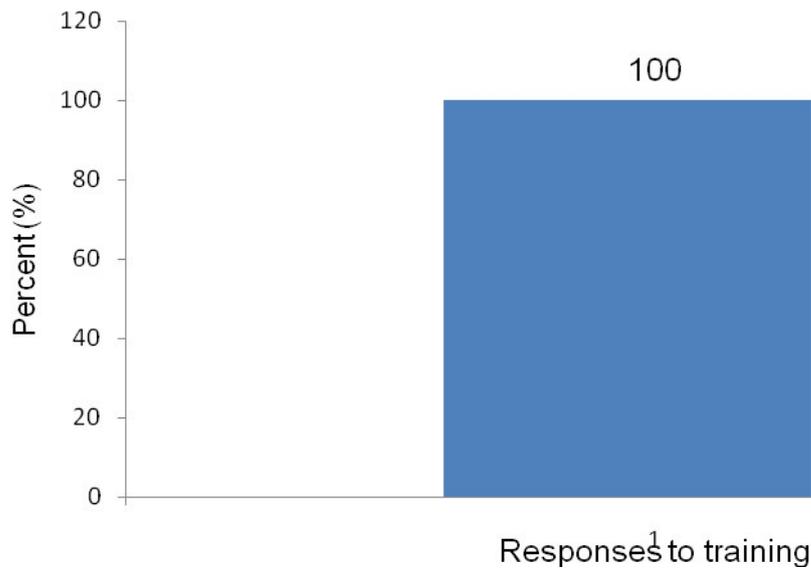
Figure 4.8, indicates that 2% of the participants receive their credit as loans through commercial banks and 98% of the participants get grants from the government.



**Figure 4.8: Credit access**

**4.2.9 Marketing training**

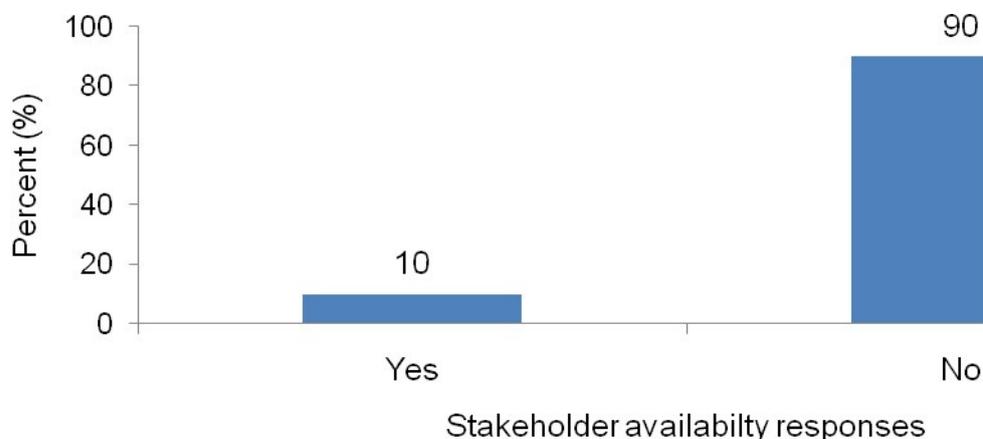
Figure 4.9, indicates that all the participants were getting training from the department of agriculture



**Figure 4.9: Training**

**4.2.10 Stakeholders availability except DoA (Department of Agriculture)**

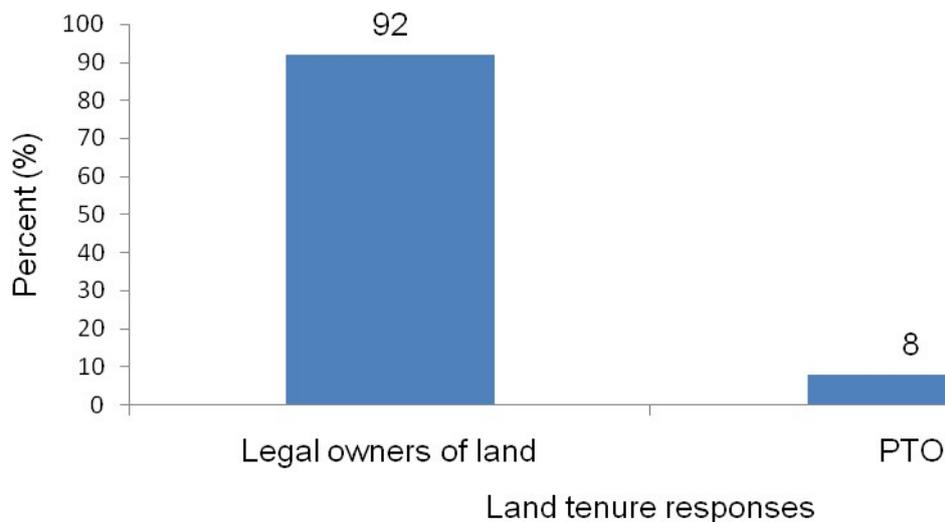
Figure 4.10 showed that 90% of the participants have no stakeholders except for DoA and only 10% of the participants agreed to having other stakeholders, that is MMI (Mapfura Makhura Incubators) and SEDA (Small Enterprise Development Agency)



**Figure 4.10: Availability of stakeholders**

**4.2.11 Land tenure arrangements**

Figure 4.11 below showed that 88.5% of the participants were the legal owners of the land and 7.7% were not the legal owners of the land, they were given PTO (permission to occupy) by the headman and some inherited the land from their fathers.



**Figure 4.11: Land tenure**

### 4.3 Logistic Regression results

In this section, results of the test for significance and non-significance of the determinants of market participation of the smallholder sunflower farmers are presented in Table 4.1 below. The table displays the socio-economic variables that affect market participation of smallholder sunflower farmers. The table estimated results for the logistic regression model and it also explained the socio-economic factors, either significantly or non-significantly influencing market participation of sunflower farmers under the study area. In total, 9 hypothesized socio-economic factors of the smallholder sunflower farmers of Sekhukhune District were tested using the Logistic Regression Model. Table 4.1 below indicates that some of the factors were significant and that some were not significant. The Pseudo  $R^2$  is 50.1% and this shows that the model fits the data somewhat reasonably. Only 4 out of 8 variables on market participation of smallholder sunflower farmers were found to be significant. The variables were: farm size, education, market experience, stakeholder availability, distance to market, and own transport. The variables, distance to the market and ownership of vehicle have a significant negative influence on the participation of the smallholder sunflower farmers in the markets.

**Table 4.1: Socio-economic variables that affect market participation of smallholder sunflower farmers**

Variables	Coefficient	Standard error	Wald significance	Significance level

Age	-0.0151 <sup>ns</sup>	0.027	0.269	0.604
Farm size	0.174 <sup>**</sup>	0.076	5.258	0.022
Education	0.124 <sup>ns</sup>	0.518	0.057	0.811
Gender	-0.915 <sup>ns</sup>	0.665	1.896	0.169
Market Exp	0.752 <sup>ns</sup>	0.327	1.008	0.315
Stakehol Avail	2.468 <sup>**</sup>	1.219	3.907	0.048
Distance Mrk	-3.161 <sup>**</sup>	1.585	3.977	0.046
Own Vehcl	-0.107 <sup>ns</sup>	0.070	0.871	0.112
Constant	5.604 <sup>*</sup>	3.505	2.557	0.110
-2 log likelihood			99.326	
R squared			50.1%	
% cases correctly predicted			72.1%	
Chi-squared			38.5	

<sup>\*</sup>, <sup>\*\*</sup>, <sup>\*\*\*</sup> Significant at 10%, 5%, and 1% respectively. ns - Not Significant at 0.604, 0.811, 0.315, 0.112 and 0.169

Source: field data 2013

#### 4.4 Hypothesis Testing and Model Fitness

The model chi-squared at 38.5 indicates the significant rating of 1% level, meaning that there is a significant relationship between the independent variables and the dependent variable. The main assumption for the -2 log likelihood ratio is that there are socio-economic characteristics that influence market participation of smallholder sunflower farmers in Sekhukhune District. The log likelihood ratio of 99.326 in Table 4.1 above indicates that there are socio-economic characteristics that influence market participation. Therefore the null hypothesis which reveals that there are no socio-economic characteristics that influence market participation by smallholder sunflower farmers in Sekhukhune District is rejected. The model is correctly predicted at 72.1 %. This implies that 27.9 % of the variables are insignificant but are included in the final analysis, which explains the relationship between the dependent and explanatory variables. Next, the variables which were found to be significant in the model were explained.

**Age** – The age coefficient of smallholder sunflower farmers in the study area was negative and statistically non-significant. The results of the analytical model indicate that the age of the household head does not affect the probability that smallholder sunflower farmers of Sekhukhune District of Limpopo participate in markets.

**Farm size** – The variable farm size is positively significant at 5 % level, which tends to be one of the most significant variables found. The implication is that there is a positive relationship between farm size and smallholder farmers' market participation. This shows that the farm size affects the probability that the smallholder sunflower farmers participate in markets. Land plays an important role in farming in terms of productivity given that enough supporting inputs are available. This implies that if these farmers produce more sunflower they will be able to participate more in marketing to avoid surplus. According to Raghbendra *et al.*, (2005), there is a positive correlation between land size and production level in smallholder agriculture, which may lead to increased market participation.

**Level of education** – The coefficient of educational level is not significant and positive and this indicates that educational levels of these farmers positively contribute to the probability of them participating in the markets in Sekhukhune District. Farmers who have formal education are likely to apply their educational capacity in marketing their crops efficiently compared to farmers with no formal education. According to Lekunze (2012), smallholder farmers who are more educated may be more able to find marketing information and utilise it to better integrate their products into the market.

**Gender of household head** – The estimated gender dummy coefficient was found to be negative and not significant as expected. This indicated that male farmers, who were dominant at 65% (figure 4.1), were the ones participating more in marketing as compared to their female counterparts. This could also be explained by the fact that in most rural farming communities, men are the ones who mostly engaged in agricultural activities while female counterparts engaged in off-farm activities.

**Marketing experience** – The results of the analysis showed that marketing experience has a profoundly positive influence on the probability that smallholder sunflower farmers of Sekhukhune participate in the markets. The variable "farmer's marketing experience" has a positive sign and it is not significant, with the implication that there is a positive relationship between the farmers' marketing experience and

market participation of the smallholder sunflower farmers. It is assumed that the more experience the farmers have, the better they can market their crops.

**Distance to the nearest market** – The coefficient of distance to the nearest market was found to be negative and significant at 5%. This implies that the level of market participation of smallholder sunflower farmers is negatively influenced by the distance from the market. It indicates that the probability of smallholder sunflower farmers participating in markets is not affected by the distance to the market. Some of the farmers also indicated that they do not own the transports that take their products to the market.

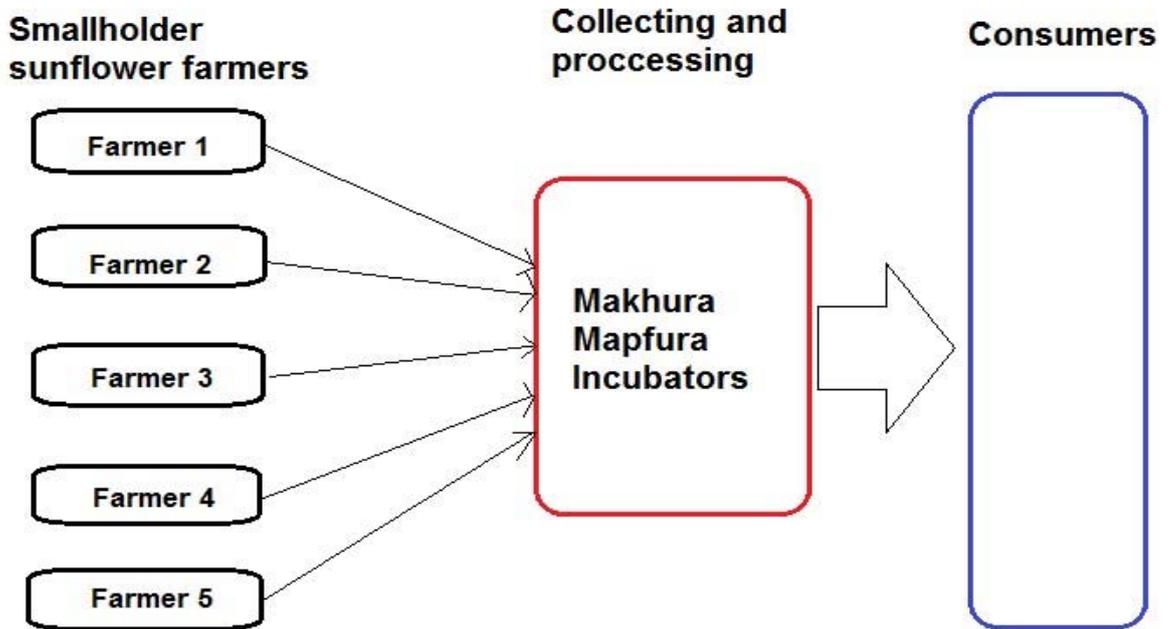
**Own vehicle** – This coefficient is negative and not significant. This indicates that lack of access to own transport will not contribute to the probability that the smallholder sunflower farmers participate in markets or not. Most smallholder farmers are located in far-flung rural areas away from input suppliers and marketing agents. Access to transport is important for the smallholder sunflower farmers when it comes to transporting inputs, fertilizers and sunflower crops to the markets. Seventy-two percent of farmers indicated that public transport was not very convenient and was expensive while 36 % of farmers indicated that hired transport increases their marketing cost.

**Stakeholders available** – The coefficient of stakeholder availability is significant at 5% and positive, this indicates that stakeholders in the form of middlemen are important in the marketing of smallholder sunflower farmer in the study area and that shows that the probability of smallholder sunflower farmers participating in markets is affected by the availability of stakeholders. Most smallholder farmers also supported this result by indicating that without a marketing agent they would not be able to market their crops since they do not have enough marketing information.

#### **4.5 Marketing chain of smallholder sunflower farmers**

According to DAFF (2011), sunflower is regarded as major cash crop and thus has attracted more marketing attention. This crop is mainly produced by large-scale commercial farmers. The marketing of large-scale sunflower is broad and requires a lot of processing which smallholder farmers do not have, whereas for smallholder farmers it is limited to few markets that are readily available to them.

**Marketing chain of smallholder sunflower farmers in Sekhukhune District.**



**Figure 4.12: Marketing chain of SHSF Source: Field data 2013**

Smallholder farmers indicated that they did not have access to many marketing channels; they only had one marketing agent who collects grades and processes their crops as indicated in figure 4.4. Since sunflower requires grading and industrial processing, all smallholder farmers in Sekhukhune District indicated that they do not have any processing capabilities. They further indicated that they sell their crop to a processing agent called Makhura Mapfura at the current seasonal SAFEX price. Farmers found this price setting system to be important, since it gives some form of guarantee that your produce would be sold as the price is uniform for everyone. Makhura Mapfura processed their crops then sell final products to the consumers at a retail price. Since the possessing agent collects, store and processes their crops, some farmers view this marketing channel as less costly and more advantageous since they do not account for any marketing costs involved. However, according to Baloyi (2010), middlemen tend to get more money than smallholder farmers themselves because of high prices they charge as they sell their processed products to customers.

Results from the study area indicated that all farmers sell their crops through a grading agent or directly to the processors. Some of the interviewed farmers indicated that they are not happy with the price that they receive from the middlemen as it is not enough to cover production costs. However, they have no choice and marketing power thus they sell to the same people who exploit them.

#### **4.6 Marketing challenges of smallholder sunflower farmers**

One of the main challenges facing smallholder sunflower farmers is lack of direct linkage between farmers and consumers. The results indicate that 95% of the respondents have no direct linkage with consumers and 98.3% of the respondents do not get the prices they are expecting in the market and this is considered as a severe constraint. Abedullah (2007) reported that marketing system still remained in traditional and heterogeneous condition in smallholder farming, as a result, producers could not develop direct linkages with the consumers, instead they utilise middlemen. Some respondents indicated that they do not have enough financial resources to access better and broader markets and also the lack of proper infrastructure, lack of knowledge on how to introduce a product to the market. Almost 89% of the respondents feel their customers perceive their products as poor or of low quality this might be due to the fact that smallholder farmers might be lacking sunflower storage infrastructure.

#### **4.7 Chapter summary**

This chapter has given an overview descriptive statistics of the socio-economic characteristics, the socio-economic variables that affect market participation. The marketing chain along the smallholder sunflower marketing chain of smallholder farmers under Sekhukhune District was also shown. In addition, the marketing constraints faced by smallholder farmers in participating in marketing were also identified. The next chapter will summarise, conclude and outline policy and further study recommendations based on the findings of the study.

## CHAPTER 5

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter summarizes the main findings of the study and draws conclusions on the basis of the findings derived from the empirical results interpreted in the previous chapter. It also makes recommendations on how to improve market participation of smallholder sunflower farmers in Sekhukhune District.

#### 5.2 Summary

The aim of the study was to analyse the socio-economic factors that affect market participation of smallholder sunflower farmers in Sekhukhune District in the Limpopo Province of South Africa. The study had three objectives that are; (1) to determine socio-economic characteristics of smallholder sunflower farmers in the Sekhukhune district of Limpopo Province, (2) to profile market participation of smallholder sunflower farmers based on socio-economic characteristics and farm size, and (3) to determine the constraints faced by the smallholder sunflower farmers in the study area.

To achieve the objectives, the study used two analytical techniques, which were logistic regression and Marketing chain map. Results of the study indicate that the majority (65%) of smallholder sunflower farmers were males and were above the age of 51. Most respondents had no or low formal level of education with more than 50 % indicating that they have less than grade 7. The average household size in the study area is six and most respondents were married.

There were several constraints faced by farmers towards market participation of sunflower farmers but the most outstanding were; lack of direct linkage between farmers and consumers, lack of financial resources that restricts farmers from purchasing the required inputs, lack of proper storage infrastructure, lack of knowledge on how to introduce a product to the market.

Results from logistic regression model indicated that some of the variables were found to be positively significant, while others were negative but significant, and some non-significant. Although some variables were not significant, they still contribute to market participation of smallholder farmers. Production factors that were considered by the

study were; age, farm size, education, gender, marketing experience, stakeholder availability, distance from the market, own transport and farm size. Some of these socio-economic factors showed a positive contribution towards market participation of smallholder sunflower farmers in Sekhukhune District.

The findings indicated that factors that were very significant were: farm size, education, stakeholder availability, distance from the market and farm size at 5 and 10 percent levels of significance.

### **5.3 Conclusions**

The study had three research objectives, namely to; determine socio-economic characteristics of smallholder sunflower farmers in the Sekhukhune district of Limpopo Province, profile their market participation based on socio-economic characteristics and determine the constraints faced by the smallholder sunflower farmers in the study area. The results of the analysis showed that there are socioeconomic characteristics that affect market participation of smallholder sunflower farmers in Sekhukhune District.

The second objective was to investigate constraints that are faced by farmers in participating in markets in the study area. In support to this objective, results indicated that there were constraints affecting farmers from participating in markets.

### **5.4 Recommendations**

Considering socio-economic effects revealed by empirical results on farm and farmer characteristics of smallholder sunflower farmers in Sekhukhune District, several recommendations can also be drawn from the results of the study. The recommendations apply to farmers' organization, farmers, extension services organizations, financial institutions and government. Therefore, this study suggests ways in which market participation in formal markets by smallholder farmers can be improved and the value of Sunflower marketed in formal markets increased.

This study gave rise to some important recommendations with regard to market participation of smallholder sunflower farmers in South Africa. The following recommendations will help to address some of the challenges and problems identified:

### **5.4.1 Training**

It is important to provide training to the smallholder sunflower farmers as it will help to improve productivity and marketing of sunflower and its products. For example, the smallholder sunflower farmers together with their farm labourers should be urged to undergo formal training on agriculture, economics, marketing and management and farming in general. Such training can be afforded through national or international colleges and universities. The government should seek to coordinate such training by subsidizing universities and colleges for the benefit of smallholder farmers.

Furthermore, farmers are continuously confronted with new technology. Various training techniques can be applied for farmers who are illiterate. Farmers will have to acquire new technological and administrative skills and receive training and extension to keep up with market changes.

The study also recommends that more females be taught and empowered in farming of sunflower, as it shows in the results analysis in figure 4.1 that they were more male smallholder sunflower farmers than female sunflower farmers.

It has been found in this study that the highest level of education of farmers positively influenced both the decision to participate in the market and the value of sunflower crop. The majority of smallholder farmers who participated in the formal markets have passed grade 7 and above and this is an indication that education played a great role in market participation, therefore there is a need for farmers to be trained. It was also found that gender of household head being female was negatively associated with market participation of smallholder sunflower farmers in the formal markets and this shows that there is a need to emphasise women empowerment training programmes.

### **5.4.2 Funding**

The government should put a budget aside for the smallholder sunflower farmers, in doing this they will be able to allocate or give subsidies to the small farms. Funding of this nature helps to support the smallholder sunflower farmers. This type of funding will also help the smallholder sunflower farmers in cases of disasters caused by, amongst others; fire, drought and floods.

### **5.4.3 Monitoring**

The government should have monitoring programs to assess the progress on the smallholder sunflower farmers on farms. This will help the government to make informed decisions on how best to support the smallholder sunflower farmers. Failure to monitor farming progress will have some negative implications on the agricultural sector and the economy as a whole. The government agricultural technicians, economics and extension officers can be used to conduct monitoring programs. This will also help to instill competition and hard work amongst the smallholder sunflower farmers in South Africa as a whole.

### **5.4.4 Access to production land**

Farm sizes and access to land in general play an important role in farm income; and successful participation of smallholder sunflower farmers in agricultural markets. The results of the study clearly indicated the need for increased land for farming. In addition, tenure security in which farmers had user rights and did not own the land they farmed on negatively influenced their decision to participate in the formal markets. It was also highlighted in this study that labour employed on the farm increased the value of Sunflower marketed in the formal markets. According to Moloji (2008), the size of the farm enterprise is directly related to employment of labour. If the farm size is big and the household labour is not able to handle the farming activities, the employment of labour is necessary for income generation.

### **5.4.5 Government support**

The government is an important role player that influences market participation of the smallholder sunflower farmers through its attitudes, formulation and implementation of policies and the way in which it responds. Below are some of the recommended support strategies that can be adopted for the smallholder sunflower farmers:

Input support: This includes support of fertilizers, pesticides, seeds, etc.

Infrastructure support: The government should be able to provide good infrastructure for the small-holder farmers in order for them to be competitive. The government of South Africa has implemented a support programme called CASP, this programme aims for land reform beneficiaries and other farmers who have land but they are involved in value addition enterprises.

Financial support: The government should be able to provide financial support to enterprises so that productivity increases and they are able to compete with other enterprises locally and internationally.

#### **5.4.6 Involvement of organisations with smallholder sunflower farmers**

Farmer Organisations such as NAFU (National African Farmers Union) provide a wide range of services such as financial services, training, advisory services, skill development, and represent their members interests in expressing demand for service. Therefore, farmer organisations can be a solution to most market related problems encountered by sunflower smallholder farmers in Sekhukhune District. This study recommends that the provincial department of agriculture together with extension officers and some government parastatals mobilise farmers and encourage them to form farmer groups with their support. Commodity-based policies should also be implemented in South Africa's agriculture.

#### **5.5 Further research**

The study focused on variables that affect market participation of the smallholder sunflower farmers in Sekhukhune District of Limpopo Province. There are some recommendations concerning further studies, this will help to broaden the study in the future.

This study focused on smallholder sunflower farmers in Sekhukhune District of Limpopo Province. These farmers not necessarily represent the total population of the smallholder sunflower farmers in South Africa. Therefore generalization of the results might not be possible. A study can be conducted looking at all nine provinces of South Africa that have smallholder sunflower farmers since the result of this study focused exclusively on farmers in Sekhukhune District.

The study mostly focused on market participation of the smallholder sunflower farmers of Sekhukhune District and not which markets they have access to, that is either local or international markets or both local and international markets, one can focus on these aspects and also conduct a study on how the smallholder sunflower farmers of Sekhukhune District access markets.

Another area in which a study can be conducted is on ways in which the government has initiated market participation with regard to smallholder sunflower farmers, on the evaluation of policies that concern the smallholder sunflower farmers and markets. That is policy coherence in relation the smallholder sunflower farmers. The current study was unable to look deep at policies that are related to the smallholders sunflower farmers.

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## APPENDICES

### Appendix 1: Questionnaire

#### Research on “Market participation of sunflower smallholder farmers in Sekhukhune District of Limpopo Province, South Africa”.

Researcher: Mathagu Tshilidzi Hangwelani  
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 Department of Agricultural Economics  
 SOVENGA  
 0727

Date: DD – MM - YYYY  
 Questionnaire no:

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Email: [mathaguht@gmail.com](mailto:mathaguht@gmail.com)

**Mark with “X”**

**General information**

GPS Readings
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a) Name of interviewee	
b) Name of the farm	
c) Local Municipality	
d) Telephone /cell number	
e) Village if the same as the location	
f) District 's name	

**1. Demographic information**

1.1 Gender of the household head	Female
	Male

1.2 Age of the household head in years		Years
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1.3 Household size		
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1.4 Level of education	Less Grade 7( Primary)	
	Matric	
	Post Matric	
	Other	

- 1.5. Farming experience in years.....
- 1.6. Membership of sunflower producer group – Yes or No
- 1.7. How many years do you have of formal education?.....
- 1.8. What is your income?.....

1.9 Occupation (apart from farming).....

**2. Land productivity**

2.1 How did you acquire the land?

Bought ( Title deed)	
Leased	
Inherited	
Given by Government	
Allocated by the Headman	
Renting and /or share	
Other	

If bought, what is the amount?.....

2.2 What is the total area of the farm in hectares?.....

2.3 Are you satisfied with the size of the land that you have?	1	Yes
	2	No
Why?.....		

2.4 Do you really feel secure with land that you have in terms of ownership	Yes	
	No	
Why?.....		

2.5 Are you the legal owner of the land in which the farm is based?

a. Yes	b. No

If no, who is the legal owner?.....

2.6 What has been your production on average for the period you have been in the business in terms of tons?.....

2.7 May you please indicate any type of production loss when practising sunflower production?

Post-harvest loss	
Theft	
Disaster	
Diseases	
Other	

2.8 What is the number of labourers in the farm?.....

**3. Product marketability**

3.1 How long have you been involved in the marketing of sunflower?

Less than 5 years	
6-10 years	
More than 10 years	

3.2 What are the products produced in the farm? Mark with "X"

Wheat	
Maize	
Sunflower	
Bananas	
Macadamia nuts	
Soybeans	
Others	

3.3. What is the unit price per ton of sunflower (in Rand).....

3.4 Where do you get your inputs?

a. Government	b. Local supermarket	c. Other (specify)

3.5 Do you always buy from the same supplier?

a. Yes	b. No

If no why?.....

3.6 Do you have special requirements for your supplier?

a. Yes	b. No	c. Sometimes

3.7 Is there a demand of your types of sunflower that is produced in a particular production method?	Yes	1
	No	2

3.8 Do you have storage facilities?

a. Yes	b. No

3.9 Where and whom do you sell your products?

Market	Mark (X)
a. Local market	
b. From farm gate to wholesalers	
c. National market	
d. Export market	
e. Other (specify)	

3.10 If you sell to national, export or wholesalers how do you transport your produce to the place of selling? .....

3.11 Do your customers have any special requirements from you?

a. Yes	b. No	c. Sometimes

If yes what kind?

Special requirement	Mark (X)
a. Certain variety	
b. Frequent supply	
c. Minimum supply	

d. Other (specify)	
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3.12 How did you develop your customer base?.....

3.13 How large it is now?.....

3.14 What are the demands (pull/push factors)?.....

3.15 Do you have competitors locally?

a. Yes	b. No

If yes, what share of the market do they constitute?.....

3.16 What were your sales in the first year?

Sales first year	Mark (X)
a. Satisfactory	
b. Not satisfactory	
c. Other (specify)	

3.17 How often do you harvest in one season (frequency in days per season and length of the season)?.....

3.18 How much do you harvest per season (in tons per season).....

3.19 What is the cost spent on each input in the farm?

Fertilizers	
Tractors	
Land	
Pesticides	
Equipments	
Seeds	
Labour	
Others	

3.20 Do you have tractors/vehicles in the farm?

Yes	
No	

If No, why.....

3.21 How much of your income comes from the project?

Proportion of income	Mark (X)
a. Nearly all	
b. Three quarter	
c. Half of the income	
d. One quarter	
e. Less than a quarter	

3.22 Do you sell produce to international buyers?	Yes	
	No	

3.23 The following production factors are causing the decrease	<b>Response</b>
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in market participation of sunflower.	Strongly disagree	Disagree	Not sure	Strongly agree	Agree
1. Distance to market					
2. Market information					
-Lack of quality					
-Lack of availability					
-Cost					
3. Quality of products					
4. Is there a market for sunflower?					
5. Road infrastructure					

#### 4. Entrepreneurship

4.1 How long have you been farming?		Years
How long have you been farming on your current farm?		Years

4.2 Are you involved in any other farm activities, apart from growing sunflower?	Yes	
	No	
Yes, specify.....		

- 4.3 How is the farm organized (cooperatives structure, leadership, organizational)?...
- 4.4 Who ensures compliance with production standards?.....
- 4.5 What has sustained the project to this date?.....

#### 5. Stakeholders

5.1 Are there any organizations in your area that you regard as stakeholders in the project beside the department of agriculture?

a. Yes	b. No

If yes, name them from the most influential to the least influential.

Most influential (01)	
Influential (02)	
Less influential (03)	
Non-influential (04)	

5.2 Do the stakeholders meet on regular basis?

a. Yes	b. No

5.3 If the stakeholders hold meetings indicate the main issues discussed in the stakeholders meetings?

Main issues discussed	Mark ( X )
a. land	
b. Infrastructure issues	
c. Market issues	
d. Resource allocation	
e. Funds	
f. Cooperatives formation	
g. politics	
h. theft	
i. policy issues	

5.4 Which of the stakeholders in the project are decision makers on the following issues? List the stakeholders according to their level of influence as decision makers. (1= most influential; 2= influential; 3= less influential; 4 = not influential)

Main issues discussed	Rating (1-4)			
	01.	02.	03.	04.
a. Land	01.	02.	03.	04.
b. Policy issues	01.	02.	03.	04.
c. Infrastructure issues	01.	02.	03.	04.
d. Market issues	01.	02.	03.	04.
e. Funding	01.	02.	03.	04.
f. Resource allocation	01.	02.	03.	04.
g. Cooperative formations	01	02	03	04
h. Politics	01	02	03	04
i. Theft	01	02	03	04

**6. Financial support**

6.1 Type of financial support you receive and amount	Amount of loan	Amount of grant	Amount of subsidy	Other (Specify)
a. Commercial banks				
b. Government				
c. Agricultural cooperatives				
d. Other ( Specify)				

7. What are the challenges in the farm?.....