



**University of Fort Hare**  
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**Assessing the socio-economic factors influencing wool production in Kolomana  
villages of Eastern Cape, South Africa**

**A dissertation Submitted in Fulfilment for the Degree of Master of Agriculture  
(Agricultural Economics)**

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**January 2013**

## DEDICATIONS

This work is dedicated to my family especially my late brother and friend, “Monde Wellington Tukani” lala ngoxolo Jambase. You will always be in my thoughts and memories.



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## DECLARATION

I the undersigned declare that the work contained in this study is my own work and has not previously in its entirety or in part been submitted at any University for a degree. Where use has been made of the work of others, it was duly acknowledged in the text.

Signature.....

Date...../...../.....



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## ACKNOWLEDGEMENTS

I wish to sincerely thank Professor A. Obi for his guidance, patience and encouragement throughout the study and I am truly grateful for his honest support.

Respectfully acknowledged is the strength and insight from our Lord the Creator to be able to undertake this study.

A special word of thank giving to all post graduate students for their assistance in data interpretation and analysis.

A special thank giving to my late mother “Ms Winnie and Grandmother Mrs Noseven Minah Mahashi” for their unconditional love, guidance and support throughout my life and my junior studies, not forgetting my sisters “Phumla and Nomthetho” and my brothers “Zoyisile, Mxolisi and Monde” for their guidance, love and support throughout my life.



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Last but not least I would like to thank my mother Nqabisa Nqabakazi “Mariza” Mgwali for her continued inspiration, support, contribution, advice and encouragement throughout the study.

To my son “Luniko-Oluhle” this is for you my boy to emulate!

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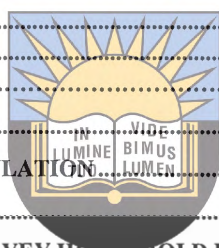
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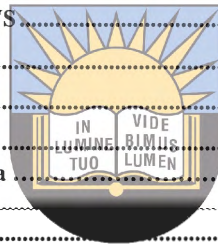
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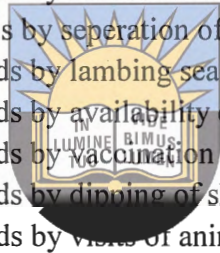
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## ACRONYMS

ADM	Amathole District Municipality
ARC	Agricultural Research Council
CG	Cape Government
CMW	Cape Mohair and Wool
CP	Cape Province
CW	Cape Wools
DAFF	Department of Agriculture, Forestry and Fisheries
DoA	Department of Agriculture
DRDAD	Department of Rural Development and Agrarian Reform
EC	Eastern Cape
ECB	Eastern Cape Business
ECDC	Eastern Cape Development Corporation
FAO	Food and Agriculture Organisation
FS	Free State
GDP	Gross Domestic Product
IWTA	International Wool Textile Organisation
MP	Mpumalanga
NDA	National Department of Agriculture
NLM	Nkonkobe Local Municipality
NP	Northern Cape
NWGA	National Wool Growers Association
S.A.	South Africa
SAWME	South African Wool and Mohair Exchange
SPSS	Statistical Packages for Social Scientists
UFH	University of Fort Hare
US	United States
WC	Western Cape
WSA	Wool South Africa
WTBSA	Wool Testing Bureau South Africa



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## ABSTRACT

Despite considerable investment by government and non-governmental organizations (NGO) to support wool production among farmers in parts of the Eastern Cape Province, the sub-sector continues to feature low production and productivity while the small scale farmers continue to wallow in poverty. There is therefore genuine interest to gain deeper understanding about the reasons for this situation and identify elements for a strategy to remedy the situation. Sheep were found to be the most important livestock species and mainly used for wool production to raise incomes.

A formal questionnaire was used to collect information on demographic parameters and socio-economic factors affecting wool production in Kolomana villages of the Eastern Cape Province, South Africa. Descriptive statistics were generated using Statistical Package for Social sciences (SPSS version 20). Observed major infrastructural constraints to sheep farmers in Kolomana were shortage of shearing sheds, dip tanks, fences and re-fencing of camps and rangeland resources such as availability of animal health technicians. Linear regression model was used to test how independent variables relate or affect the dependent variables which were defined in value and quantitative terms.

The variables that are explained are those with significant values. They include: age of the household head, marital status of household head, number of sheep owned by households, division of rangeland into camps, state of fencing on rangeland, visits by animal health technicians and availability of first milk to lambs. Significant variables mean that the relationship that exist between dependent variable that is income in this case and independent variables is true and can be claimed as there is sufficient evidence to support that relationship whether it is positive or negative. Not all of these independent variables were influential to dependent variable as they have negative relationship with dependent variable.

However, the majority of the independent variables are positive hence they influence the dependent variable. These positive independent variables are: age of household head, numbers of sheep owned by households, visits by animal health technicians and availability of first milk to lambs. It can be concluded that removing constraints faced by rural wool sheep farmers and implementing correct managerial practices when necessary could improve efficiency in wool production of the rural poor.

**Key words:** Wool Production, Smallholders, Rural Wool Farmers, Socio-Economic Factors, Descriptive Statistics Analysis, Linear Regression Model.




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## CHAPTER 1

### INTRODUCTION

#### 1.1 Background of the study

Sheep is important to farmers in many economies. They provide milk (and its derivative products, such as cheese and butter), wool, sheep skin (used for making clothes, footwear and rugs) and meat. The contribution of sheep to the economies of many countries in Southern Africa has, however, declined in the last decades (Bota, Karlssoub, Greef & witt 2004 & Lupton, Huston, Craddock Pfeiffer & Polk 2007). South Africa produces mainly apparel wool (Bota *et al.* 2004 & Lupton *et al.* 2007). The South African wool clip is predominantly a Merino clip but coarse and coloured types are also produced and marketed on a limited scale. Historically, wool produced in the neighbouring states of Namibia and Lesotho was considered part of South African production and has always been sold in South Africa (Department of Agriculture, Forestry and Fisheries 2010).

South Africa is also rich in mutton production and mutton sheep are mostly found in the semi-desert areas of the Northern and Western Cape. The most popular mutton breed in South Africa, which is locally developed, hardy and highly reproductive is a Dorper. Limited numbers of indigenous fat-tailed sheep and Karakul sheep are still found (Agriculture and Land Affairs 2006/07). Mutton contribution in the growth rate of Southern Africa economies was 3.0% per annum in 1960-1970 and 1.4% per annum in 1970-1980 (Tangermann &  an exceptional ability to convert a wide variety of non-competitive feedstuffs (forage and crop residues) into high quality meat and fibre products for human use (Agriculture and Land Affairs 2006/07). They are efficient converters of forage to meat and fibre and are capable of producing good carcasses from forage alone (Umberger 1996).

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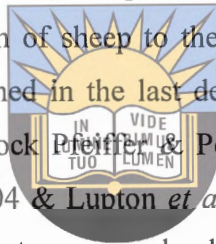
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Sheep feed on a forage that is found freely on the rangelands and convert it to meat and fibre. Therefore sheep produce high income generating produce (meat and fibre) using low cost vegetation found on the rangelands. Sheep also play a role of generating income through its wool while it is still alive and continues doing that as long as it is alive. This makes them choice elements of poverty reduction strategies especially for previously disadvantaged groups unable to raise the critical mass of capital to invest in income generating activities (Department of Agriculture, Forestry and Fisheries 2010). South Africa is ranked number five after Australia, New Zealand, Uruguay and Argentina among wool exporting countries (Department of Agriculture, Forestry and Fisheries 2010).



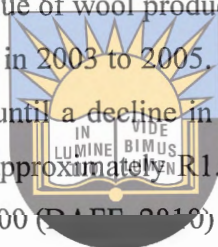
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The composition of sheep wool in South Africa is mainly Merino and Karakul. The 74% of the total sheep wool in South Africa is Merino wool. The production season of wool is between August and June of the following year and each sheep is shorn twice during the production season (Department of Agriculture, Forestry and Fisheries 2010). Over half of sheep in South Africa are fine-woolled Merinos. Other breeds used include the locally developed Afrino, a woolled mutton breed adapted to arid conditions, the South African Mutton Merino, the Dohne and the Merino Landrace.

Approximately 91% of the clip is produced in four provinces, namely the Eastern Cape (EC), Western Cape (WC), Free State (FS) and Northern Cape (NC). Total production of wool in 2008/09 was estimated at 45.8 million kg. Eastern Cape accounted for 33% of the clip followed by Free State with 25%, Western Cape with 20% and Northern Cape at 13%. In 2009/2010 Eastern Cape produced 13 805 227 kg, followed by the Free State with 10 355 592 kg, the Western Cape with 8 493 860 kg, the Northern Cape with 5 617 319 kg and Mpumalanga (MP) with 2 470 875 kg (Department of agriculture, forestry and fisheries 2010). The Eastern Cape is well known for its wool production and good quality wool that farmers produce every year. The sheep breed with highest wool production per head in South Africa is the South African Merino . (Safari, Fogarty & Gilmour 2005).

The other high producing breeds are the dual purpose Merino breeds, of which the Dohne Merino, the South African Mutton Merino, the Afrino and the Lettele are the most popular (Safari, Fogarty & Gilmour 2005). Dual-purpose breeds are bred with the specific aim of maximising wool and mutton income, since they have a better body conformation than the Merino, but produce slightly less wool per Kilogram (kg) of body weight (Bota *et al.* 2004). The gross value of production for wool is dependent on the quantity produced and prices received by producers. Average Merino fleece weights vary from 4 kg to 5 kg per year in the semi-arid regions, to up to 8 kg per year from sheep grazing on cultivated pastures.

DAFF (2010) stated that the gross value of wool production started to increase in 2000 to 2002 until a decline was experienced in 2003 to 2005. Between 2006 and 2007 the gross value of wool production increased until a decline in 2009. In 2007 the gross value of wool production reached a peak at approximately R1.3 million and the lowest attained was in 2000 at approximately R600 000 (DAFF 2010)



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The recorded gross value of wool sold at first point of sale for the season (2009/2010) came to R1 505 million, compared to R1 154 million in 2008/09 – an increase of 30.5%. In South Africa, wool production increased by 0.8% from 47.9 million kg in 2008/09 to 48.3 million kg in 2009/10, mainly because of improved production conditions in most areas (DAFF 2010). Marked dramatic improvements in productivity and quality of wool are possible and are already experienced in other parts of the country where improvement programmes are put into place. For example, de Lange (2004) reported that pilot programmes under cooperation arrangements between the National Wool Growers Association (NWGA) and the Department of Agriculture, with the active engagement of communal developing farmers, led to an increase in the annual income from R15 per sheep per annum to more than R65.

The NWGA is running a scheme to improve the quality of wool sheep in underdeveloped areas. The project is aimed to produce good quality and environmentally adapted sheep in these areas, through the use of improved technology such as artificial insemination and embryo transfer. The improved ewes and rams will provide a sufficiently large infusion of appropriately high quality animals into the communal areas, that will catalyse production practices and catapult rural wool production and income levels ten times (de Lange 2004). These quality wool sheep are distributed to farmers by NWGA through the exchange system, where a farmer will take an old sheep to NWGA and get a good quality ram to improve his/her flock. One of the requirements for the success of the project is proper veld and flock management systems (de Lange 2004).



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The emergent and traditional stock-keepers in particular in the rural areas of South Africa are faced with problems or constraints in increasing their production and productivity and thus their incomes from wool are alarming. The principal constraints are technical in nature, especially genetic (stock quality) improvement, better herd and health management (to increase reproduction and reduce mortality rates), and improvements in shearing, grading and sorting standards as well as the fenced camps. However, most of the technical solutions are known and capable of being addressed (Bota *et al.* 2004).

There are more or less 846 communal sheds in the Eastern Cape, that vary from old and poor constructions with insufficient equipment, handling facilities and no dipping facilities for effective wool harvesting, classing and marketing. There are an estimated three million wool sheep in communal areas, owned by more than 70 000 farmers (NLS 2009). The average income from wool varies between R2/kg through the informal trader market, to more than R10/kg through the formal auction market. Communal producers own from 500 to more than 600 sheep, with average sheep numbers varying between 40 sheep per farmer marketing their wool informally, to 120 sheep per farmer marketing their wool formally through auctions. Commercial farmers produce more than 44 million kg of wool annually from an estimated 13 million sheep.

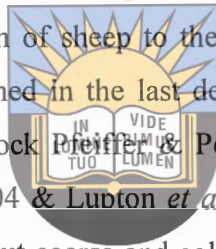
## CHAPTER 1

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### INTRODUCTION

#### 1.1 Background of the study

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South Africa is also rich in mutton production and mutton sheep are mostly found in the semi-desert areas of the Northern and Western Cape. The most popular mutton breed in South Africa, which is locally developed, hardy and highly reproductive is a Dorper. Limited numbers of indigenous fat-tailed sheep and Karakul sheep are still found (Agriculture and Land Affairs 2006/07). Mutton contribution in the growth rate of Southern Africa economies was 3.0% per annum in 1960-1970 and 1.4% per annum in 1970-1980 (Tangermann & Krostitz 1982). Sheep possesses an exceptional ability to convert a wide variety of non-competitive feedstuffs (forage and crop residues) into high quality meat and fibre products for human use (Agriculture and Land Affairs 2006/07). They are efficient converters of forage to meat and fibre and are capable of producing good carcasses from forage alone (Umberger 1996).

Sheep feed on a forage that is found freely on the rangelands and convert it to meat and fibre. Therefore sheep produce high income generating produce (meat and fibre) using low cost vegetation found on the rangelands. Sheep also play a role of generating income through its wool while it is still alive and continues doing that as long as it is alive. This makes them choice elements of poverty reduction strategies especially for previously disadvantaged groups unable to raise the critical mass of capital to invest in income generating activities (Department of Agriculture, Forestry and Fisheries 2010). South Africa is ranked number five after Australia, New Zealand, Uruguay and Argentina among wool exporting countries (Department of Agriculture, Forestry and Fisheries 2010).



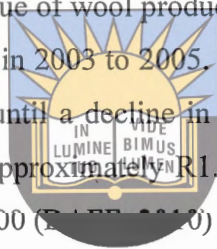
The composition of sheep wool in South Africa is mainly Merino and Karakul. The 74% of the total sheep wool in South Africa is Merino wool. The production season of wool is between August and June of the following year and each sheep is shorn twice during the production season (Department of Agriculture, Forestry and Fisheries 2010). Over half of sheep in South Africa are fine-woolled Merinos. Other breeds used include the locally developed Afrino, a woolled mutton breed adapted to arid conditions, the South African Mutton Merino, the Dohne and the Merino Landrace.

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Approximately 91% of the clip is produced in four provinces, namely the Eastern Cape (EC), Western Cape (WC), Free State (FS) and Northern Cape (NC). Total production of wool in 2008/09 was estimated at 45.8 million kg. Eastern Cape accounted for 33% of the clip followed by Free State with 25%, Western Cape with 20% and Northern Cape at 13%. In 2009/2010 Eastern Cape produced 13 805 227 kg, followed by the Free State with 10 355 592 kg, the Western Cape with 8 493 860 kg, the Northern Cape with 5 617 319 kg and Mpumalanga (MP) with 2 470 875 kg (Department of agriculture, forestry and fisheries 2010). The Eastern Cape is well known for its wool production and good quality wool that farmers produce every year. The sheep breed with highest wool production per head in South Africa is the South African Merino . (Safari, Fogarty & Gilmour 2005).

The other high producing breeds are the dual purpose Merino breeds, of which the Dohne Merino, the South African Mutton Merino, the Afrino and the Lettele are the most popular (Safari, Fogarty & Gilmour 2005). Dual-purpose breeds are bred with the specific aim of maximising wool and mutton income, since they have a better body conformation than the Merino, but produce slightly less wool per Kilogram (kg) of body weight (Bota *et al.* 2004). The gross value of production for wool is dependent on the quantity produced and prices received by producers. Average Merino fleece weights vary from 4 kg to 5 kg per year in the semi-arid regions, to up to 8 kg per year from sheep grazing on cultivated pastures.

DAFF (2010) stated that the gross value of wool production started to increase in 2000 to 2002 until a decline was experienced in 2003 to 2005. Between 2006 and 2007 the gross value of wool production increased until a decline in 2009. In 2007 the gross value of wool production reached a peak at approximately R1.3 million and the lowest attained was in 2000 at approximately R600 000 (DAFF 2010)



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The recorded gross value of wool sold at first point of sale for the season (2009/2010) came to R1 505 million, compared to R1 154 million in 2008/09 – an increase of 30.5%. In South Africa, wool production increased by 0.8% from 47.9 million kg in 2008/09 to 48.3 million kg in 2009/10, mainly because of improved production conditions in most areas (DAFF 2010). Marked dramatic improvements in productivity and quality of wool are possible and are already experienced in other parts of the country where improvement programmes are put into place. For example, de Lange (2004) reported that pilot programmes under cooperation arrangements between the National Wool Growers Association (NWGA) and the Department of Agriculture, with the active engagement of communal developing farmers, led to an increase in the annual income from R15 per sheep per annum to more than R65.

The NWGA is running a scheme to improve the quality of wool sheep in underdeveloped areas. The project is aimed to produce good quality and environmentally adapted sheep in these areas, through the use of improved technology such as artificial insemination and embryo transfer. The improved ewes and rams will provide a sufficiently large infusion of appropriately high quality animals into the communal areas, that will catalyse production practices and catapult rural wool production and income levels ten times (de Lange 2004). These quality wool sheep are distributed to farmers by NWGA through the exchange system, where a farmer will take an old sheep to NWGA and get a good quality ram to improve his/her flock. One of the requirements for the success of the project is proper veld and flock management systems (de Lange 2004).



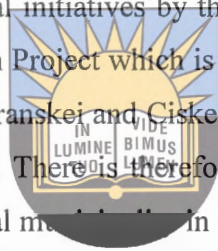
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The emergent and traditional stock-keepers in particular in the rural areas of South Africa are faced with problems or constraints in increasing their production and productivity and thus their incomes from wool are alarming. The principal constraints are technical in nature, especially genetic (stock quality) improvement, better herd and health management (to increase reproduction and reduce mortality rates), and improvements in shearing, grading and sorting standards as well as the fenced camps. However, most of the technical solutions are known and capable of being addressed (Bota *et al.* 2004).

There are more or less 846 communal sheds in the Eastern Cape, that vary from old and poor constructions with insufficient equipment, handling facilities and no dipping facilities for effective wool harvesting, classing and marketing. There are an estimated three million wool sheep in communal areas, owned by more than 70 000 farmers (NLS 2009). The average income from wool varies between R2/kg through the informal trader market, to more than R10/kg through the formal auction market. Communal producers own from 500 to more than 600 sheep, with average sheep numbers varying between 40 sheep per farmer marketing their wool informally, to 120 sheep per farmer marketing their wool formally through auctions. Commercial farmers produce more than 44 million kg of wool annually from an estimated 13 million sheep.

There are close to 8 000 commercial farmers in South Africa, and sheep numbers vary from 300 to 20 000 sheep per farmer. More than 90% of the South African clip is exported (NLS 2009). Over 70% of the resource poor rural farmers in the Eastern Cape Province of South Africa reside in the harsh agro-ecological zones where cropping is unsuitable and thus, rely on livestock for their livelihoods (Bester, Matjuda, Rust & Fourie 2003). Wool sheep contributes to subsistence farming and enhance the sustainability of smallholder farming systems.

Although sheep provide diverse functions to farmers in Africa, their productivity is generally low. There are various factors that reduce wool production (Abeyratne 2001). This led to the introduction of several initiatives by the government and National Wool Growers Association such as the Ram Project which is introducing superior rams to wool farming communities in the former Transkei and Ciskei regions. These constraints have a negative impact on wool production. There is therefore, a need to carry out a study at Kolomana villages, in Nkonkobe local municipality in the Amathole district municipality of the Eastern Cape to determine constraints faced by rural wool farmers and management practices being used.



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## 1.2 Problem statement

Kolomana sheep farmers have large numbers of different wool sheep breeds such as Merino and Dohne Merino, availability of suitable vegetation for feeding their sheep, availability of clean water for the stock to drink and veterinary services, as well as the undivided support from the Eastern Cape government structures such as extension services from the provincial Department of Rural Development and Agrarian Reform (DRDAR), previously known as the Department of Agriculture. The National Wool Growers Association (NWGA) and the Agricultural Research Council (ARC) joined hands in 1996 to establish and provide an advisory service to the woolgrowers in the former Transkei/Ciskei areas to improve the quality of life of rural sheep farmers.

Under the scheme, sheep farmers exchange old sheep for superior ram to improve the quality of their breeding stock. Kolomana sheep farmers have benefited from the project. Even though these farmers have been supported over the years and are still being supported, the quality of their wool is still poor; producers still suffer low incomes and poverty remains high. Both the Department of Rural Development and Agrarian Reform and the NWGA are concerned about this state-of-affairs.

Over the years, several studies have been undertaken to explore the reasons for this situation as a basis for designing optimal solutions. However, these studies have focused on general animal production questions, trying to find out which types of livestock were suitable to be reared in Kolomana. Cattle, sheep and goat were the livestock that have received the most attention. Studies on wool production constraints, opportunities and management practices have either been rare or never been carried out. Types of sheep which are mostly reared in Kolomana are Merino and Dohne Merino, which are the wool breeds. Ideally, these farmers are supposed to produce good quality wool. In the view of experienced white farmers in the area, it is contrary to common sense that wool production would be as severely constrained among these farmers as is the case at present. This view is shared by the Department of Rural Development and Agrarian Reform and specialists who have experience with the sub-sector.

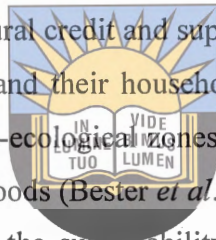
These views were again very strongly expressed during the rural sheep farmers mini flock show held in September 2010 in Kolomana and again in September 2011 by the Department of Rural Development and Agrarian Reform and NWGA in trying to motivate farmers to take wool production seriously. It is also true that neighbouring farms (white-owned) have consistently produced good quality wool when compared to what the local farmers produce. It is for this reason that the present research is designed to seek answers to this mystery. The result of this study will enable the researcher to draw some lessons on what should be done in order to address the matter and contribute to addressing the current problems of low income, underemployment and poverty in the area.

### 1.3 Motivation for the study

The majority of households in South Africa lack cash to purchase food. Underlying the lack of purchasing power is the limited scope of income opportunities, especially in the rural areas. Unemployment rate in South Africa has increased to 25.50% in the third quarter of 2012 from 24.90% in the second quarter of 2012 (S.A. Statistics 2012). Majority of the unemployed live in rural areas and cultivate their small farms and rear livestock for means of survival. Some of them are not cultivating or managing their livestock properly at all due to the lack of money to hire the expensive tractors or to buy medicines and feed for their livestock.

Also due to lack of access to agricultural credit and support services, they cannot produce food that is enough for themselves and their households. Most of these resource-poor rural farmers reside in the harsh agro-ecological zones where cropping is unsuitable and thus rely on livestock for their livelihoods (Bester *et al.* 2003). Woolled sheep contributes to subsistence farming and enhance the sustainability of smallholder farming systems through the sale of the wool during shearing season. Often, the rural people make ends meet by selling the whole animal itself. Although sheep serve diverse functions to farmers in Africa their productivity is generally low.

There are various factors that reduce wool production, chief of which is low veld quality during the dry season, overstocking and the general management practices (Abeyratne 2001). Therefore, if the small scale or rural farmers can adopt proper sheep management systems and have proper resource base and infrastructure, their profit margins can improve and the current problems of low income, underemployment and poverty in rural areas can be addressed. This study is therefore justified on that ground.



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## 1.4 Research objectives

The broad objective of this study is to assess the management practices such as feeding, breeding, lambing and health issues that are employed or practised in seven villages of Kolomana. More specifically, the study aims:

- To describe the sheep production system in the study area.
- To assess opportunities and constraints to sheep wool producers in Kolomana.
- To assess availability of resources such as feed, water and grazing land; and infrastructure needed for wool sheep production such as fencing, dip tanks and shearing sheds in Kolomana.
- To assess the sheep management practices (feeding, health issues, breeding and lambing) that are being employed in Kolomana and how they influence the performance of the sheep wool production systems.



## 1.5 Research questions

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This study seeks to answer the following questions:

- What are the sheep production systems in Kolomana?
- What are the opportunities and constraints to sheep wool producers in Kolomana?
- Which are available infrastructure and resources for wool sheep production in Kolomana?
- What sheep management practices (feeding, health issues, breeding and lambing) are being employed in Kolomana and how do they influence the performance of the sheep wool production systems?

## 1.6 Hypothesis

This dissertation will test the following hypothesis:

- Wool production quantity increases with resource and infrastructure availability.
- Wool production quality improves with better sheep management practices.

## 1.7 Outline of the paper

This study consists of six chapters, where chapter one is an introductory section which gives background of the study, the problem statement which is significant in this investigation, motivation for the study as well as the objectives questions to be answered and hypotheses of the study. Chapter two reviews the literature on livestock production as a tool for rural development, poverty alleviation and grassroots empowerment. The historical overview of wool industry in South Africa (S.A.), sheep wool industry in S.A., quality of wool produced by rural farmers, economic role of wool production to rural farmers, government interventions to rural wool producing farmers where National Wool Growers Association (NWGA), extension and veterinary services are highlighted in this chapter.

Also transaction costs to rural wool producers are discussed in this chapter where labour and transportation of wool bales are mentioned as the major costs to farmers. Chapter three lays out the procedures for selection of the study site as well as a brief description of the selected study site. In chapter four the methodology is discussed where questionnaire design, selection of the respondents, sample size, interviewing process and data analysis techniques are briefly discussed. Chapter five presents the main findings of the study. Lastly chapter six summarizes the main findings of the study and presents the conclusion, the recommendations and the future areas of research.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Introduction

This chapter reviews the literature on economic and social importance of livestock production in rural development and poverty alleviation, challenges and opportunities for communal livestock production and enterprise development for small-scale farmers. Brief historical overview of wool production in South Africa is also discussed. Summarised sheep wool industry in South Africa, quality of wool produced by rural farmers, economic role of wool production to rural or communal farmers and government intervention to rural wool producing farmers as well as brief transaction costs to rural sheep wool producers are also discussed.



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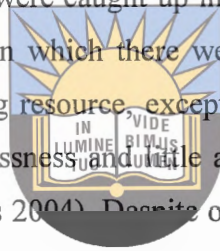
#### 2.2 Livestock production - the tool for rural development and poverty alleviation

Livestock production account for about one-fourth of the total food produced by households rearing livestock in the Eastern Highlands of Ethiopia. These results lead one to hypothesize that if livestock are so critical in the densely populated Eastern Highlands with small land holdings, their contribution might be even greater in the Central and Western Highlands of Ethiopia where population density is lower and average land and livestock holding per farm is larger (Khosa & Averbeke 2007).

The total numbers of cattle and small stock fluctuate in response to high and low rainfall in a year. There are more cattle in the communal than the freehold sector, although the communal sector contributes minimally to formal beef sales. Nationally, beef production is the most important livestock related activity, followed by small stock production. Most of the output from the small stock sector is exported.

Palmer & Ainslie (n.d.) stated that communal area livestock production contributes insignificantly to formal agricultural output and is mainly confined to the eastern and northern parts of the country. However, herd sizes vary considerably between and within regions and livestock ownership is strongly skewed with a small number of people owning large herds and the majority owning few animals or none at all. Stock numbers tend to be less evenly distributed in communal than in commercial areas. There is a tendency for high concentrations of people and livestock near to access roads, towns and infra-structure (schools, clinics, supply stores) and permanent water. Portions of the landscape that are inaccessible or far from permanent water remain under-utilised.

The areas designated as homelands were caught up in an age-old tradition of communal livestock farming among Africans in which there were very poorly defined individual rights with respect to access grazing resource, except for national or tribal boundaries. This led to problems such as landlessness and little available land, which were in fact, unavoidable (Bayer, Akock & Gilles 2004). Despite of all the above mentioned barriers, livestock have always remained a very important component of African societies and this is quite evident in South Africa.



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### **2.2.1 Economic importance of livestock production in rural development and poverty alleviation**

In the Eastern Cape Province of South Africa the communal grazing areas which occur mostly in the former homeland areas such as Transkei and Ciskei, constitute about 25% of the surface area but are carrying high livestock numbers. These areas carry about 1.7 million out of 2.3 million cattle, 2.9 million sheep out of 7.3 million and 2 million goats out of the 2.7 million in the Province (FAO STAT 2001). These figures are an equivalent of more than 60% of the cattle and 70% of the goat populations of the entire province (Ainslie 2002). The combined livestock sector contributes about 75% of total agricultural output (National Department of Agriculture 1999).

Comparison between crop and livestock incomes reveals that while livestock accounted for 49% of total net income, crop production contributed a mere 6%. Within the livestock sector, cattle contributed the highest (33%). Nevertheless, the contribution of small ruminants is substantial, amounting to 15%. This exceeds the contribution from crops by 58%. This finding provides enough evidence for the smallholder farmers to reallocate some resources from crop production to small ruminant production if only they view profitability and efficient utilisation of resources as their main goals. Smallholder farmers in the area should, therefore, exploit the potential benefits of small ruminant production to increase their household income by allocating more resources to its improvement. Furthermore, policy makers, researchers and farmers should be made aware of the economic viability of small ruminant production in the country and elsewhere in Africa.



According to Hendricks & Fraser (2003) about 65% of all the cattle in the province are held in the former Ciskei and Transkei and this in itself illustrates the importance of the cattle for very reserve dwellers. Livestock produces for about 70% of gross agricultural income in the province as a whole (Eco-wool 2008). There is an overwhelming catalogue of evidence about the skew distribution of cattle holdings and ownership in the former reserves with fewer households owning large herds and the majority holding smaller herds. Hendricks & Fraser (2003) argues that conventional wisdom has merely repeated the view that cattle holdings in the reserves are manifestly irrational, that low off-take has led to overgrazing and land erosion with little attention to animal health. From an economic point of view the large cattle holdings in the communal areas is rational if the objectives of keeping the cattle are taken into account. If the cattle are seen as a symbol of status or wealth, the owners are being perfectly rational by maximizing their wealth by increasing the number of cattle they own.

Livestock produce food (e.g. meat, milk) and non-food commodities (e.g. hides, wool), and provide draught power and manure for food and cash crop production, thereby helping to generate income for livestock owners and their employees. Since livestock grow in number and in individual size, they also constitute a form of profitable investment/savings which can be drawn on in time of need.

In good years, savings invested in livestock can earn considerably higher rates of return than those obtainable from money deposited in interest-earning bank accounts. However, in times of drought or disease, such savings can be swiftly wiped out. According to Eastern Cape Business (ECB), the Eastern Cape provides approximately a quarter of South Africa's milk, and the industry is further expanding as producers tend to favour high-rainfall coastal areas such as the Eastern Cape. The province's farmers mostly sell raw milk to three major processors: Parmalat, Clover and Dairy belle. With the growth of the dairy subsector in recent years, a few independent processors have emerged. Small-scale dairy farming presents an opportunity to develop the industry in the former homeland areas. The livestock subsector accounts for about 5% of the total gross domestic product (GDP) in sub-Saharan Africa. Its contribution to the gross domestic product excludes draught power and manure. In South Africa livestock sector contributes up to 49% of agricultural output (van Niekerk 2012).



### 2.2.2 Social importance of livestock production in rural development and poverty alleviation

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Socio-cultural functions of cattle include their use as bride price and to settle disputes (as fine) in communal areas (Chimonyo, Kusina, Hamudikuwanda & Nyoni 1999). They are reserved for special ceremonial gatherings such as marriage feasts, weddings, funerals and circumcision (Bayer *et al.* 2004). Cattle are given as gifts to visitors and relatives, and as starting capital for youth and newly married man.

They are used to strengthen relationships with in-laws and to maintain family contacts by entrusting them to other family members (Dovie, Shackleton & Witkowski 2006). Gilimani (2005) stated that cattle production plays a major role in rural livelihood. In most developing countries animal draught power represents a major output from the livestock sector. He found that 90% of ploughing in Africa is done by using animals, mostly oxen. He also argues that when researchers' value cattle they tend to focus on value of sales only, thereby underrating their importance.

Livestock are valuable in many ways. Manure can be used as fertilizer and as form of polish for decoration and milk is valuable form of nutrition. Livestock slaughtering for home consumption is very rare, the decision to slaughter livestock is influenced by the need to satisfy ceremonial demand. Cattle play an important role in installation and exorcism of spirits. They are given as sacrificial offerings to appease avenging spirits (Bayer *et al.* 2004). The relative importance of each of the cattle function varies with production system, rangeland type and regional socio-economic factors such as gender, marital status, age, education and religion of the keepers (Simela, Montshwe, Mahanjana & Tshuwa 2006).

The differences in farmers' objectives and perspectives to communal cattle production hamper the formulation of effective livestock policies aimed at improving the livelihoods of the resource-poor farmers across all regions (Bayer *et al.* 2004). Efforts to improve communal cattle production should, therefore, emphasize the understanding of farmers' objectives, perceptions and experiences. From this knowledge, constraints and opportunities of indigenous cattle by the rural communities can be identified and sustainable developmental strategies formulated (Doyle *et al.* 2006).



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According to Bester, Matjuda, Rust & Fourie (2003) scientists and commercial farmers became interested in Nguni cattle already half a century ago because of its hardness in disease resistance and surviving in low feed availability and quality. Since Nguni is an indigenous, small to medium size cattle breed of eastern and northern South Africa it is well adapted to low quality feed, has a high degree of tick resistance, is docile, early maturing and fertile.

It is also a typical multi-purpose animal, used for meat, milk, leather, draught and savings account as well as various socio-cultural functions. Due to its heterogeneity in colour, horn shape and confirmation Nguni were rejected as “scrub” by the great majority of white settlers. More recently scientists and commercial farmers have developed an interest in Nguni as low external input breed.

It is one of the reasons why Nguni cattle development project was commenced in 1998 by the University of Fort Hare in partnership with rural development agencies in South Africa. The model's long term goal is to develop a niche market for Nguni beef and skins and to position the communal farmers for the global beef market through organic production and product processing (Raats, Magadlela, Fraser & Hugo 2004).

### **2.2.3 Challenges and opportunities for communal livestock production and enterprise development for small-scale farmers**

Ngqangweni & Delgado (2002) stated that the interest in livestock keeping is affected by lack of proper institutions specifically related to livestock keeping. The communal tenure arrangement is such that households share common grazing land. Maintenance of the land is non-existent and its use is disorganized as seen in lack of proper fencing, watering points and grazing rotation programmes. Part of the consequence of this is overgrazing and soil erosion.



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According to South Africa Info (2008) livestock enterprise development for small-scale farmers is considered as a potential mechanism for generating income for many rural households, thereby alleviating poverty and improving the livelihoods of the rural poor. However, to unlock the potential contribution of this sector in alleviating poverty and improving the livelihoods of the rural poor, there is a need to necessitate development strategies related to marketing, as well as a supportive institutional environment to ensure economic development of small-scale livestock farmers.

According to Averbek & Khosa (2007) livestock are kept as a source of investment and insurance against disaster and also for cultural purposes. The South African government has, through extension programs, supported rural livestock farming by introducing modern farming practices. However, it seems more effort is required to improve livestock production for food security in these areas.

Musemwa, Mushunje, Chimonyo, Fraser, Mapiye & Muchenje (2008) states that cattle production is the most important livestock sub-sector in South Africa. It contributes about 25 - 30% to the total agricultural output per annum. However, cattle productivity is declining due to diseases and parasites prevalence, lack of feed resources, and poor breeding and marketing management. To increase sustainability and contribution of cattle in eradicating hunger and poverty in communal areas, there is a need to make use of locally adapted breeds. In South Africa's communal cattle enterprise, the Nguni breed is becoming a very important socio-economic drive for the resource-poor farmers.

Nguni cattle development projects have been initiated in South Africa to improve livelihoods of communal farmers. However, these projects are mainly concentrating on solving production constraints and ignoring marketing factors. Musemwa, Mushunje, Chimonyo & Mapiye (2010) stated that with the increased demand for organic meat by consumers, there is a growing trend towards adopting livestock genetic resources that produce meat without the extensive use of chemicals and synthetic feeds. Local cattle breeds, such as the Nguni cattle, of which most of them are found in the communal production system, have been shown to have the potential to produce high quality beef with little, if any, use of such chemicals. The use of livestock for both production and wealth accumulation can increase financial and food security in rural areas, even in the absence of financial services. The development of effective and reliable financial services in rural areas could promote sustainable livestock production and play a significant role in poverty reduction, while having a long-term impact on rural household food and income security. Formal credit is used far less often for the acquisition of efficiency-improving inputs for livestock development.

Musemwa *et al.* (2010) state that lack of information access reduced cattle sales. The presence of markets that farmers like to be in or near their communities facilitates cattle sales. Smallholder farmers sell more cattle as transport become more available. The probability of smallholder farmers selling their cattle decrease as the body condition of cattle improves. As the household head changes from being male to being female, the probability of selling cattle increases.

Most smallholder farmers in sub-Saharan Africa keep livestock because their land is largely marginal and not suitable for cropping. Class formation processes in the former homelands have probably led to a concentration of a significant proportion of livestock in the hands of elite of 'traditional' leaders, bureaucrats and businessmen, some of whom manipulate the communal tenure system for their own benefit. Control of livestock gives rise to differentiation between households, especially between older men, on one hand, and women and younger men on the other hand.

The Eastern Cape is regarded as South Africa's livestock province with significant number of cattle, sheep and goats. Domestic and foreign markets are available in terms of organic livestock production, product beneficiation and livestock bi-products (leather). Eastern Cape Development Corporation (2010) noted that the agricultural opportunities in the province for livestock, if harnessed, could yield significant returns in terms of the following:



Nguni Cattle farming - the Nguni Cattle Project is a project initiated by the provincial government in association with the University of Fort Hare (UFH). The major by-products (milk and meat), also the Nguni hides are sought after for domestic and foreign markets for their unique patterns. Meat processing - opportunities exist in the rural areas of the province to provide processing and manufacturing facilities associated with meat products and packaged meat for local, regional and international consumption. Small - scale goat-meat processing has already started in the western part of the province and is proving successful (Eastern Cape Development Cooperation 2010).

Sheep and goat - wool commodity is a major primary product of livestock farming in the Eastern Cape. Opportunities exist to partner with the National Wool Growers Association (NWGA) to provide support structures to this industry by way of shearing facilities, transport solutions and access to global markets. Sheep and goat breeding as part of community agricultural development, has significant opportunities in the rural areas. Opportunities exist in supply of young sheep and goats to rural farmers, meat production, hide beneficiation and the provision of alternative breeding stock.

Piggeries and poultry - the domestic demand for pork and chicken provides a ready-market for the establishment of urban and rural supply of pork and chicken in the Eastern Cape and South Africa as a whole (ECDC 2010). Nedunchezian & Thirunavukkarasu (2009) stated that livestock play a key role in mitigating the risks and uncertainties involved in income generation through crop production. There had been a considerable scope for increasing income generation in agricultural sector through livestock and forestry. Livestock enterprises had become an alternative to obtain more stable and continuous income, especially in smaller farms. Even in landed households, it was the livestock that gave stability to the households rather than land.

### 2.3 Historical overview of wool production in South Africa



The first sheep in South Africa are said to have originated in Southern and Central Asia from where they migrated to Egypt and through Africa and eventually arriving in the Cape. The sheep seen by the visitors to the Cape were big and had a very good meat. They were different to other sheep in that they did not have wool but hair in their backs (Turtle South Africa 2011). As stated by Makapela (2008) the first merino farming venture dates back in 1800 and started in the area of Darling in the Western Cape (WC). On the farm Grootpost, Darling, the Cape Government (CG) bred pure merino rams to distribute amongst farmers. The upgrade from non wool sheep to wool sheep, also pure merino sheep, started to spread quickly as from 1850.

The sheep and wool production is one of the oldest agricultural industries in the South Africa. It plays an important economic role in South Africa as the means of earning foreign exchange as well as providing employment for the many. During the British colonial period, the Cape Province (CP) remained the most important wool producing area in South Africa. The sheep industry spread rapidly to other parts of the country in the subsequent years. According to Makapela (2008) the total wool sheep population in the Cape Province (8.5 million) in 1904 was approximately 72% of South African total wool sheep population (11.8 million). In 1904 the number of wool sheep increased to 14.7 million from a total of 27.1 million wool sheep in South Africa.

That was the decrease from 72% to 54% of total number of wool sheep in South Africa. Non wool sheep were 3.3 million in 1904 and 3.6 in 1924. It therefore seems that Cape Province historically made a remarkable contribution to South African wool sheep and meat production industry.

## 2.4 Sheep wool industry in South Africa

In South Africa sheep wool industry is made up of different structures. These are associations, organisations, processors, traders and brokers as well as the Wool Testing Bureau South Africa (WTBSA). Associations involve the wool growing farmers, where farmers of the particular area organise themselves into a group and form the association.

Makapela (2008) stated that two of the commercial farmers associations Cape Wools (CW) and South African Wool and Mohair Exchange (SAWME) have been given the mandate by the Department of Agriculture to provide market information and statistics for wool production to researchers and farmers. The organisations involve National Wool Growers Association, Wool South Africa (WSA) and Wool Testing Bureau South Africa. These organisations provide to farmers training, advice and farmer development plans. WTBSA is involved in the testing and sampling services to the South African wool and textile industries. It also provides research for purposes of certification of wool according to the requirements laid down by the International Wool Textile Organisation (IWTO) and to other international specifications (Wool Testing Bureau S.A. 2012).

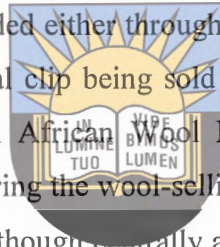
Brokers such as BKB and Cape Mohair and Wool (CMW) buy raw wool from farmers and sell them to processors in South Africa and overseas, particularly China. Wool industry production is not stable. The recorded gross value of wool sold at first point of sale for the season (2009/2010) came to R1 505 million, compared to R1 154 million in 2008/09; this was mainly because of improved production conditions in most areas (Department of Agriculture, Forestry and Fisheries 2010).

## 2.5 Socio-economic characteristics affecting wool production in South Africa

Domestic market, price, culture and religion are some of the factors that affect wool production in South Africa. These factors are very much important in wool production and are briefly discussed in the following sections.

### 2.5 .1 Domestic market

Liberation in the wool industry started in 1993 when the single channel marketing system was abolished. Since then wool producers have been able to market their produce in the way that suit them best. Wool is traded either through auctions or by private treaty, with the largest percentage of the national clip being sold through the auction system. Wool auctions, coordinated by the South African Wool Exchange, are centralized in Port Elizabeth and occur once a week during the wool-selling season which runs from August in one year to June next year. Even though centrally auctioned, wool producers can send their wool to one of three major ports close to them, i.e. Port Elizabeth, Durban and Cape Town. Wool brokers facilitate sales of wool at the auction. The main wool brokers are CMW and BKB (Cape Wools S.A. 2012). For most communal farmers a market is a problem as they struggle to get transport for their wool market points (BKB and CMW) in Port Elizabeth. This causes delays in getting the produce to the market points in time.



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### 2.5.2 Prices

Prices paid for wool is determined by free market demand and supply forces and are closely linked to the international price for apparel wool, which is determined by the Australian market (Cape Wools S.A. 2012). If the supply of wool is high the price might be negatively affected in favour of buyers as there will be large quantities of wool in the market. The producers will earn decreased incomes due to such market forces.

In 2000/01 average auction prices of wool started to increase until 2002/03. From 2003/04 to 2005/06 there was a decline in average auction prices of wool. In 2006/07 average auction prices of wool started to increase until a peak was attained in 2007/08 at approximately R37.00 per kilogram then a slight decline in 2008/09 and 2009/10 at approximately R30.00 per kilogram respectively (Sneeuberg 2011).

### 2.5.3 Religion and culture

Livestock is very important in some parts of the country (South Africa) especially in communal areas. Chimonyo *et al.* (1999) stated that socio-cultural functions of livestock include their use as bride price and to settle disputes (as fine) in communal areas. Bayer *et al.* (2004) also noted that livestock are reserved for special ceremonial gatherings such as marriage feasts, weddings, funerals and circumcision. For these cultural functions that are prevalent in communal areas, the farmers in such areas tend to lose the animal that they have. Once the farmer loses the animal he or she loses the produce and the income that is generated from the animal. For example, a wool sheep farmer will lose wool if he or she loses a sheep by giving it away for some kind of cultural ceremony, hence there will be no income.

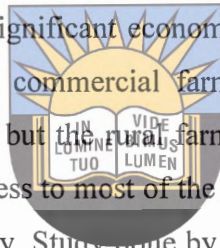
### 2.6 The quality of wool produced by rural farmers

The rural wool farmers generally produce poor quality wool. Poor quality of wool means that it is short in length and dirty. The shortness of length is probably due to poor feeding and a lack of supplementary feeding to lactating ewes. Wool is dirty because of scab infection, weeds and dirty kraals. Communal grazing enhances the spread of scab infection. A communal grazing system can be described as a system in which all households in a demarcated community share a piece of land for grazing and other farming and social purposes. The poor quality wool reduces incomes received from selling wool because wool producers have to sell at a cheaper price (Industry and Trade Summary 1998).

Though rural farmers produce poor wool, the South African wool industry provides a high-quality environmentally sound product which meets the needs of the textile industry. On farm classing and clip preparation of greasy wool is of high standard. Virtually the entire South African clip is tested and certified by the Wool Testing Bureau of South Africa (WTBSA) for mean fibre diameter, vegetable matter content and clean yield in accordance with the procedures lay down by the International Wool Textile Organization (IWTO) (Wool Marketers 2009).

## **2.7 Economic role of wool production to rural farmers**

Wool production has not played a significant economic role to the rural sheep farmers. Wool Marketers (2009) stated that commercial farmers in the Eastern Cape receive millions of rand just for their wool, but the rural farmers do not get this amount. Wool production is still a very small business to most of the wool producers, especially in rural areas although it is a primary activity. Study done by De Beer (2009) showed that wool production was a primary agricultural activity done by most rural farmers and was the steadiest source of cash. The price for wool is often low and determined by speculators. Income received by the commercial farmer is more than double the income received by the communal farmer (De Beer 2009).



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## **2.8 Government intervention to rural wool producing farmers**

All South African government policies aim to bring the previously excluded black community into the mainstream economy through job creation and entrepreneurship (Organisation for Economic Co-operation and Development 2006). The two national directorates; extension and veterinary services as well as national wool growers association are considered in this regard as the interventions rendered to rural wool farmers by the government to improve wool production. NWGA is there to render trainings to farmers in many spheres regarding wool production.

DRDAR two directorates, extension and veterinary services are also playing integral role to rural wool producers in that extension extend or disseminate needed information from researchers to farmers and from farmers to researchers and give technical advice to the farmers. Veterinary services render services on health subjects of the sheep, where certain medicines are given for free to farmers.

### **2.8.1 Extension services**

Bembridge (1984) states that extension employs teachings and learning principles which effect changes in the life of farmers and which are generally carried out with farmer involvement and in an atmosphere of mutual trust and respect between agricultural extension workers and farmers. Obi & Pote (eds. 2012) noted that extension service is important source of farming information and advice to smallholder farmers. The government employed extension officers to make sure farmers; especially communal and small scale farmers get proper advice from researchers through extension services so that to be well equipped and knowledgeable of what they are doing in all spheres of farming industry.



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### **2.8.2 Veterinary services**

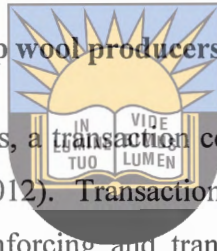
The National Directorate, Veterinary Services is responsible for controlling and reporting on animal diseases in South Africa to prevent other stock from becoming infected and to prevent human consumption of contaminated meat (Western Cape Government 2012). All South African agricultural offices have this directorate with its officials to make sure that livestock in our communities is not infected with diseases so that to get quantity and quality production from the stock.

### 2.8.3 National Wool Growers Association

National Wool Growers Association (NWGA) is committed to train farmers in the basics of sheep handling; wool classing and sheep health control is a high priority. The aim is to minimise the problems of wool contamination as this affect the quality and value of wool (Wool Marketing 2009). National Wool Growers Association is also responsible for shearer training as part of improving the wool production and sales in rural areas (De Beer 2009). This clearly shows that the government is fully committed in supporting rural sheep farmers to have profitable production.

### 2.9 Transaction costs to rural sheep wool producers

In economics and related disciplines, a transaction cost is a cost incurred in making an economic exchange (Wikipedia 2012). Transaction costs are observable and non-observable costs associated with enforcing and transferring property rights from one person to another (eds. Jari and Fraser 2012). Every business incurs cost for its day to day activities in order to achieve its goal. Labour and transport are taken into consideration in this regard as the major variables that contribute to wool farmers to incur cost in wool production.



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#### 2.9.1 Labour

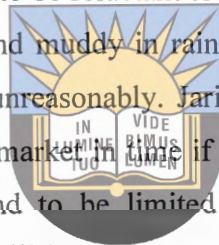
Labour is very important in sheep wool production. Rural sheep wool producers use intensive labour for their wool production as they don't have machines to carry out some of the activities in wool production. Rural sheep wool producers mostly perform the following activities in their farming during the shearing season:

- Sheep shearing
- Sorting and classing of wool
- Baling and weighing of wool bales

The amount of money paid by a sheep owner per sheep shorn is R5, 00 in some of the rural areas. For some of the activities mentioned above there are no monetary costs that are paid by sheep producers as they perform these activities themselves collectively.

### 2.9.2 Transportation of wool bales

Grwambi (2005) stated that a lack of necessary infrastructure such as own transport causes rural farmers to get lower prices for their wool because of the high transport costs from rural areas to the market. The poor road networks increase the cost of transport even more because transport owners tend to be reluctant to get into these farming areas due to the bad state of the roads (gravel and muddy in rainy days). Those that agree to help these farmers increase their prices unreasonably. Jari *et al.* (eds. 2012) stated that it is difficult to transport produce to the market in time if there is no reliable private form of transport, since public vehicles tend to be limited in the rural areas. In addition, unavailability of reliable transport will increase transport costs, which in turn increases transaction costs amongst smallholder farmers (eds. Jari *et al.* 2012). This also leads to delays in transportation of wool bales from the farming point to the market because farmers go up and down the nearest towns seeking transport.



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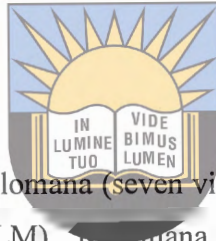
## CHAPTER 3

### SELECTION AND DESCRIPTION OF THE STUDY SITE

#### 3.1 Introduction

This chapter displays the description of the study site in general as well as its economic factors. The chapter goes on to lay out the reasons why the researcher has selected this particular site for the study. Geographical location and some social factors are also discussed in this chapter.

##### 3.1.1 Selection of the study site



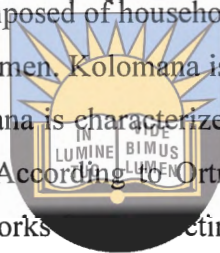
This study has been conducted at Kolomana (seven villages) one of the rural areas of the Nkonkobe Local Municipality (NLM). Kolomana is located in Amathole District Municipality (ADM) in the Eastern Cape Province, the second largest of the nine provinces in terms of surface area. The Eastern Cape Province is one of the poorest provinces in South Africa and poverty is aggravated by growing unemployment and limited economic opportunities. The situation is even worse in the former homeland areas of this province where very few development efforts have been successful (De Beer 2009).

The data for this study has been collected in seven villages of Kolomana. The reason for the researcher to have chosen these villages of Kolomana as the study area was that almost all the community members of these villages depend primarily on the sales of wool and sheep itself for living purposes and carrying of the study was assumed to be convenient for the researcher because these villages are not far from each other. It was convenient in terms of time and money, therefore, cost of travelling was minimized and not much time was taken to travel from one village to another to interview the respondents.

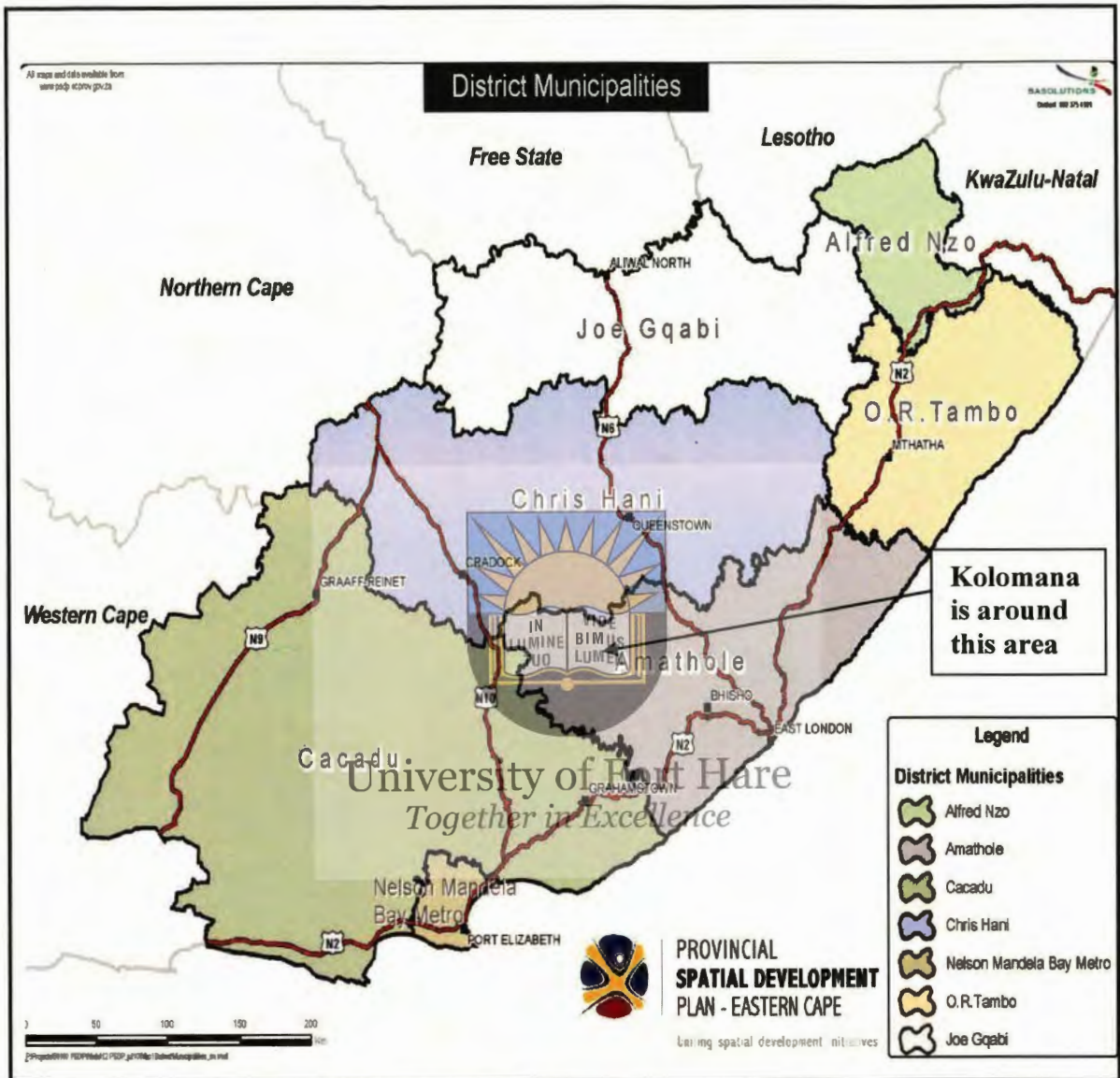
### 3.1.2 Description of the study site

The description of the study area is important because it familiarizes one with the area in which the study was going to be carried out. The climate has been recognized as suitable for crop and livestock production (Ortmann 2005). The geographical coordinates of Kolomana location are (latitude 32° 10' and longitude 26° 00') and the altitude of 1052 meters above sea level. Kolomana is situated about 86 km from Fort Beaufort town in Nkonkobe local municipality along the way to Whittlesea town in Lukhanji local municipality and can be classified as a rural community.

Kolomana community is mainly composed of households headed by old (age) people and in most cases they are headed by women. Kolomana is surrounded by communal grazing and arable land. The area of Kolomana is characterized by extremely poor infrastructure and high levels of unemployment. According to Ortmann (2005) people in rural areas rely on poorly developed road networks connecting with the surrounding towns and cities. The poor road conditions of Kolomana prevent development in the area in terms of job opportunity creations. According to Ortmann (2005) the main occupation held by rural residents is skilled agricultural (farming) workers. This means that rural households of Kolomana are capable of producing own food combining indigenous knowledge and skills they have.



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**Figure 3.1: Map showing Amathole District Municipality where Kolomana is situated**

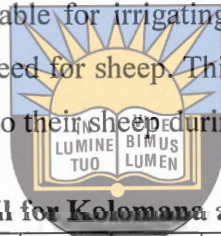
**Source: Municipal Demarcation Board 2012**

### 3.1.3 Climatic factors of Kolomana

This section outlines the climatic conditions of the study area. Rainfall, temperature and vegetation are given special attention in this regard as they are considered important climatic factors in the study. These three dynamics are all discussed separately in the following sub-sections.

### 3.1.3.1 Rainfall

The average monthly rainfall in year 2007 for Kolomana area is indicated in Table 3.1. The average annual rainfall is 485.7mm and the lowest rainfall occurs in winter months as shown in Table 3.1. The highest rainfall is received in summer months. According to Table 3.1, the highest rainfall is received from October to April with the highest rainfall in February (86.6 mm) and the lowest in July (7.9 mm). This is a clear indication that Kolomana is a summer rainfall area. This implies that sheep do not suffer from unavailability of feed on range land during summer months as the highest rainfall is found in summer to stimulate the growth of grasses for sheep feeding. It is assumed that if there is not enough rainfall available for irrigating the vegetation, it will not grow. Therefore there will be not enough feed for sheep. This means that farmers in Kolomana need to provide supplementary feed to their sheep during these months.



**Table 3.1: Monthly average rainfall for Kolomana area in year 2007**

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall	79.0	86.6	74.2	79.0	79.0	79.0	79.0	79.0	32.0	34.3	34.0	64.8

Source: Makapela 2008

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### 3.1.3.2 Temperature

According to Makapela (2008) temperatures in Kolomana area can drop down to minus 6° Celsius in winter and rise up to 38° Celsius in summer. Temperatures are therefore quite extreme in this area. As mentioned before in winter rainfall is low and this results in poor vegetation in terms of quantity and quality on the range land. Low temperatures makes matters worse as it delays the growth of vegetation. High temperatures in summer can lead to destruction of vegetation through burning, but since rainfall is high in this season the intensity of high temperatures is neutralized by rainfall.

### 3.1.3.3 Vegetation

According to Acocks (1988) Dohne and Highland Sourveld is a combination of the local veld type found in Kolomana location. These sour velds are not suitable for the production of livestock as they are nutritionally deficient during the winter months and do not generally tolerate high grazing pressures. From the agro-ecological conditions stated, the areas can be viewed as being best suitable for crop production with effective livestock production possible only with judicious management, particularly during the winter months. Since rainfall in Kolomana is practically high it can be described as sour veld area.



### 3.2 Chapter summary

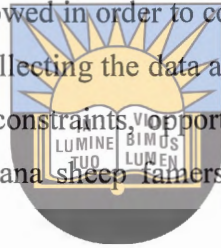
This chapter laid out the description of the study area. It described the location of the study area. Kolomana is located in Nkonkobe Local Municipality under Amathole District Municipality. Kolomana is described as the rural area where its residents depend on their sheep for survival. They shear their sheep and sell the wool to obtain income. High rainfall is found in summer months where the highest rainfall 86.6mm is found in February and the lowest rainfall 7.9 mm is found in winter month July. Temperatures are quite extreme as in summer temperatures rise up to 38° Celsius and drop down to minus 6° Celsius in winter. Vegetation is described as sour veld and that means management in terms of feeding must be properly employed especially in winter for livestock production.

## CHAPTER 4

### METHODOLOGY

#### 4.1 Introduction

Methodology basically describes the methods which are used to conduct the research. Research methodology consist of research design, sample, sampling procedure, data collection and data analysis which are used in the study and also guide the researcher on methods that are used in research process. This chapter, therefore, discusses the procedure or methods that were followed in order to conduct this research, it includes the techniques that have been used in collecting the data and the tools that have been used to determine and analyze the data on constraints, opportunities and management practices that are being employed by Kolomana sheep farmers in Nkonkobe local municipality, Eastern Cape.



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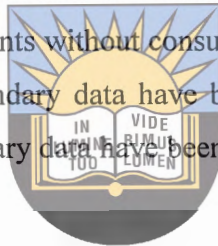
#### 4.2 Data collection

Both primary and secondary data have been used in this study. Primary data have been collected using interviewer administered questionnaires which has included household characteristics such as demographic questions (age, sex, education, marital status, family size and employment status), availability and characteristics of resources or infrastructure found in the area (dip tanks and materials, shearing facilities, fencing) and finally sheep management practices that are taking place in kolomana.

The questionnaires have been interviewer-administered to alleviate the problem of misinterpretations or misunderstandings of words or questions by respondents. The respondents have been presented with a series of questions that they have responded directly on the questionnaire form itself with an aid of an interviewer. This questionnaire method of data collection is much quicker in terms of saving time. The interviewer have read questions to respondents and recorded their answers.

The advantage of this data collection method is that an interviewer has been in a position to probe for more information from respondents. These questionnaires also could ensure that all questions had been considered and respondents did not omit difficult questions. By having the questionnaires administered by the interviewer, it also meant that information could also be obtained from respondents who could neither read nor write (Levy and Lemeshow 1991).

The questionnaire has consisted of both open ended and closed ended questions. Open ended questions allowed respondents to express their views freely, but they have been minimized for easy data analysis as well as to pay focus on issues relating to the research. Most of the questions have been structured as closed ended questions for the benefit of obtaining information from respondents without consuming much of their time as well as for easy coding of responses. Secondary data have been collected from published and unpublished documents. The secondary data have been collected from the books, articles, journals and the internet.



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### **4.2.1 Sampling of respondents and sample size**

Simple random sampling has been used to select respondents or households for interviews. Simple random sample is a special case of a random sample. A sample is called simple random sample if each unit of the population has an equal chance of being selected for the sample. Whenever a unit is selected for the sample, the units of the population are equally likely to be selected. It must be noted that the probability of selecting the first element is not to be compared with the probability of selecting the second unit (Emathzone 2011).

There are seven villages in Kolomana and each village has about 11 to 23 families or households. All these villages have been chosen or represented because all of them are occupied by wool sheep keepers or farmers and there are few households (about 13 to 19 households) per each village to choose from. These respondents are from seven (7) villages of Kolomana. These villages are Grafton, Ngqikana, Cains, Phathikhala, Marais, Votyiwe and Dunedine. A total of 100 questionnaires have been administered to wool sheep farmers in all of these seven villages. Only sheep farmers were interviewed.

#### **4.2.2 Interviewing procedure**

Interviews have been carried out by the researcher and his enumerators. The enumerators of the researcher were his colleagues from the (Department of Rural Development and Agrarian Reform) and they were most preferred since they were able to get the needed information and they spoke the local language of the area. The purpose of the study has been explained to the enumerators and the data needs have been made clear. Knowing what was required for the study, ideas have been shared on how to approach the respondents in these villages. The study objectives and questionnaires have first been discussed and explained to the sampled farmers. When the farmer was found to be willing to answer questions, interviews progressed. All this has been done and the interviewers have established a good relationship with respondents and encouraged them to cooperate and give honest and unbiased answers.

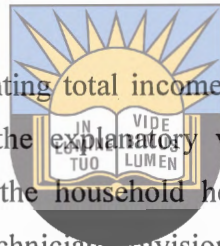
#### **4.2.3 Data analysis**

For the purpose of this study, the unit of analysis have been rural households of Kolomana locations and per each household the head of the household was interviewed. The study has used tables, graphs and descriptive statistics (frequency and percentages) to analyze data. Descriptive statistics are used to describe the basic features of the data in a study.

They provide simple summaries about the sample and the demographic measures of the households and household heads. Together with simple graphics analysis, they form the basis of virtually every quantitative analysis of data (Emathzone 2011). A linear regression model was used to predict direct relationships between a vast array of sheep management practices as well as the characteristics of household heads and the total income generated from wool sales. It is therefore possible to fit a simple linear model of the form:

$$Y = f(x_1, x_2, \dots, x_n) \dots\dots\dots(1)$$

Where:



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*Y* is the dependent variable representing total income that has been generated from the sales of wool, while the *x*'s are the explanatory variables representing age of the household head, marital status of the household head, number of sheep owned by household, visits by animal health technicians, division of range land into camps, state of fencing on range land, gender of household head, household size, access to arable land, production of feed for sheep, availability of technicians when are needed, season to join ewes with rams, keeping of sheep on range land and the availability of first milk to lambs. These explanatory variables were used to determine the relationship between them and the dependent variable.

Following convention, the model can be specified as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \dots\dots\dots \beta_n X_n + \mu_i \dots\dots\dots(2)$$

Where:

- $\beta_0$  = the intercept or constant term
- $\beta_1, \beta_2, \dots, \beta_n$  = slope or regression coefficient
- $X_1, X_2, \dots, X_n$  = explanatory or independent variables
- $\mu_i$  = error or disturbance term.

The model was estimated to identify factors affecting the total income generated from wool production. As mentioned before the explanatory variables are used to determine their effect on dependent variable.

If the signs of their coefficients are positive this implies positive relationship between the dependent and explanatory variables, meaning that dependent variable is influenced by such explanatory variables. If the signs of their coefficients are negative this implies they are not influential to dependent variable. The synthesis of qualitative data has also been done to fully cater for valuable information from key informant interviews and individual perceptions. Quantitative data was analysed using a combination of Microsoft Excel and Statistical Package for Social Scientists (SPSS) version 20.



#### 4.2.4 Explanation of independent variables

Fourteen explanatory variables measured as continuous and categorical variables were identified to be major determinants of income in this study. These variables include age of the household head, marital status of the household head, number of sheep owned by household, visits by animal health technicians to farmers, division of range land into camps, state of fencing on range land, gender of household head, household size, access to arable land, production of feed for sheep, availability of technicians when are needed, season to join ewes with rams, keeping of sheep on range land and the availability of first milk to lambs. These explanatory variables are expected to have positive or negative impact on income. These variables are discussed in the following section as follows:

**Age of the household head:** Age in farming can be a positive or negative factor. The old aged person can do better in farming than a younger person due to the farming experience the older person has. On the other hand young person can do better than an older person because the younger person can read and write, therefore he or she can adopt technology faster than older person.

**Marital status of the household head:** Married couple headed household has a better chance of doing work activities efficiently than single person headed household. One partner can carry out farming activities while the other partner can carry out house work such as cooking and cleaning the house.

**Number of sheep owned by household:** Number of sheep owned by household is referred to as continuous variable. Number of sheep owned by household is the determinant of the quantity of wool that is produced by wool farmers. The more sheep the farmer has the more quantity of wool the farmer will get. This variable has a positive relationship with a dependent variable (income).

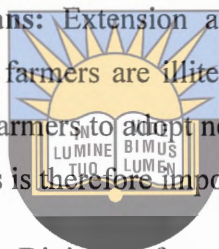
**Visits by animal health technicians:** Extension and animal health technicians are important in farming. Most of rural farmers are illiterate and unable to read and write. This illiteracy makes it difficult for farmers to adopt new technologies as they not able to read. Visit by agricultural technicians is therefore important in this regard.

**Division of range land into camps:** Division of range land into camps is important in farming. For proper sheep management range land division should be done. For example in order for ewes to be separated from rams division of range land into camps in needed.

**State of fencing on range land:** Fenced range land can lead to proper sheep management. If range land is fenced sheep cannot stray to other unsuitable areas and get diseases which will lead to the death of the sheep or get diseases that will affect the quality of wool.

**Gender of household head:** In most rural areas farming is mostly undertaken by women as the men are in urban areas for work. Women are also undertaking house hold duties such as cleaning the house and cooking for the family. Men are working in urban areas and bring money home for family needs.

**Household size:** This refers to the number of people living in the same household. It is believed that many people in the household means that they can carry on a lot of work in the farm and household. There is a high chance that they will save a lot of money that would be spent on paying the hired people for some work in the farm.

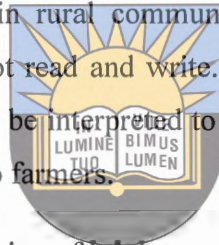


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**Access to arable land:** Arable land is important in farming not only for producing food for people but also for producing feed for livestock. If farmers have access to arable land it means they have a chance of producing feed for their sheep especially during the periods of scarcity of natural feed (vegetation) on the range land.

**Production of feed for sheep:** Production of feed for livestock is important in farming as it help to supplement feed if it is unavailable or unsuitable for livestock especially in winter. For good quality wool and meat form livestock a farmer should supply enough feed to his or her livestock.

**Availability of technicians when are needed:** Extension and animal health technicians' availability in farming, especially in rural communal farming is very crucial. Some farmers are illiterate that they cannot read and write. Technicians are needed so that to read and interpret whatever needs to be interpreted to such farmers. Also technicians are needed to provide technical advice to farmers.



**Season to join ewes with rams:** Timing of joining ewes with rams is very important as it determines the right season of lambing. Lambing should be planned to take place in spring when there is enough feed on the range land for ewes to be able to produce milk for the lambs.

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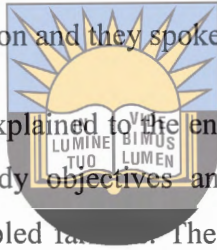
**Keeping of sheep on range land:** Keeping of sheep on range land is also a crucial management practice but the sheep should be well looked after as livestock theft incidents are so high nowadays.

**Availability of first milk to lambs:** First milk to lambs is very significant as it helps the lamb to provide proteins and prevent the lamb not to get diseases easily. If the lamb does not get enough of that milk the chances of it dying are high.

### 4.3 Chapter summary

This chapter presented the methods used in conducting the research. Questionnaire design, sampling of respondents and sample size, interviewing procedure and data analysis is presented in this chapter. Hundred interviewer-administered questionnaire were designed. The study was done in seven villages of Kolomana. Primary and secondary data was used in this study. Simple random sampling was used to select the respondents or households for interviews. Households were selected from all seven villages of Kolomana. Interviews have been carried out by the researcher and his enumerators. The enumerators of the researcher were his colleagues from the Department of Rural Development and Agrarian Reform and they were most preferred since they were able to get the needed information and they spoke the local language of the area.

The purpose of the study has been explained to the enumerators and the data needs have been made clear and also the study objectives and questionnaires have first been discussed and explained to the sampled households. The study has used tables, graphs and descriptive statistics (frequency and percentages) to analyse data. Descriptive statistics are used to describe the basic features of the data in a study. A linear regression model was used to predict direct relationships between a vast array of sheep management practices as well as the characteristics of household heads and the total income generated from wool sales.



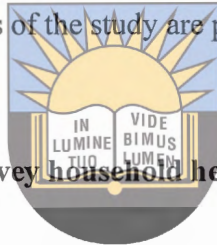
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## CHAPTER 5

### CHARACTERISTICS OF THE STUDY POPULATION

#### 5.1 Introduction

This chapter presents results of the study in the context of sheep production and emphasis is put on management practices, opportunities and constraints faced by sheep farmers of the area. The aim of this chapter is to highlight the various factors affecting quality and quantity of wool produced by village wool producers. Demographic characteristics of the household, characteristics of arable land and rangeland, availability of resources and infrastructure based on the objectives of the study are presented in this chapter.



#### 5.2 Demographic profile of the survey household heads

The study sample consisted of 100 households. In this section the demographic characteristics of the household heads is presented. These include gender distribution, age, educational level, marital status, size of the household and occupational information of the household head. Makhura (2001) stated that these aspects are important because the main household activities are coordinated by the household head and the head's decisions are most likely to be influenced by such demographic aspects. As the population continues to grow, increasing pressure on land, agricultural production, and rural household's behaviour under limited demographic conditions such as education would lead to a fall in agricultural productivity, food crises and increased rural poverty (Machingura 2007). The results of the demographics are presented in Table 5.1 and Table 5.2.

**Table 5.1: Summary statistics of the household demographic (continuous) variables**

Variable	Minimum	Maximum	Mean
Age	31	89	59.01
Household size	3	11	6.08

Source: Field survey 2012

Table 5.1 displays the personal information of the household. Demographics that are in the table include the age of the household head and household size and are referred to as continuous variables. The minimum and maximum statistics are shown in Table 5.1 and the minimum age is 31 while the maximum age is 89. These demographics are explained further in the sections of the study. The mean age of the households is 59.01 and household size is 6.08.



**Table 5.2 Summary statistics of the household demographic and socio-economic situation (categorical) variables**

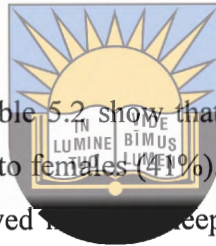
Variable	Category	Frequency	Percentage
Gender	Male	59	59.0
	Female	41	41.0
Marital status	Single	10	10.0
	Married	57	57.0
	Divorced	3	3.0
	Widowed	30	30.0
Employment status	Employed	26	26.0
	Unemployed	34	34.0
	Pensioner	40	40.0
Educational level	No education	17	17.0
	Primary	38	38.0
	Secondary	41	41.0
	Tertiary	4	4.0

Source: Field survey 2012

Table 5.2 shows the household demographic frequencies. These household head demographic variables include gender, marital status, educational level and employment status of the household head and are referred to as categorical variables. These variables are discussed into details in the following sections of the study.

### 5.2.1 Gender distribution among household heads

Question was included in the study to determine the gender distribution of the household heads. Gender is important because it is an important determinant of the nature of household decision on enterprise choice and resource allocation, among others (Besta, Belete & Doni 1999).



The results that are presented in Table 5.2 show that there were a larger proportion of male respondents (59%) as opposed to females (41%). This figure shows that a relatively large percentage of males are involved in sheep production than females. In most cases especially in rural areas farming is still regarded as the practice that is undertaken by males only. Females are regarded as responsible for taking care of or doing domestic work in their homes. Cooking family meal and cleaning the family house are among the work females are associated with and farming is predominantly the male activity.

### 5.2.2 Age of household head

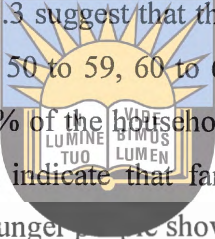
Age factor plays a vital role in agriculture. Agriculture is always associated with older people. According to Randela (2005) the age of the household head is an important aspect in agriculture because it determines experience one has in a certain type of farming. Older people have better experiences in agricultural activities than younger people in that they know the social and physical environments better than younger people. However, Romuld and Sandham (1996) argued that young people are more adaptable and willing than older people to try out new innovations since old people believe in their old cultural way of doing things.

**Table 5.3: Distribution of household heads by age**

Age Group	Frequency	Percent (%)
30-39	10	10.0
40-49	13	13.0
50-59	24	24.0
60-69	25	25.0
70-79	24	24.0
80-89	4	4.0

**Source: Field survey 2012**

The information presented in Table 5.3 suggest that the majority of the household heads in the study fell between the ages of 50 to 59, 60 to 69 and 70 to 79 years old at 24%, 25% and 24% respectively. Only 10% of the household heads were between the ages of 30 to 39 years old. These statistics indicate that farming in these villages is mostly practiced by older generation with younger people showing no interest in agriculture.



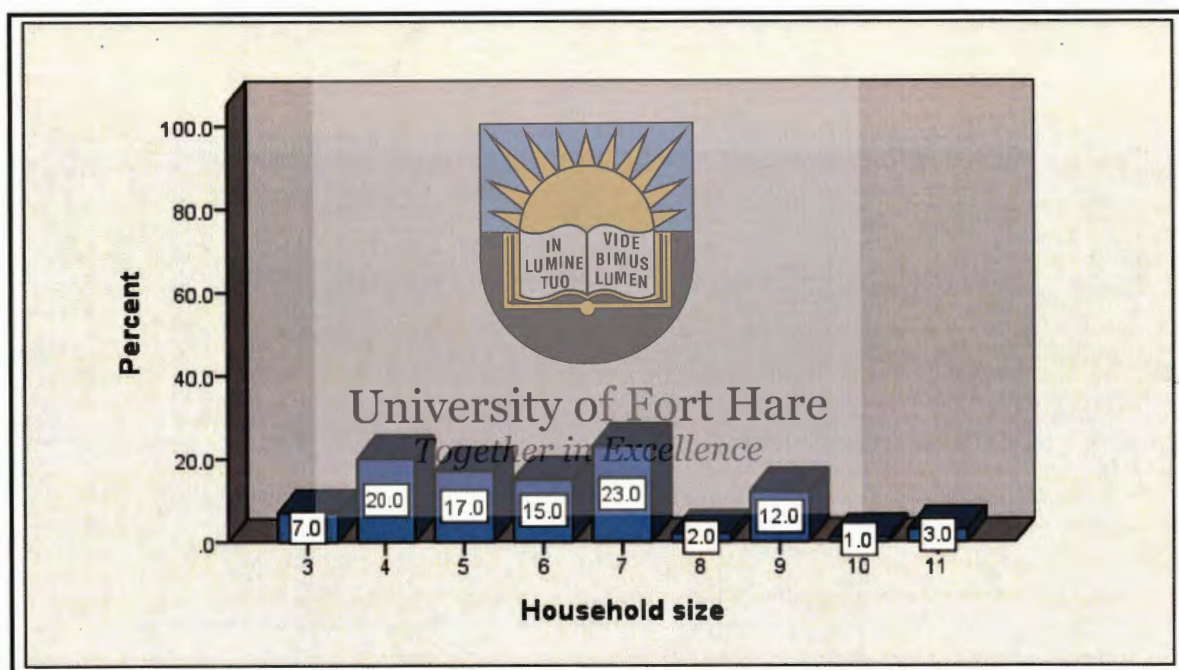
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### **5.2.3 Marital status of household heads**

Marital status of the household heads question was included in the study to analyse their involvement in wool production based on their ability to share ideas on how to do things as a couple. More hands and thinking capacities in farming activities are always more important than hands and minds of fewer people because they carry out a lot of activities in farming together. The married people or couple give the support base to each other and encourage one another to do what they have to do in order for them to achieve what they intend to achieve. Zenda (2002) stated that married people are able to share household such as agricultural production, herding of livestock and other household chores. While households with divorced, widowed and divorced heads have to do all the work unless to get the support from older children. Table 5.2 shows that most (57%) of the households constitute of married couples, followed by widowed families (30%), then single (10%) and divorced (3%) headed households.

### 5.2.4: Size of the households

Questions about the size of the household heads in the study was also included. Larger household size is more helpful in terms of labour supply in farming activities. A larger family size tends to provide the households with the required labour for agricultural production (Paddy 2003). Larger family size also means that a variety of labour capacity is available in the form of young, middle aged and elderly members of the family.



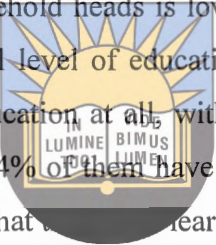
**Figure 5.1: Distribution of households by size**  
Source: Field survey 2012

The study revealed that household sizes were in the range of 3 and 11. Figure 5.1 shows that 23% of households are made up of 7 family members and 7% represented the households with 3 family members, whereas other 12% of households was made up of 9 family members. This shows that labour or man power is not a problem in many households as is shown in Figure 5.1 many households have many family members.

### 5.2.5 Educational levels of the household heads

In this study, the highest educational level achieved by the respondents was recorded to determine the human capital level of households and the ability to interpret information. Montshwe (2006) stated that people with higher educational levels are more able to interpret information than those who have less education or no education at all. Thus, education levels affect market information interpretation and hence, market participation level of farmers. It was therefore crucial to determine the education level of the household heads.

The level of education in most household heads is low and most of them have primary education and others have no formal level of education. Table 5.2 shows that 17% of household heads have no formal education at all, with 38% attended primary and 41% attended secondary school and only 4% of them have tertiary education. These families gained knowledge in farming from what they learned practically over the years.



The logo of the University of Fort Hare is a circular emblem. It features a central sun with rays, positioned above an open book. The Latin motto 'LUMINE BIVMUS' is written across the book. The entire emblem is set against a dark background within a circular border.

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### 5.2.6 Employment status of the household heads

Employment status of the household heads other than farming is very important because it determines the involvement of the household heads in farming activities. Those who are employed tend to have less time invested in farming as compared to those who are unemployed but they invest some of the income obtained from work to agricultural production. FAO (1999) noted that employment in off-farm and non farm activities is important for diversification of sources of farm households' livelihoods. It enables households to modernize their production by applying proper inputs during production.

Table 5.2 shows that 40% of household heads are pensioners and they depend on their pension money and sheep production for survival, therefore, they are the role players in wool production. Only 26% of household heads who are employed, that means not much off-farm generated income to be invested to sheep production. The survey shows that larger number of household heads are unemployed (33%).

### 5.3 Arable land issues and ownership of sheep

This section discusses issues such as number of sheep owned by households, availability of arable land, nature by which the arable land was obtained, use of arable land for production of feed and frequency of producing feed on the arable land.

#### 5.3.1 Number of sheep owned by households

Number of sheep owned is important in determining the quantity of wool that can be produced by a farmer. However, the quantity of wool is not of great importance if the quality of that wool is of lower grade because that can have a negative impact on incomes.



**Table 5.4: Distribution of households by sheep numbers**

Number of sheep	Frequency	Percent
1-49	66	66.0
50-99	25	25.0
100-149	3	3.0
150-199	4	4.0
200-249	0	0
250-299	0	0
300-349	1	1.0
350-399	1	1.0

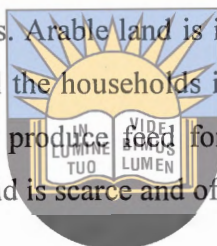
Source: Field survey 2012

The majority (66%) of farmers or households on the survey own less than 49 sheep as shown in Table 5.4. The total number of households on the survey who were found to own sheep between 100 and 149 were only 3, while those who owned sheep between 150 and 199 were only 4. Those households that were found to have large numbers of sheep between 300 and 349 as well as between 350 and 399 were only 2.

As it was mentioned in Table 5.2 lot of households (40%) were pensioners and 34% were unemployed. These households depend on their sheep for survival. They generate income by producing wool and selling the sheep itself in times of hardship and need so that they can get what they don't have.

### 5.3.2 Availability of arable land

Arable land is the land which is suitable for planting crops. All rural households have a piece of land whether it is a small backyard piece of land or bigger land that they use to produce food for themselves. It is very rare to find rural people not to have arable land, especially in communal communities. Arable land is important in sheep production as it is needed for supplementary feed. All the households in the survey have access to arable land. They have the opportunity to produce feed for their sheep, especially in winter months when vegetation on range land is scarce and of poor quality.

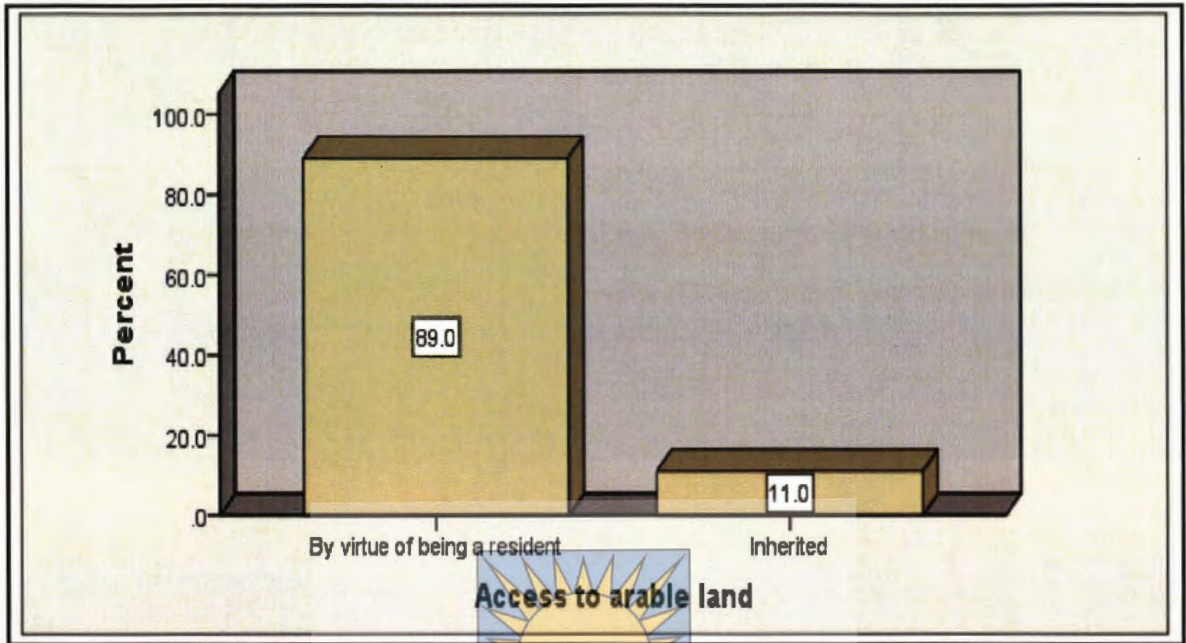


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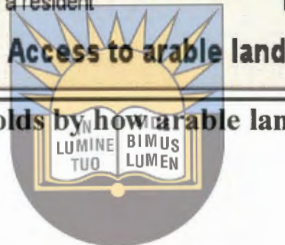
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### 5.3.3 Nature by which the arable land was obtained

Access to land in some communal areas is not a big issue. It was found that majority (89%) of households obtained land by virtue of being a resident and followed by those who inherited (11%) it as shown in Figure 5.2. There were no households who bought or rented the land.



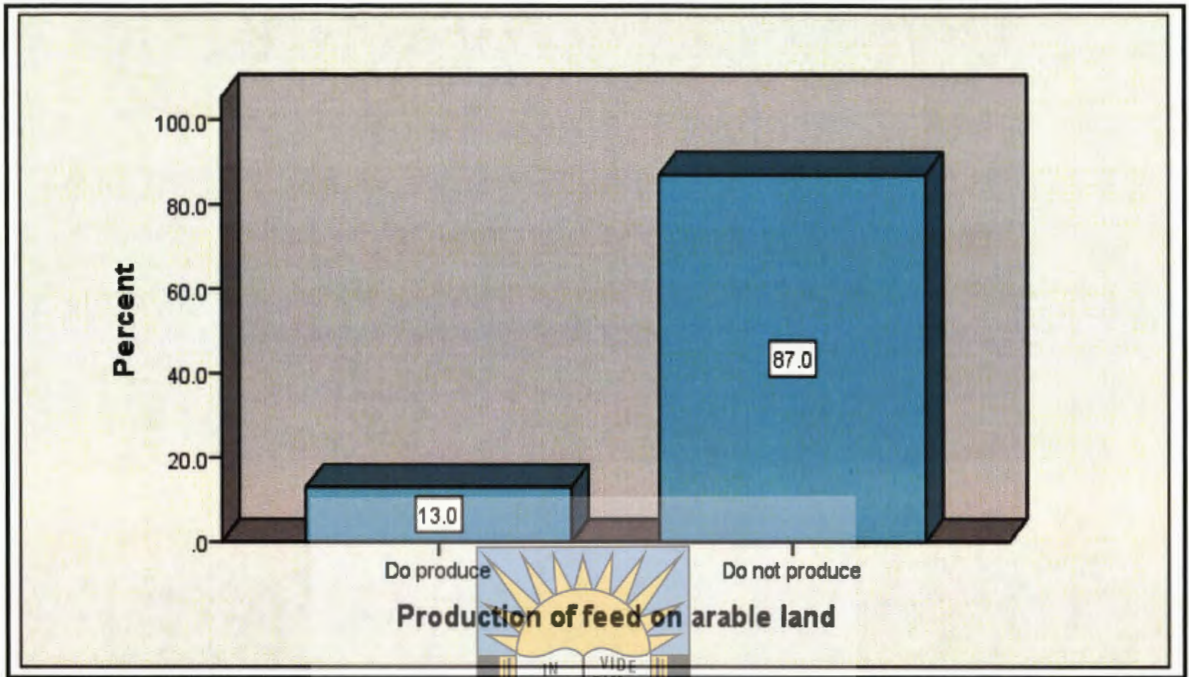
**Figure 5.2: Distribution of households by how arable land was obtained**  
**Source: Field survey 2012**



**5.3.4 Use of arable land for production of feed**

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Arable land is important for wool production because farmers can produce feed for their sheep when natural feed on range land is not available for sheep. Figure 5.3 shows how arable land is used by households in terms of feed production.



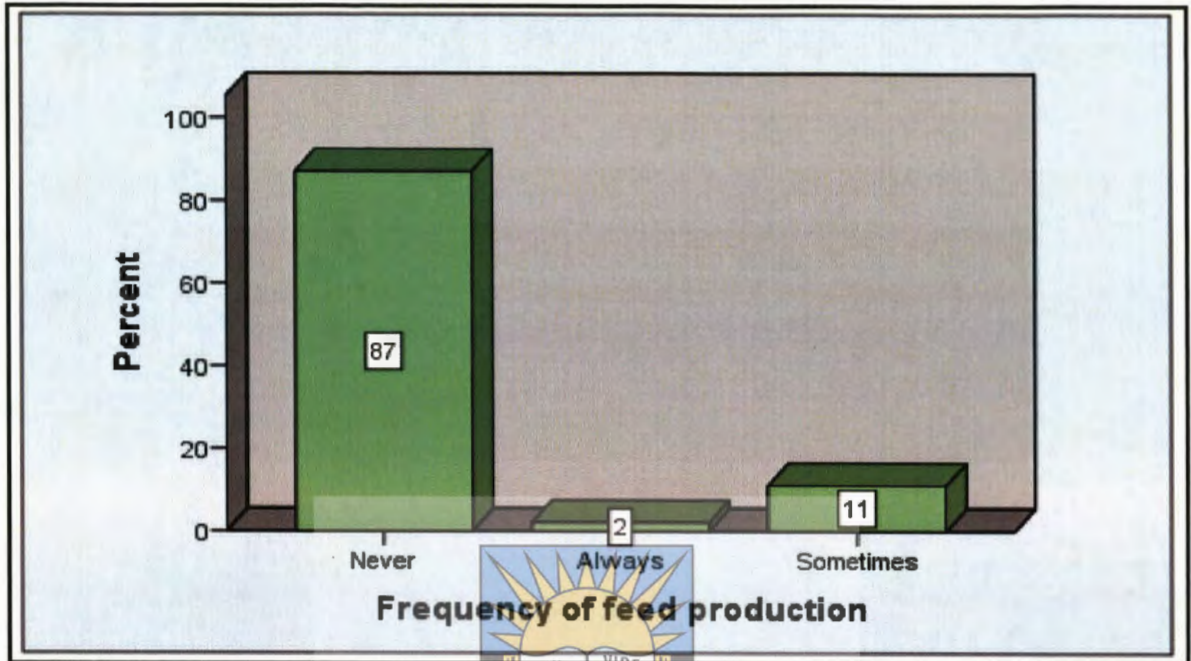
**Figure 5.3 Distribution of households by sheep feed production**  
**Source: Field survey 2012**

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Figure 5.3 indicates that 13% of the households produce feed for their sheep and 87% of the households do not produce feed for their sheep on the arable land that they have. This can lead to their sheep starving and the result of that could be inferior quality of wool, therefore, lower incomes from wool sales.

### **5.3.5: Frequency of producing feed on arable land**

Feed is important for every living organism. For good quantity and quality wool proper feeding is needed for sheep. Figure 5.4 indicates frequency of producing feed on the arable land for those farmers who produce feed.



**Figure 5.4 Distribution of household by regularity of producing feed**  
 Source: Field survey 2012

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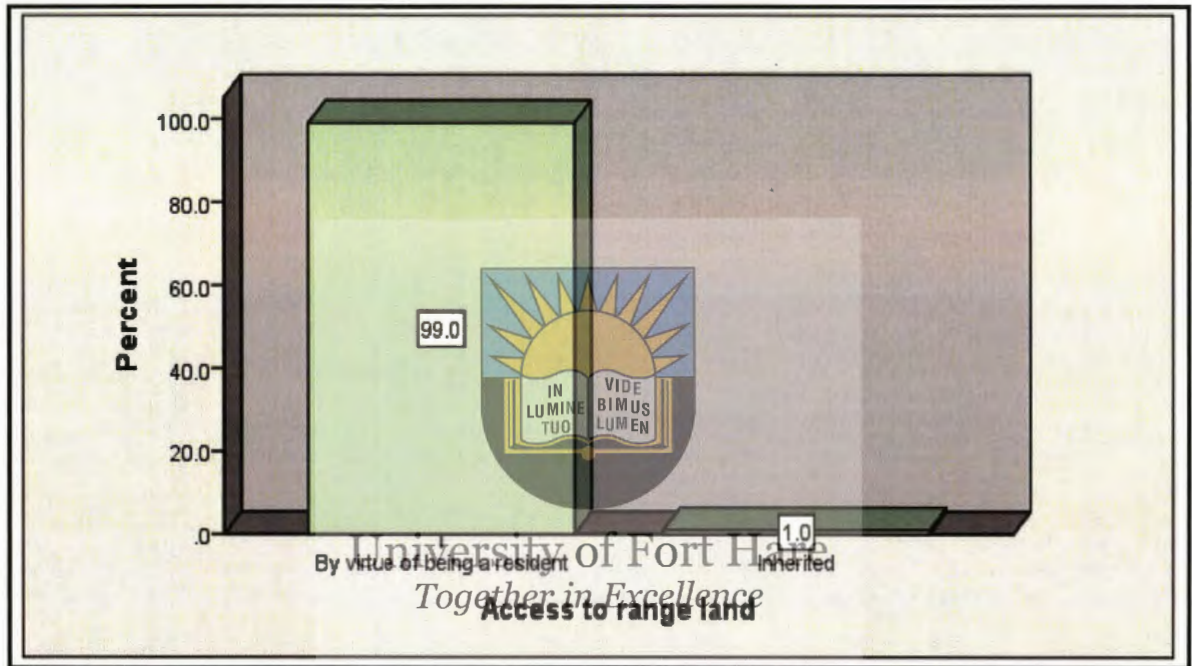
Figure 5.4 indicates that 2% and 11% of households produce feed for their sheep on the arable land, meaning that they provide supplementary feed for their sheep. About 11% of these households produce feed in certain times, they don't produce or provide feed regularly. The majority of 87% of the households do not produce feed at all. This may have negative impact on the production of wool.

### 5.4 Rangeland issues

Access to range land and nature or manner by which access to range land was obtained, Usage of range land, problems encountered on range land, what must be done to prevent those prevalent problems and who to be responsible for making sure that they are prevented.

### 5.4.1 Access to rangelands

Range land is the land that is used for grazing, browsing and for keeping livestock. It is important for every farmer to have access to range land for his/her livestock. Without the access to range land livestock production is not possible.



**Figure 5.5 Distribution of households by access to rangelands**

**Source: Field survey 2012**

Figure 5.5 indicates that all the households in the survey have access to range land. A total of 99% got the access to range land by virtue of being a resident, while 1% got the land through inheritance. There are no problems interms of range land availability for these farmers.

#### 5.4.2 Usage of rangeland

Range land is used for livestock feeding and keeping and other household needs. It is much important that it should be taken care of by those who use it for different household needs. It is assumed that it doesn't matter how someone uses it and or which livestock is kept in the range land. Even the number or units of livestock that is kept on the range land is not managed well in terms of having correct number of stock on the piece of land (stocking rate) to avoid over grazing. Obi (ed. 2011) reported that Eastern Cape province is one of the three most degraded provinces in South Africa. Most degraded rangelands are those used communally. The major contributors in the communal rangelands degradation are deforestation, and loss of vegetation cover from overgrazing and overstocking with livestock (ed. Obi 2011). Every communal person do whatever he or she likes on the rangeland in terms of usage.



All the households use the rangeland communally. No single one owns the range land individually. They do farming on the same land collectively. That may have negative effects because in some communal areas some of the farmers don't follow proper measures in terms of looking after their livestock, for example others tend not to treat livestock diseases.

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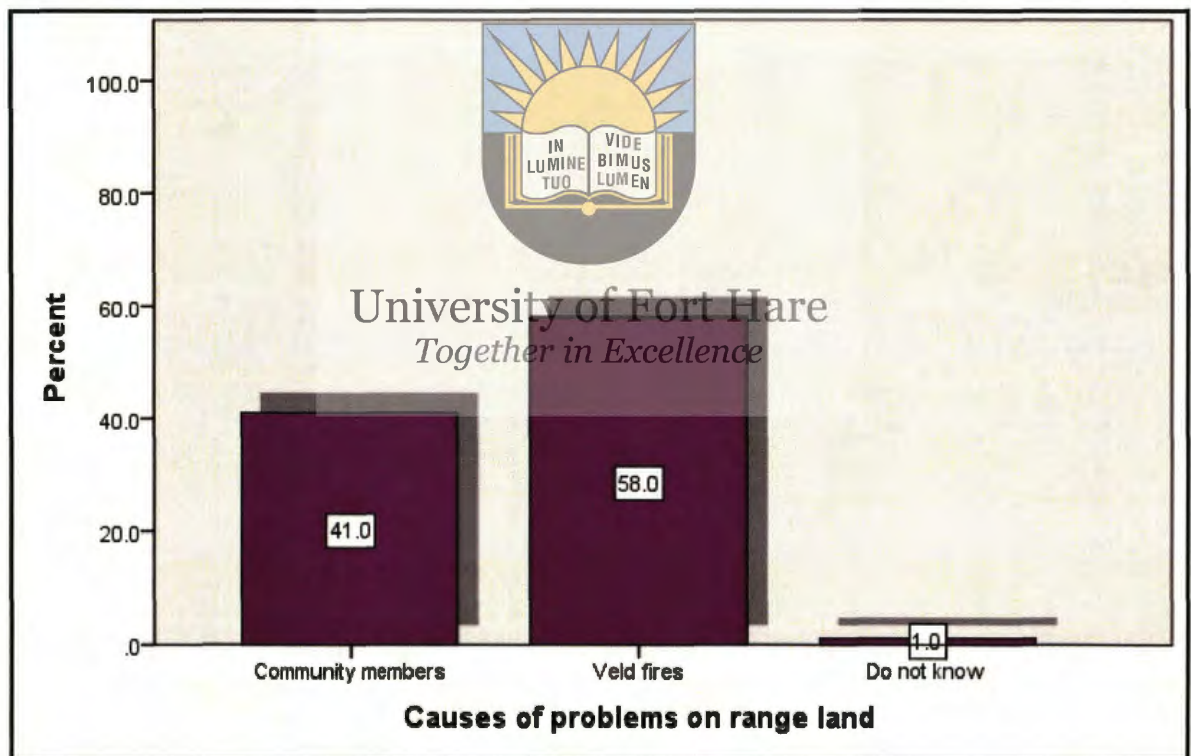
#### 5.4.3 Problems experienced on rangelands

There are some problems among the others that have been identified as most detrimental on the rangeland and these include demolished fencing and undevided camps as identified by households who participated in the study.

All the households on the survey indicated that camps on the range land were not properly fenced as the fence is demolished and the range land is not divided into camps. This makes very difficult for them to follow proper sheep management practices. This means sheep management practices are not properly practised in Kolomana villages.

#### 5.4.4 Causes of problems on the range land

In most rural areas where land is normally used communally, problems always arise. Those problems are normally caused by ignorant community members.



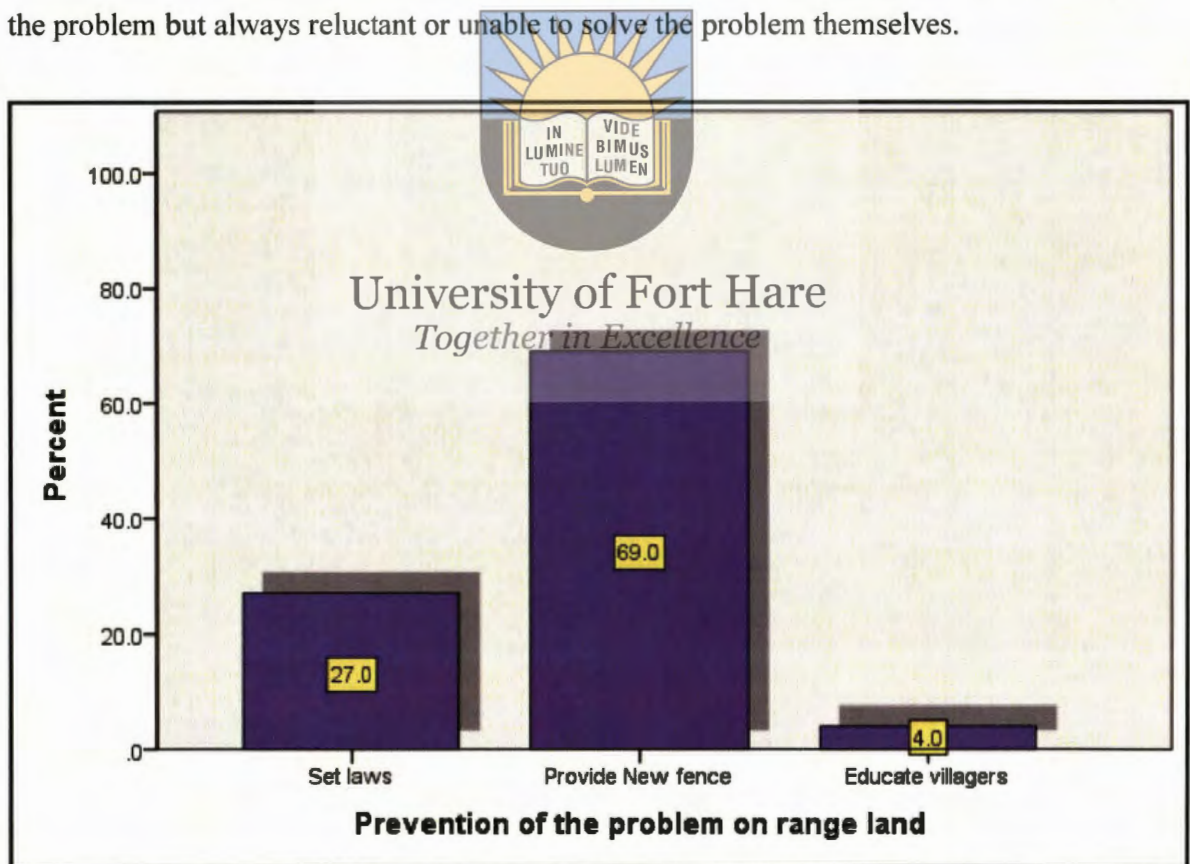
**Figure 5.6** Distribution of households by causes of problems on range land  
**Source:** Field survey 2012

Figure 5.6 outlines the causes of the problems that occurs on the range land as indicated by the households who took part in the survey. About 58% of the households indicated that most of the problems are caused by veld fires, which are set by people. These veld fires damage the fencing on the range land by destroying the poles and cause the fence to fall down.

Another 41% of households showed that community members cause the problems on the range land by stealing the fencing material for their own personal use, while 1 percent indicated that the causes of these problems were not identifiable. Clearly this shows ignorance by community members in terms of conserving what they have for their own use.

#### 5.4.5 Prevention of problems on rangeland

Prevention is always better than fixing the problem. Farming in communal land is always difficult and there are challenges and problems. Communal farmers are able to identify the problem but always reluctant or unable to solve the problem themselves.

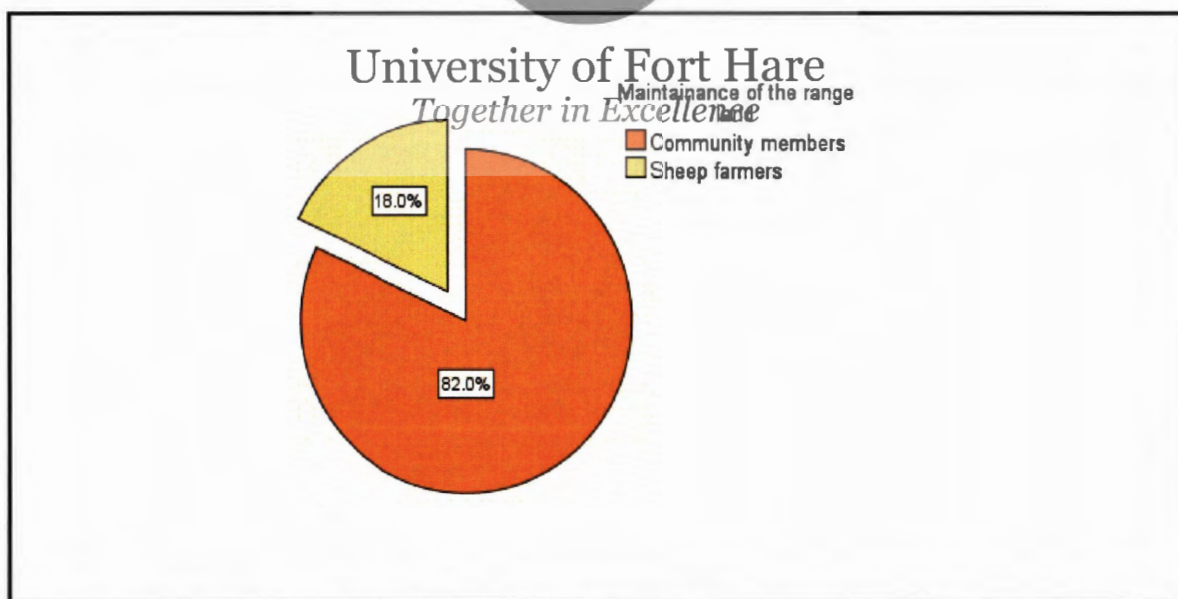
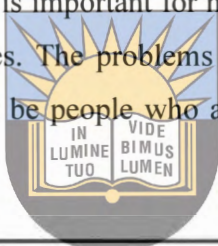


**Figure 5.7: Distribution of households by prevention of problems on range land**  
 Source: Field survey 2012

Figure 5.7 show that 69% of households are convinced that if government can provide fencing material for them, their problems would be over. This is followed by 27% of the households who indicated that if the community can have or set laws against those community members who vandalize the resources that they have their problems would be solved. And only 4% of households in the survey indicate community members should be educated on how to look after the resources that they have.

#### 5.4.6 Maintainance of the range land

As mentioned before that range land is important for many household needs. It should be kept in a good condition at all times. The problems that take place on the range land should be dealt with and there must be people who are responsible for ensuring that is done.



**Figure 5.8: Distribution pf households by maintainance of range land**  
**Source: Field survey 2012**

Figure 5.8 indicates that 82% of the households participated in the survey indicated that community members should be responsible for rectifying problems and preventing those problems to occur. This is followed by 12% of households who indicated that sheep farmers should be responsible for range land issues. Clearly some of the people in the area think that only sheep owners are the ones who should take care of the range land resources, whereas it is suppose to be everybody's responsibility who is a resident in that location.

## 5.5 Sheep management practices

This section outlays some of the sheep management practices such as breeding, lambing, health issues of the sheep and technical support by animal health and extension officials. All these management practices are important in sheep production.

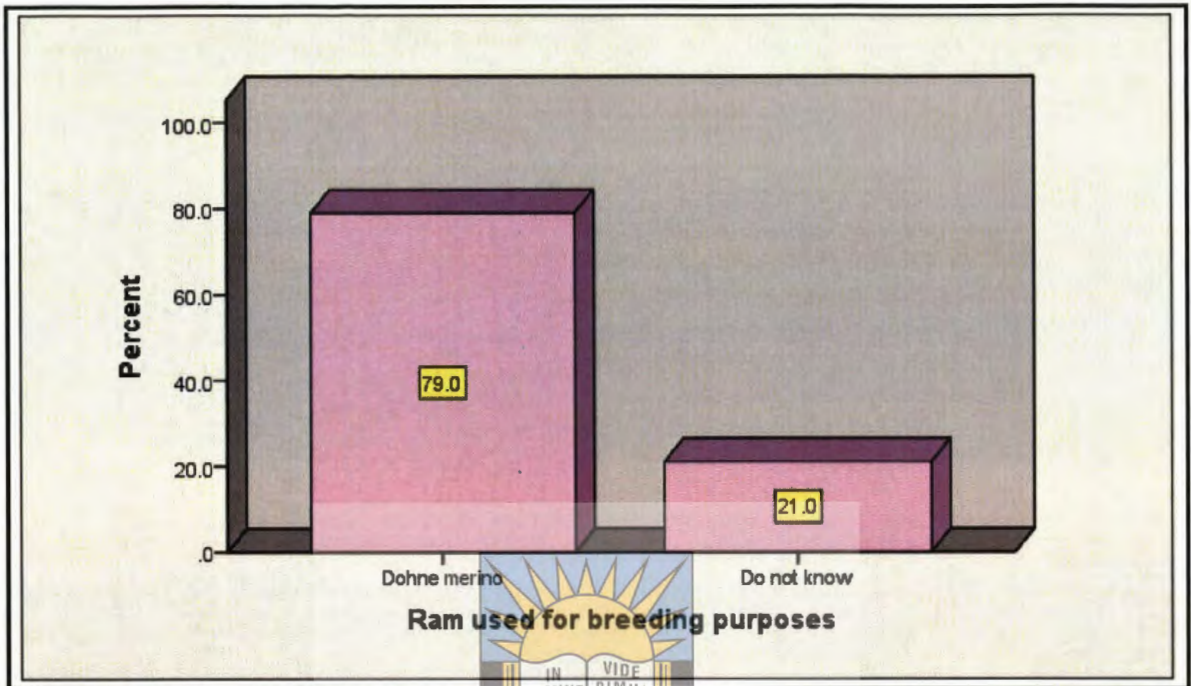


### 5.5.1 Ram used for breeding purposes.

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Breeding refers to the production of offspring or lambs from the sheep. It is very important for every farmer to have a quality ram to produce good quality lambs so that to increase numbers of livestock in the farm. Also a quality ram will produce lambs with quality characteristics including quality wool. Therefore, it is very much important for every farmer to know the type of ram she or he is using for breeding purposes.



**Figure 5.9: Distribution of households by ram used for breeding purposes**  
**Source: Field survey 2012**

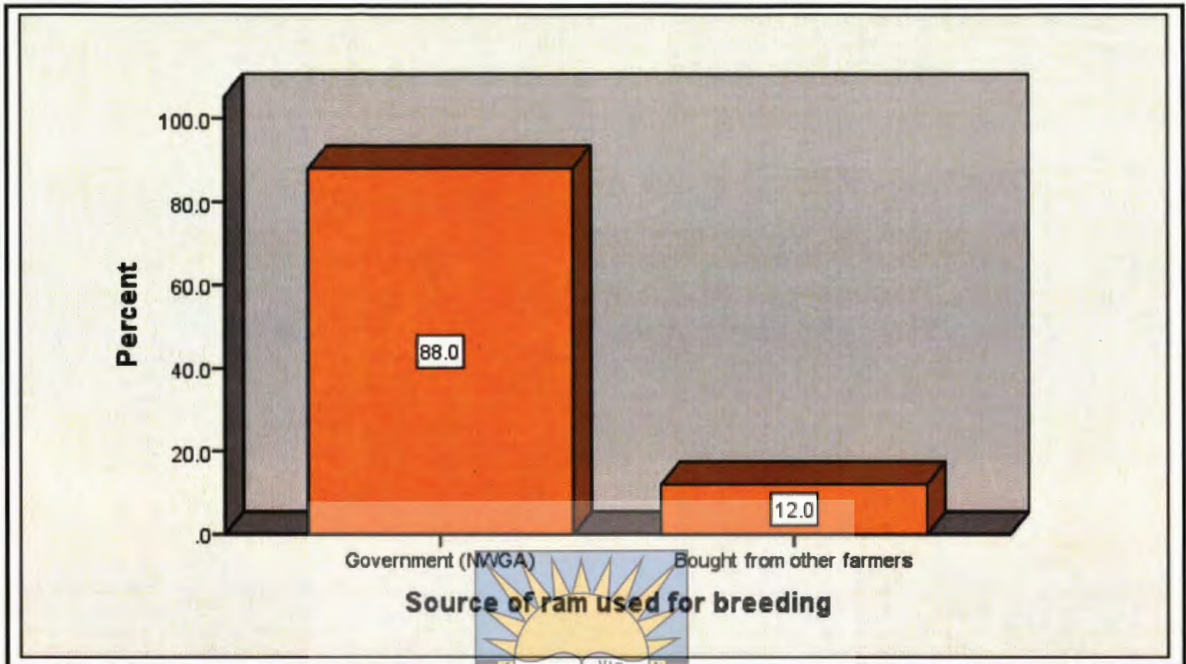
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Figure 5.9 indicates that 79% of households participated in the study use Dohne Merino ram for breeding purposes, while 21% do not know the type of breed they use. These households practise their farming in villages where farming is communal. Therefore, the presence of these quality rams that are used by some farmers will not be of any importance because of many communal farming challenges and problems.

### 5.5.2 Source of ram used for breeding

Most rural farmers obtain livestock through inheritance and others bought them from other village members. In recent years rural farmers have had the opportunity of getting the rams from National Wool Growers Association (NWGA) ram exchange scheme, a rural sheep improvement program.

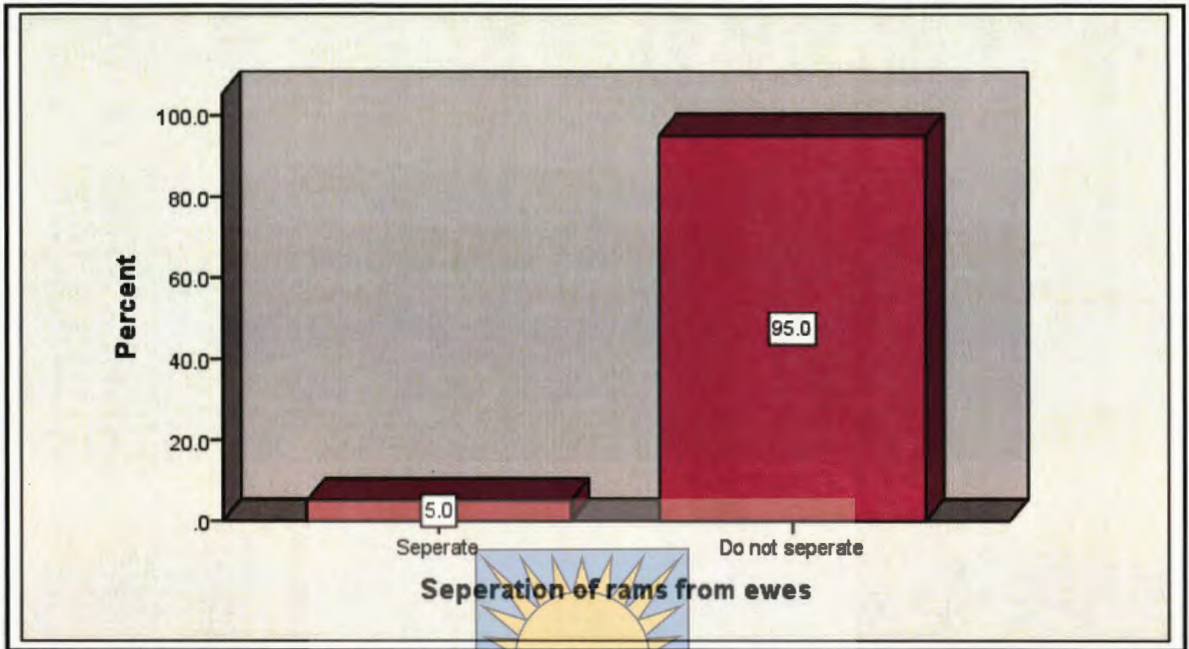


**Figure 5.10 Distribution of households by source of ram used for breeding**  
**Source: Field survey 2012**

Figure 5.10 shows that 88% of the households that took part in the survey use ram that they obtained from NWGA ram exchange program for breeding purposes. Some 12% of the household uses the rams that they bought from other farmers, especially white commercial farmers.

### 5.5.3 Separation of rams from ewes

It is believed that rams should not live in the same camp with ewes for a long time as that will lead to a ram being not interested in mating the ewes. Rams should be separated from ewes for a particular time and join them in certain period for mating period. This is also important in terms of lambing periods. Lambing should be planned in the manner that it occurs in spring or summer when conditions are favourable so that lambs don't suffer from extreme temperatures and die.

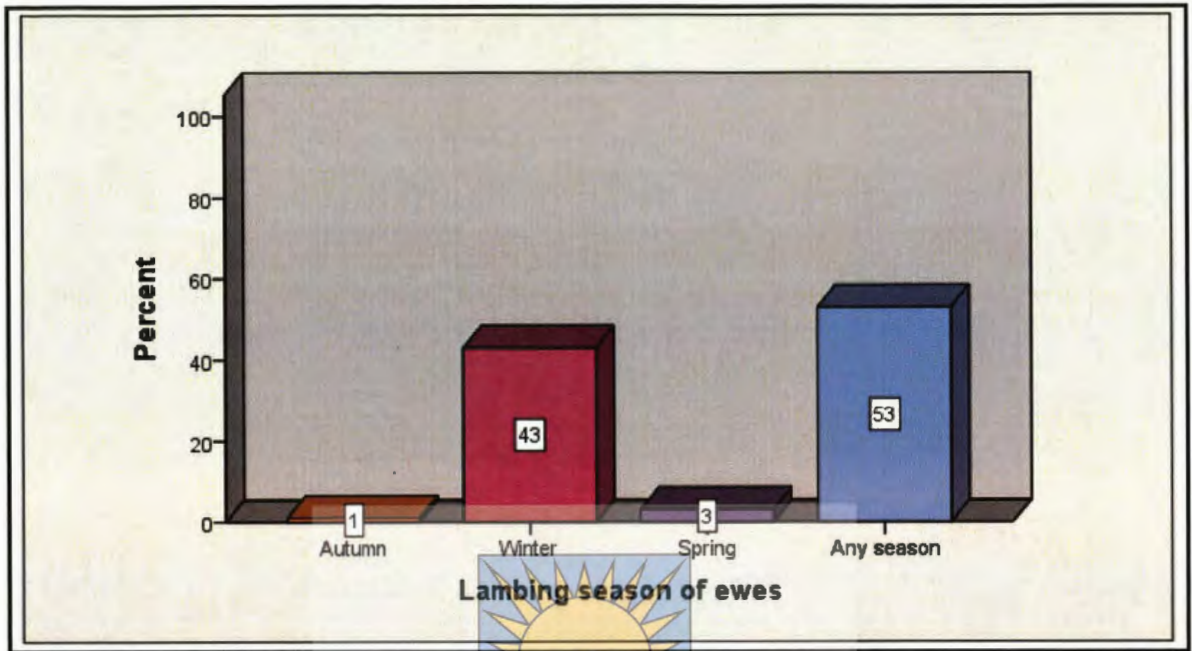


**Figure 5.11: Distribution of households by seperation of rams from ewes**  
**Source: Field survey 2012**

Figure 5.11 indicates that 95% of the households who participated in the survey do not separate their rams from ewes. Only 5% that practice that management activity of separating rams from ewes for lambing management. Those who do not separate ewes from rams will have lambs in every season, meaning that even when the season is not suitable or favourable for lambing, while those who separate their rams from ewes will have lambs when the season is favourable because breeding is planned or controlled.

#### 5.5.4 Lambing season

Lambing season is important because it determines wellness and health of the lambs that are born. For example, lambs that are born in spring have better chance of survival than those which are born in winter when it is cold. The reason for this is that in spring the weather is warm and there is enough feed on the range land for the lambing ewes to feed on so that to produce milk for lambs. In winter, it is cold and the feed is scarce for the lambing ewes, therefore, lambs will suffer because of limited milk produced by their mothers.

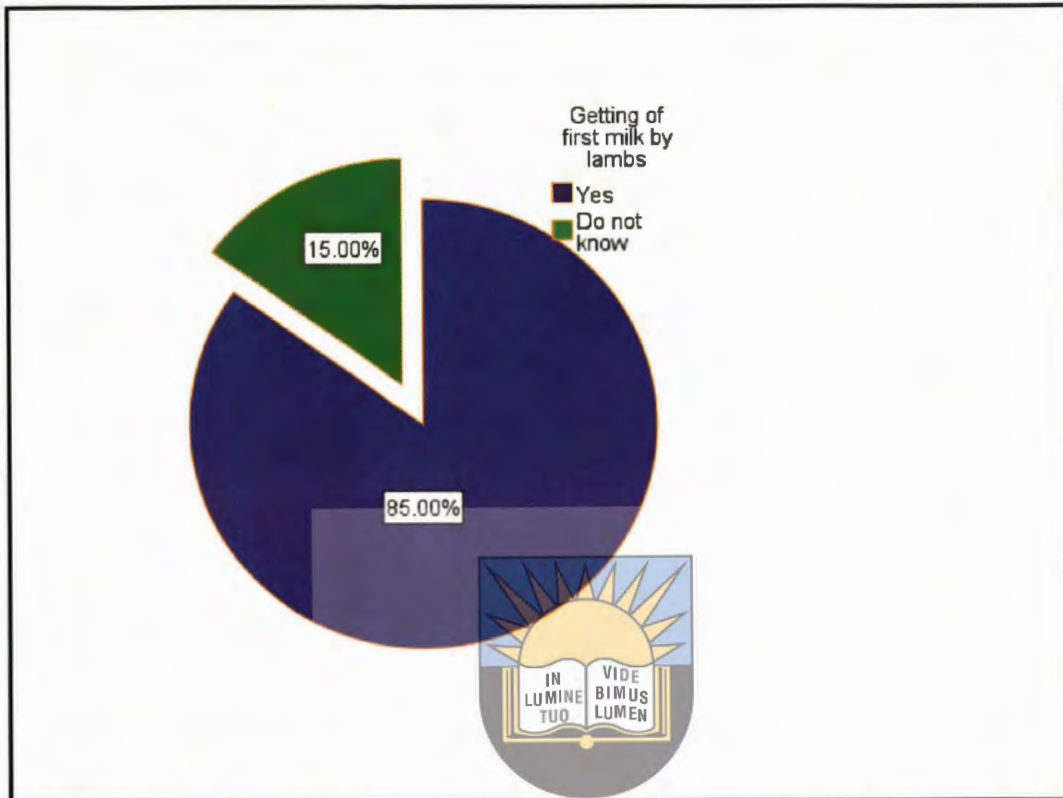


**Figure 5.12: Distribution of households by lambing season**  
**Source: Field survey 2012**

Due to lack of fencing in the study area it is indicated in Figure 5.12 that lambing is taking place at any season as indicated by the majority (53%). Following is 43% indicating that their ewes lamb in winter. Most of the farmers tend to avoid lambing in winter because it is cold and unfavourable for the lambs. Lambing in winter or any season that is not suitable for lambing in communal areas indicates separation of rams from ewes is not done and the reason for that is lack of fencing.

### 5.5.5 Availability of first milk for lambs

Milk is important in the life of lambs' especially first milk (colostrum). The first milk contains lots of nutrients that help the lamb to withstand and fight diseases and also nourishes and gives strength to the lamb. It is therefore wise for a farmer to be close the ewes which are about to lamb so that to help the lamb to get the milk. Sometimes other ewes, especially those which lamb for the first time reject their lambs. That means a farmer must be present when the ewes lamb.



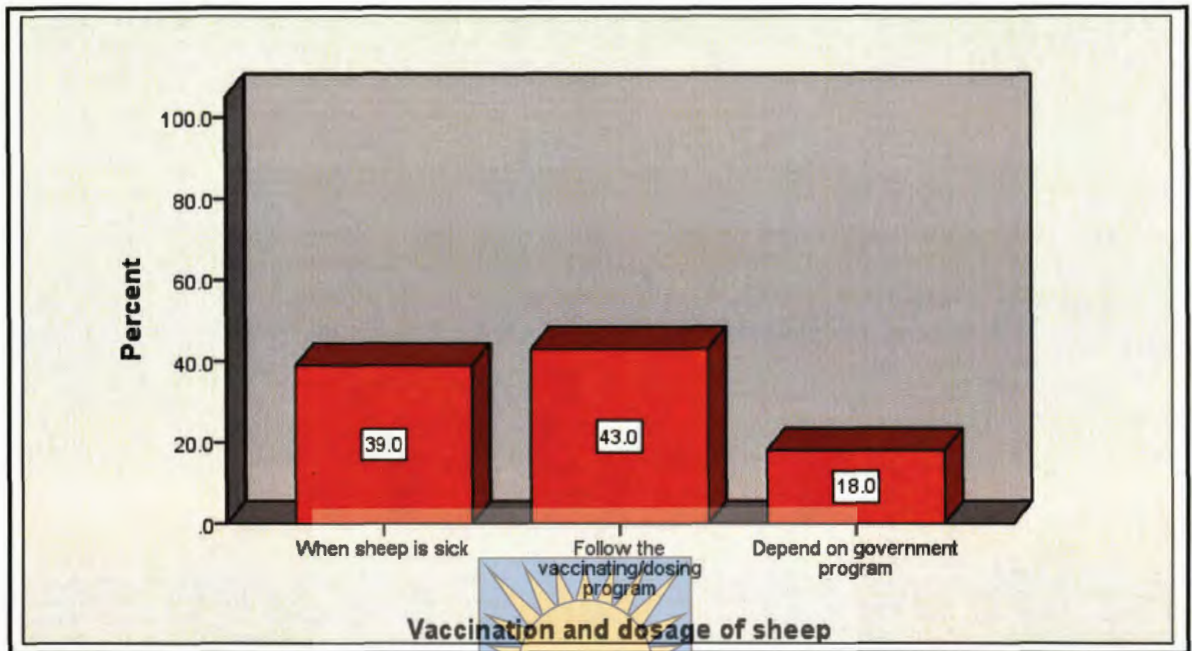
**Figure 5.13: Distribution of households by availability of first milk for lambs**  
**Source: Field survey 2012**

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Figure 5.13 indicates that 85% of households who participated in the study indicated that their lambs do get the first milk, which means they are present when the ewes lamb. Other 15% of households indicate that they do not know if their lambs do get the first milk after birth.

### 5.5.6 Vaccination and dosing of sheep

Vaccinating and dosing of sheep is important and every farmer has to be aware and practise these management practices. These practices help to cure and prevent diseases. Sheep scab is the most detrimental disease that affects the skin of sheep hence the wool quality is automatically affected. It is important for farmers to take a serious note of these diseases because they affect incomes negatively and this is not a good thing for them.

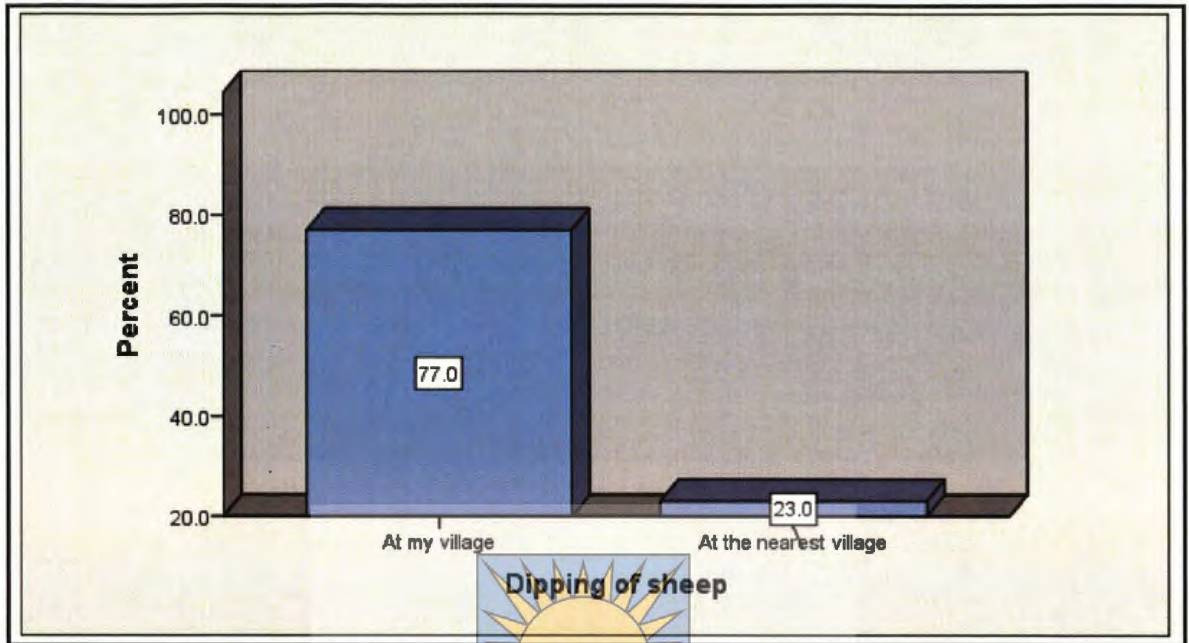


**Figure 5.14: Distribution of households by vaccination and dosing of sheep**  
**Source: Field survey 2012**

Figure 5.14 indicates that households do understand the importance of vaccinating and dosing of their sheep. However, 39% of farmers practice what is not right because they wait for a sheep to be sick before they dose or vaccinate it. They like to cure than to prevent the disease. On the other hand, 43% of the households do follow the program of vaccinating and dosing their sheep to prevent the sheep not to contract diseases easily. Then 18% of the households don't vaccinate nor dose their sheep until the animal health technicians from the government arrive and perform these practices for them.

### 5.5.7 Dipping of sheep

Dipping of sheep is very important because it helps to treat or control external parasites which affect livestock and eventually causes diseases that can lead to death of an animal. The sheep scab is prevented by dipping the sheep in dip material and if farmers do dip their livestock they would be saving them from incurring costs of buying medicines that treat some diseases caused by external parasites.



**Figure 5.15 Distribution of households by dipping of sheep**  
**Source: Field survey 2012**

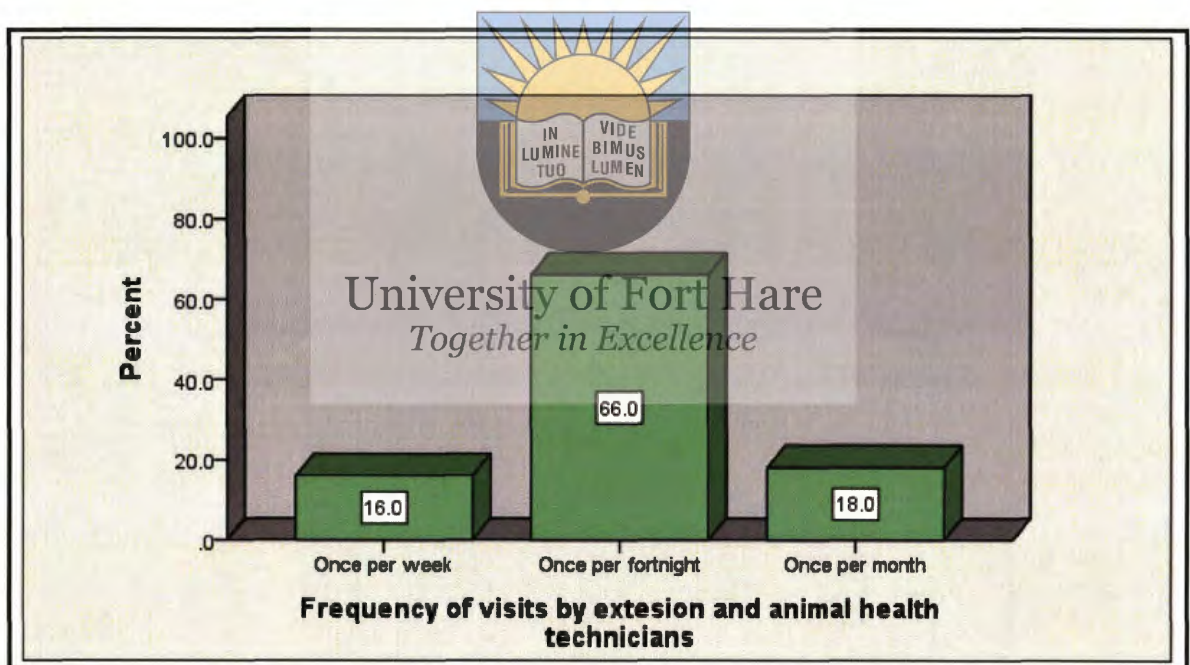
Figure 5.15 show that all the households that participated in the survey do dip their sheep. The majority (77%) of these households have a dipping tank in their village, which means they do not dip their sheep far away from where the sheep graze. The other (23%) do not have a dip in their village; they need to travel a distance before they dip their sheep. This could cause the problem for these households because others would end up not being interested in dipping their sheep.

### **5.6 Provision of extension services**

This section displays extension services issues. These include visits by animal health and extension technicians for technical support and availability of technicians when they are needed by farmers.

### 5.6.1 Visits by animal health and extension technicians for technical support

Technical advice is essential to every farmer, especially those farmers that practise farming activities communally. As mentioned before some communal farmers depend on extension and animal health technicians for their farming activities to run smoothly. Extension technicians transfer information from farmers to researchers and from researchers to farmers and give to farmers' technical advice. Animal health technicians help farmers with everything in connection with animal health. Dosing, ear tagging/marking, castration; vaccinating and any other health related issue is performed by animal health technicians. The constant visits are needed by these communal farmers.



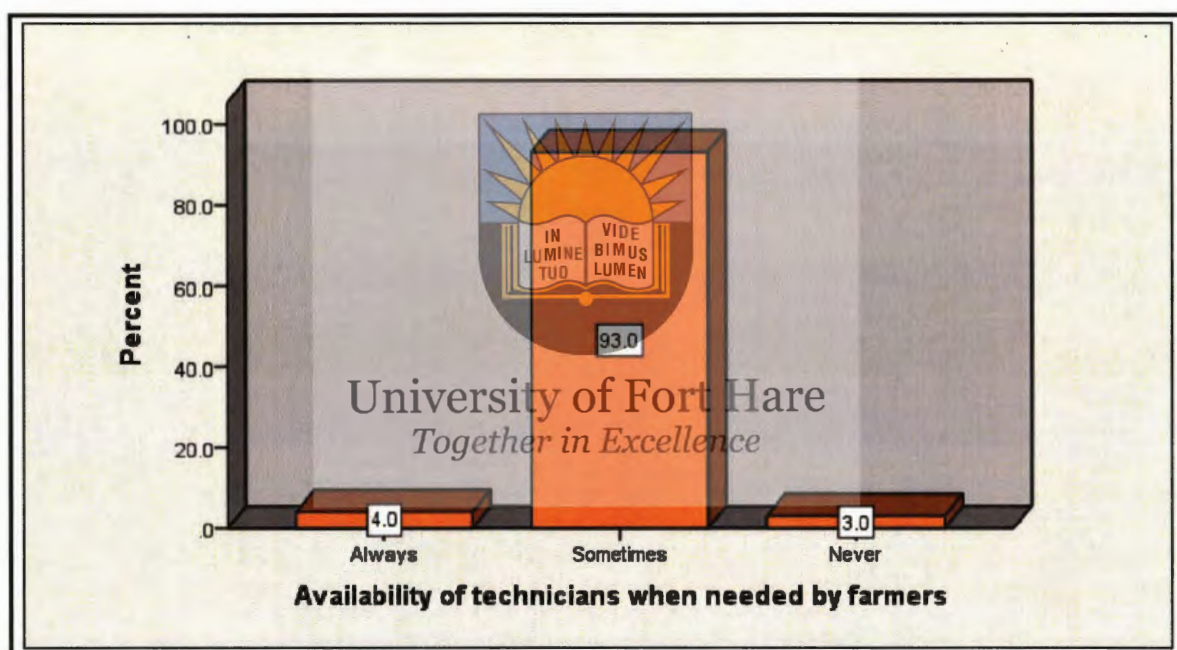
**Figure 5.16: Distribution of households by visits of animal health and extension technicians**

Source: Field survey 2012

In figure 5.16 it is indicated that 66% of the surveyed households stated that extension and animal health technicians' visits once in two weeks, while 18% stated that they visit once in a month and 16 percent stated that they visit once in a week. Figure 5.23 show that the technicians do visit these farmers but such visits are not enough for such farmers, these farmers need proper visits in order for them to be productive and sustainable.

### 5.6.2 Availability of technicians when needed by framers

There are times when farmers happen to need the existence of technical or animal health technicians for urgent technical or animal medical advice. In such situations they would contact a relevant official or technician for such needed assistance. It is therefore of high importance that these technicians to always be available when needed by farmers as these farmers depend on them. If for some reasons the relevant official cannot be available, s/he should delegate someone else to attend such farmer.



**Figure 5.17: Distribution of households by availability of technicians when needed**  
Source: Field survey 2012

Figure 5.17 show that 93% of the households in the survey indicated that extension and animal health technicians are only available in certain times, not during the time when they need them, while 4% claimed that the technicians are available all the time when they need them and 3% claimed that the technicians are never available when they need them.

## 5.7 Sheep shearing and wool marketing management

Sheep shearing and marketing is very crucial in wool production. In this section sheep shearing and marketing of wool is presented. Where the farmers shear their sheep, how and where they sell their wool is discussed.

### 5.7.1 Shearing of sheep

Wool production is a serious farming business that someone can survive on. The households of Kolomana villages keep their sheep mainly for wool production. Wool production is the main farming enterprise that every household strive to specialize in. They shear their sheep in shearing sheds and in old structures where there are no proper shearing facilities.

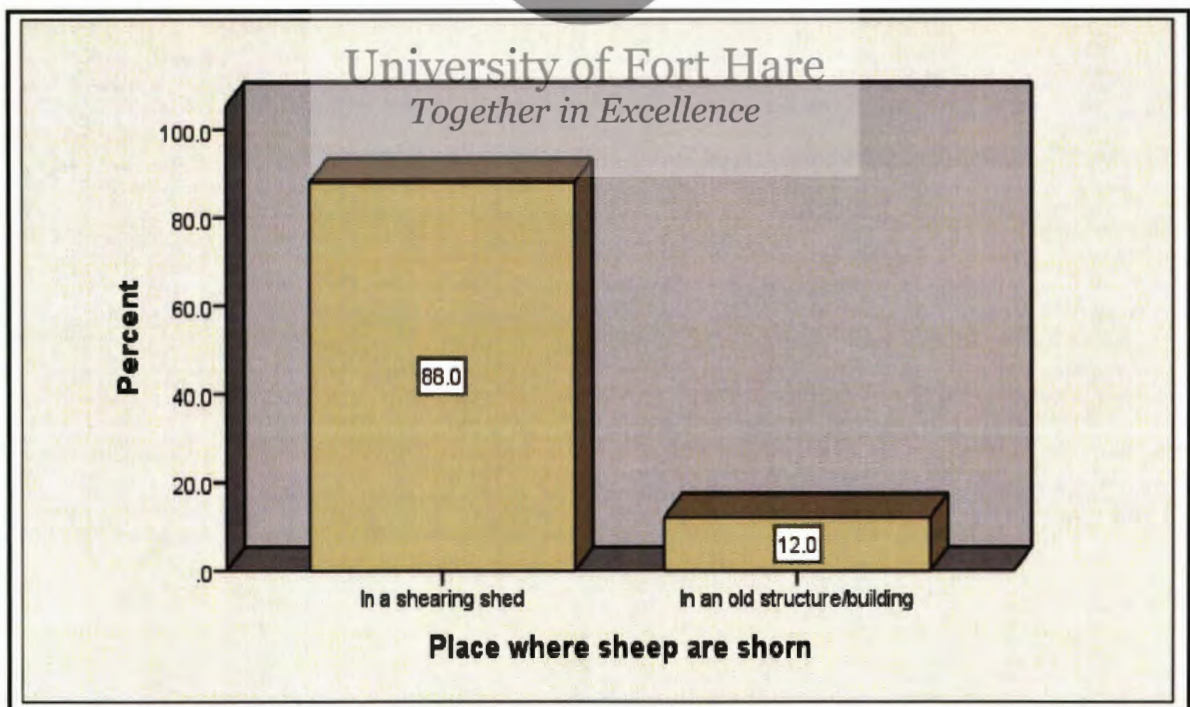
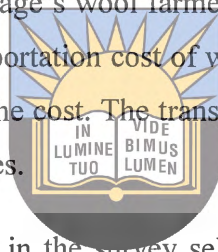


Figure 5.18: Distribution of households by place where sheep shearing is done  
Source: Survey 2012

Figure 5.18 indicates that 88% of the households that were surveyed shear their sheep in proper shearing sheds with proper shearing facilities. Another 12% of the households are using an old building to shear their sheep where there are no proper shearing facilities. This is detrimental to the quality of their wool because it is contaminating their wool with foreign objects that decreases their incomes.

### 5.7.2 Selling of wool

There are 2 agents to where communal wool farmers are selling their wool; these agents are BKB and CMW. Kolomana village's wool farmers sell their wool to BKB which is situated in Port Elizabeth. The transportation cost of wool to BKB is incurred by farmers but they don't know the amount of the cost. The transportation of the wool is carried out by the buyers using their own vehicles.



All the households that participated in the survey sell their wool collectively, meaning that they put their wool in wool pack (bag). Every farmer's wool that is put in the wool pack is weighed and recorded accordingly for reference purposes so that every farmer knows the quantity and quality of his or her wool that is contained in the wool pack. The reason for them selling collectively is because they shear their sheep in the same structure which has a minimum space and fewer facilities to allow them to pack their wool individually and separately. It will also delay them to finish the process of shearing if every farmer shears his or her sheep separately.

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### 5.8 Inferential Results

A General Linear Regression model (GLM) was used to analyze the effect of household head characteristics and the sheep management practices variables in influencing the total income generated from wool sales. The farmers' goal of getting higher (income) which is the dependent variable in the model is assumed to be influenced by many factors.

It is assumed that if the farmer's goal is to get higher income from the wool production he or she needs to apply proper sheep management practices in his or her farm, but if such farmer doesn't do that his or her goal will never be realized. Wool production does not start in the shearing shed during the shearing season. It starts from making sure that the farm itself is in proper and suitable condition for keeping the animal that is sheep in this case and to apply proper management practices in the whole farm.

Multiple variables were therefore regressed to determine their influence on the income. The independent variables include gender of household head, age of household head, household size, marital status of household head, number of sheep household head owns, access to arable land, production of feed, visits by animal health and extension technicians, availability of animal health and extension technicians when needed, division of range land into camps, state of fencing, season to join ewes with rams, availability of first milk to lambs and keeping of sheep on open camps.



Table 5.5 shows the results or findings of the model; where the independent variables were tested to check how influential they are to income (dependent variable in this study) generated from wool sales. Some independent variables were found to be influential and the findings are indicated in Table 5.5. The overall results as summarised in Table 5.5 shows that the model for the study is highly adequate and fit as the R Square value is 0.947 and is higher than the Adjusted R Square value which is 0.938.

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**Table: 5.5: Factors affecting income generated from wool sales**

Variable	Coefficient (B)	t-Value	Significance
(Constant)		-0.777	0.439
Gender of household head	0.033	1.204	0.232
Age of household head	0.133	3.307	0.001***
Marital status of household head	-0.099	-2.675	0.009***
Household size	-0.044	-1.405	0.164
Number of sheep owned by household	0.994	37.276	0.000***
Access to arable land	0.044	1.409	0.163
Production of feed for sheep	0.042	1.446	0.152
Visits by animal health technicians	0.119	3.650	0.000***
Availability of technicians when needed	-0.031	-1.046	0.299
Range land division into camps	-0.057	-1.873	0.065*
State of range land fence	-0.077	-2.704	0.008***
Season to join ewes with rams	-0.041	-1.341	0.183
Availability of first milk to lambs	0.007	2.231	0.028**
Keeping of sheep on the range land	0.019	0.582	0.491
Model summary	R Square = 0.947; Adjusted R Square = 0.938; F Change = 108.297; Durbin-Watson = 1.703		

\*Significant at 10% level; \*\*Significant at 5% level; \*\*\*Significant at 1% level.  
 Source: Survey 2012

Table 5.5 presents results of the major factors influencing the income generated from sales of wool produced. These factors are the marital status of the household head, age of the household head, number of sheep owned by household, visits by animal health technicians, division of range land into camps, state of fencing on range land and availability of first milk to lambs. The results presented in the table are discussed into more detail. For the purposes of this study the discussion will be focusing on the variables which are significant in the table.

### 5.8.1 Age of the household head

At 1% significant level age of the household head has been found to be significant in influencing the income. It has a positive relationship with income as it has a positive  $\beta$  value (0.133). Age of the household head is found to be influential in income generated from wool production. It is assumed that the older the person participating in agricultural activity the better the output to be realized. Reason for this is the assumption that the older people have experience in farming activities than younger people. However, young people are indeed needed in agricultural activities as the older people are no longer able to participate in agricultural activities, especially wool production in this case; as it need more physical labour n terms of handling sheep during shearing process.



### 5.8.2 Marital status of the household head

Table 5.5 shows that at 1% significant level marital status of the household head is significant. At  $\beta$  value of  $-0.099$  marital status of the household has the negative relationship with income. This implies that income is not influenced by marital status of the household head. Income can be generated even if the household head is married or not.

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### 5.8.3 Numbers of sheep owned by household

At 1% significant level numbers of sheep owned by house hold is highly influential to income that generated from the sales of wool. At  $\beta$  value of 0.994 numbers of sheep owned by household has a positive relationship with income. This implies that numbers of sheep owned by household is influential to income. Wool that is sold is from the sheep that are shorn by farmers. Therefore, numbers of sheep owned are crucial in generating income because if a farmer owns large numbers of sheep he/she will eventually obtain maximum amount of wool which will bring in higher income.

#### 5.8.4 Visits by animal health technicians

It is shown in Table 5.5 that visits by animal health technicians are very important and has an impact on income. At 1% significance level and at  $\beta$  value of 0.119, visits by animal health technicians has a positive relationship with income. This implies that visits by animal health technicians are highly influential to income. These technicians are important to farmers especially wool farmers in this case as they advise them on prevailing diseases and medicines to prevent or cure such diseases. Healthier sheep gives good quality wool that yield higher incomes.

#### 5.8.5 Division of range land into camps

Table 5.5 indicates that division of range land into camps has 10% significance level at  $\beta$  value of -0.057. This implies that division of range land into camps has a negative relationship with income and it does not influence income. Income can be generated without division of range land into camps. However proper sheep management practices to be well implemented range land has to be divided into camps. This will ease the process of feeding, mating and lambing in that those ewes which are about to lamb to be separated from the whole flock of the farm. Also, division of range land helps to rest certain camps so that to allow them to grow enough grass for the sheep not to starve in winter season when vegetation become poor.

#### 5.8.6 State of fencing on range land

At 1% significance level and at  $\beta$  value of -0.087 state of fencing on range land has a negative relationship with income. This implies that state of fencing on range land does not affect income. Income is not influenced by state of fence on range land, it can be generated whether there is fence or not.



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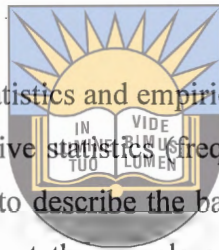
### 5.8.7 Availability of first milk to lambs

At 5% significance level and at  $\beta$  value 0.066 availability of first milk to lambs has a positive relationship with income. This implies that availability of first milk to lambs is influential to income that is generated from sales of wool. If the lambs don't get the first milk from ewes after birth they are at risk of easily contracting diseases and starve. Once the lambs get diseases or starve they are at risk of dying and once they die the numbers of sheep the household have will decreased. Decreasing sheep numbers means that the quantity of wool is also going to decrease and that will lead to decreased incomes.

### 5.9 Chapter summary

This chapter provided descriptive statistics and empirical findings of the study. The study has used tables, graphs and descriptive statistics (frequency and percentages) to analyse data. Descriptive statistics are used to describe the basic features of the data in a study. They provide simple summaries about the sample and the measures of variables. The empirical evidence of perception factors influencing the income generated from wool production by small scale farmers of Kolomana villages in Nkonkobe local municipality is also presented in this chapter.

These perception factors influencing the predictor variable were defined and tested using the linear regression model. The statistically significant independent variables, at 1% significant level are the numbers of sheep owned by households, age of household head, marital status of household head, state of fencing on arable lands and the visits by animal health technicians; at 5% significance level is availability of first milk for the lambs and at 10% significance level is division of range land into camps. Some of the statistically significant variables have a positive relationship with the predictor variable which is income in this case and they have influence on predictor variable. Some significant variables have a negative relationship with predictor variable and have no influence on predictor variable.



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## CHAPTER 6

### CONCLUSIONS AND RECOMMENDATIONS

#### 6.1 Introduction

This chapter provides summarized interpretations and discussion of the findings of this study. These findings are organized into similar themes as presented in the previous chapters and seek to establish an answer to the research questions. From these linkages with the theoretical framework in chapter two are drawn. Recommendations with respect to key findings are also provided. The study also makes provisions for future research and practice to address the issues regarding sheep production in the area of Kolomana.

Studies show that small-scale farmers and rural households of South Africa have the potential to contribute to growth in rural areas and to reduce poverty as well as income disparity. Wool farmers have not yet reaped the full benefits from the potential of new technology because of employment of improper sheep management practices and illiteracy in rural areas. It is suggested that there is a need for small holder farmers to increase adoption of improved techniques of production for them to get improved farming production. However, it has been observed that smallholder farmers are still restricted by a number of institutional arrangements, technical factors and other factors.

The purpose of this study was to identify the opportunities that the rural sheep farmers have and the constraints they face as well as to identify sheep management practices that are being employed by Kolomana wool sheep farmers. The study was also seeking to identify the availability of resources for wool sheep production. This would provide appropriate information required to design and implement sustainable development strategies that will benefit resource poor farmers.

## 6.2 Summary

Chapters that were included in the study are summarized in this section and they include the literature review, selection and description of the study site, methodology and the presentation of the descriptive and empirical findings of the study.

### 6.2.1 Literature review

It is argued that in the Eastern Cape Province of South Africa the communal grazing areas which occur mostly in the former homeland areas (Transkei and Ciskei), constitute about 25% of the surface area but are carrying high livestock numbers. These areas carry about 1.7 million out of 2.3 million cattle, 2.9 million sheep out of 7.3 million and 2 million goats out of the 2.7 million in the Province. Due to lack of resources and implementation of improper sheep management practices rural farmers still struggle to meet the standard of white commercial farms of wool production.



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Wool is a major primary product of livestock farming in the Eastern Cape. Opportunities exist to partner with the National Wool Growers Association (NWGA) to provide support structures to this industry by way of shearing facilities, transport solutions and access to global markets. It plays an important economic role in South Africa as the means of earning foreign exchange as well as providing employment for the many. It is noted that in 2000/01 average auction prices of wool started to increase until 2002/03. From 2003/04 to 2005/06 there was a decline in average auction prices of wool. In 2006/07 average auction prices of wool started to increase until a peak was attained in 2007/08 at approximately R37.00 per kilogram then a slight decline in 2008/09 and 2009/10 at approximately R30.00 per kilogram respectively (Steuberg, 2011). This proves that rural wool farmers can support their families through wool production if proper sheep management practices are followed and the resources are available to farmers. As most rural wool farmers keep their sheep on a communal land with lot of challenges, generally they produce poor quality wool. Poor quality of wool means that it is short in length and dirty.

The shortness of length is probably due to poor feeding and a lack of supplementary feeding to lactating ewes. Wool is dirty because of scab infection, weeds and dirty kraals. Communal grazing enhances the spread of scab infection. A communal grazing system can be described as a system in which all households in a demarcated community share a piece of land for grazing purposes. The poor quality wool reduces incomes received from selling wool because wool producers have to sell at a cheaper price. The two national directorates; extension and veterinary services as well as National Wool Growers Association are considered in this regard of poor wool production by rural wool farmers as the interventions rendered to rural wool farmers by the government to improve wool production. NWGA is there to render trainings to farmers in many spheres regarding wool production.



DRDAR two directorates, extension and veterinary services are also playing integral role to rural wool producers in that extension extend or disseminate needed information from researchers to farmers and from farmers to researchers and give technical advice to the farmers. Veterinary services render services on health subjects of the sheep, where certain medicines are given for free to farmers. It can therefore be concluded that rural wool farmers get support from the government in terms of improving the wool production.

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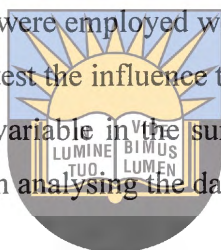
### **6.2.2 Selection and description of the study site**

The study was carried out in seven villages of Kolomana, which is situated in the Nkonkobe local Municipality under Amathole District Municipality which falls under the Eastern Cape Province of South Africa. The villages were as follows Grafton, Marais, Ngqikana, Votywe, Cains, Phathikhala and Dunedine.

### 6.2.3 Methodology

Methodology basically describes the methods which are used to conduct the research. Research methodology consist of research design, sample, sample procedure, data collection and data analysis which are used in the study and also guide the researcher on methods that are used in research process. The random sampling procedure was used to select the 100 respondents in these villages. An open ended and closed ended questionnaire was used as the primary tool for data collection and the process of collecting data was based on face- to- face interviews.

Data analysis involved the use of descriptive statistics and the linear regression model. The main descriptive indicators that were employed were frequency and percentages. The linear regression model was used to test the influence the independent variables they have on income which is the dependent variable in the survey. Linear regression model was chosen because it was found useful in analysing the data to fulfil the researchers aim.



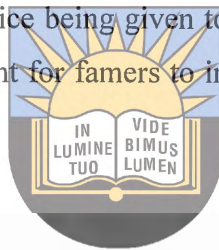
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### 6.2.4 Descriptive analysis

The descriptive statistics results provided information related to demographic and sheep management practices. The descriptive results provided information related to personal information of the household head and household information. The results indicates that the majority of the sampled rural households at Kolomana villages the household heads ages are in the range between 60 and 69 as it is indicated by 25 percent. The educational levels of many household heads are generally low as 17 percent did not attend school at males all. The majority of household heads were males as it is indicated by 59 percent, but the difference was not that big as women household heads were indicated by 41 percent. Most of the households are not employed as 33 percent proves that and 41 percent indicated that their main source of income is (pension) social grant.

All of the household heads indicated that they have access to arable lands but not all of them are producing feed in those arable lands as 87 percent indicates and even in those who do produce feed 11 percent indicates that producing feed is not the culture that they practise as always as it should be practised, they only produce feed in specific occasions. The majority of farmers indicated that they do not provide supplementary feed to their sheep as 88 percent indicates that. These farmers indicated that they have access to range land but it is not properly fenced and 77 percent indicates that the range land is not even divided into camps so that to be able to practise proper sheep management practices such as separation of ewes from rams as 95 percent indicates that they don't separate ewes from rams. These farmers receive extension and veterinary services as they are available and so they utilize the technical advice being given to them by extension and veterinary workers employed by the government for farmers to improve the quality of their wool so that to obtain better incomes.



#### 6.2.5 Linear regression model results

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The linear regression model was used to analyze and test the influence that the independent variables have on dependent variable. The results of the linear regression model revealed that income is influenced by independent variables, but not all independent variables have an influence on income generated from wool sales. These independent variables that are influential on income are age of the household head, marital status of the household head, sheep numbers the household owns, state of fencing on range lands, division of range lands into camps, availability of first milk to lambs and visits by animal health technicians. The explanation for the relationship between the above independent variables and the dependent variable that is income can be summarized as follows:

### **Age of the household head**

Age of household head has a positive relationship with income as it is shown by  $\beta$  value of 0.133. This implies that age of household head is important because is positively influential on income that a farmer obtains by producing wool.

### **Marital status of the household head**

At  $\beta$  value of -0.099 marital statuses of the household heads has the negative relationship with the income. This implies that income that is generated from wool sales is not influenced by marital status of the household head. Income can be generated whether household head is married or not.



### **Number of sheep owned by household**

As indicated by  $\beta$  value of 0.994 in the table in previous sections, number of sheep owned has a positive relationship with the income from wool sales. This implies that higher incomes cannot be realized if there are smaller numbers of sheep owned by household. The income is generated from wool which is obtained from sheep, therefore one need to have many sheep to get larger volumes of wool so that to get higher income.

### **Visits by animal health technicians**

The  $\beta$  value of 0.119 shows that there is a positive relationship between visits by animal health technicians and income that is generated from wool sales. This implies that in order for farmers to produce quality wool they need the technical and medical advice from animal health technicians. This will help the farmers to obtain the good quality of wool which will give them higher incomes.

### **Division of range land into camps**

There is a negative relationship between division of range land into camps and income generated from wool sales this is shown by  $\beta$  value of -0.057. This suggests that there is a negative influence by division of range land into camps on income. Income from wool can be generated whether rangeland is divided into camps or not.

### **State of fencing on range land**

The  $\beta$  value of -0.087 proves that there is a negative relationship between the state of fencing on range land and the income from wool sales. This implies that whether the range land is properly fenced or not, but the income still can be realized from sales of wool that is produced.



### **Availability of first milk to lambs**

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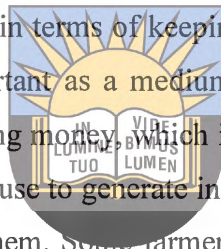
The relationship between the availability of first milk to lambs and income is found to be positive. It is proven by  $\beta$  value of 0.066 that availability of first milk to lambs is important in that it influences the income that is generated from the sales of wool. If the lambs don't get the first milk they can die and that will limit the numbers of sheep the farmer owns and that will result in decreased wool that the farmer will obtain during the shearing season therefore the decreased amount of incomes will be the ultimate result.

From the above summary explanation of the variables, the significant variables that were explained are only those with significant values. They included: age of the household head, marital status of household head, number of sheep owned by households, division of rangeland into camps, state of fencing on rangeland, visits by animal health technicians and availability of first milk to lambs.

Significant variables means that the relationship that exist between dependent variable and independent variables is true and we can claim it as there is sufficient evidence to support that relationship whether it is positive or negative. Other variables which were included in the linear regression model for analysis and test were found to be insignificant in the model as their significance levels were greater than 0.05 and therefore were not discussed.

### 6.2.6 Recommendations

With regard to sheep management practices some farmers in rural areas still use the old traditional techniques of production in terms of keeping their sheep. They do understand that sheep production is very important as a medium of income generation. They just look at their sheep as a tool of making money, which is a right perception but they fail to understand that the same sheep they use to generate income has to be well managed for it to continue generating income for them. Some farmers were found not to dip, vaccinate and dose their sheep until the animals had reached the point of death.



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The excuse they use to brush away the responsibility is that they don't have the dip tanks in their communities and the medicines are expensive therefore the government should provide for them. In order for farmers to stop thinking that their farming is for the government or they do it for government, the government should provide by capacitating farmers through trainings, where the training will focus in certain areas of the prevailing problem and stop implementing the top down approach where they assume and decide on the needs of the farmers without consulting the farmers of extension officers who are the ones who understand and know better the needs of the farmers.

Another problem which was found worrying is the issue of fencing. Rangelands are not fenced and that is the fact that is known by every person who is directly or indirectly involved in agriculture. Livestock production cannot do well if the rangeland where they are kept is not properly fenced. Government should consider fencing the rangelands especially those in rural areas where farming is the source of income for many households.

Also farmers meanwhile the government is still distant from them in terms of helping them they should try and organize themselves to form cooperatives or any legal entity so that to be legally recognized as the commodity group of specific field of agriculture. This will help them to apply for funds from different government departments and non-government organizations. Also farmers need to be educated about the importance of being independent and stop to depend on government for their farming. There are farmers who were emerging farmers for more than fifteen years and they still need government to financially support them in their farming. Such farmers are supposed to be commercial farmers by now.

These were the key constraints that the researcher find pressing regardless of what the farmers indicated in the study. There are other problems such as unavailability of shearing sheds and dip tanks in two villages, but those are not as pressing as unavailability of fencing on rangelands because fencing is one factor that influences most of sheep management practices.



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### 6.3. Areas for further research *Together in Excellence*

This study only focused on sheep management practices, opportunities the Kolomana wool farmers have as well as the constraints they faced with in terms of wool production. Further study or research is required to assess the impact that the improved rams they have on sheep improvement which are provided to farmers of rural communities by the government in conjunction with NWGA through ram exchange scheme. Some farmers claim that these rams that are provided to them by NWGA are not as good as the government and NWGA officials claim. Also there is a need for research on finding why there are no proper funding that aim at wool producing farmers as the sole commodity since there are some funding available for other commodities in The Department of Rural Development and Agrarian Reform. This will help wool farmers to head to a right direction in terms of improved wool production.

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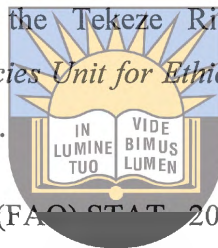
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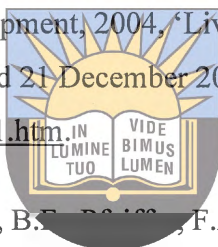
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## APPENDIX 1

### Questionnaire for Assessing Socio-Economic Factors Influencing Wool Production in Kolomana Villages of Eastern Cape, South Africa

*Note: This questionnaire is for assessing socio-economic factors influencing wool production in Kolomana villages of Eastern Cape, South Africa. The researcher is a student in University of Fort Hare. The information that will be given by the respondents is strictly confidential and will not be disclosed to any other entity without the permission of the respondents.*

#### BACKGROUND INFORMATION

Date (optional).....

Questionnaire no.....

Interviewer (optional).....

Name of village.....



#### A. DEMOGRAPHICS

*Fill in the relevant information and where possible mark with an X.*

**A.1 What is your gender?** **University of Fort Hare**  
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1: Male	2: Female
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**A.2 What is your age?.....**

**A.3 Which of the following best describes your marital status?**

1: Single	2: Married	3: Widowed	4: Divorced
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**A.4 What is the size of your family?.....**

**A.5 Choose the appropriate and answer the following?**

Level of education	Number of years spent in school
1: Tertiary level	
2: Secondary level	
3: Primary level	
4: No formal education	

**A.6 What is your employment status other than farming?**

1: Pensioner	
2: Employed	
3: Unemployed	

**B. ARABLE LAND AND SHEEP**

**B.1 How many sheep do you have?.....**

**B.2 Do you have access to arable land?**

1: Yes		2: No	
--------	--	-------	--

**B.3 How did you obtain access to the land?**

1: By virtue of being a resident	
2: Inherited	
3: Bought	
4: Rented	
5: Borrowed	



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**B.4 Do you produce feed on your land?**

1: Yes		2: No	
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**B.5 How often do you produce feed on your land?**

1: Always		2: Sometimes		0: Never	
-----------	--	--------------	--	----------	--

**C. SUPPLY OF FEED**

**C.1 Do you give supplementary feed to your sheep?**

1: Yes		2: No	
--------	--	-------	--

**C.2 Is the diet formulated by the professional nutritionist?**

1: Yes		2: No	
--------	--	-------	--

**C.3 Which time /season of the year do you give supplementary feed to your sheep?**

1: Autumn		2: winter		3: Spring		4: Summer		5: All the seasons		0: Never	
-----------	--	-----------	--	-----------	--	-----------	--	--------------------	--	----------	--

**C.4 Why are you giving supplementary feed to your sheep?**

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

**C.5 Which feed/s do you supply to your sheep?**

.....  
 .....

**D. RANGE LAND**

**D.1 Do you have access to range land?**

1: Yes	<input type="checkbox"/>	2: No	<input type="checkbox"/>
--------	--------------------------	-------	--------------------------

**D.2 How did you get access to range land?**

1: By virtue of being a resident	<input type="checkbox"/>
2: Inherited	<input type="checkbox"/>
3: Bought	<input type="checkbox"/>
4: Rented	<input type="checkbox"/>
5: Borrowed	<input type="checkbox"/>



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**D.3 Which of the following best describes the usage of the range land?**

1: Communally	<input type="checkbox"/>	2: Privately	<input type="checkbox"/>
---------------	--------------------------	--------------	--------------------------

**D.4 Is the range land in terms of capacity and availability of natural feed enough to accommodate and feed your sheep?**

1: Yes	<input type="checkbox"/>	2: No	<input type="checkbox"/>	3: Don't know	<input type="checkbox"/>
--------	--------------------------	-------	--------------------------	---------------	--------------------------

**D.5 Are there any problems that you encounter on the range land?**

1: Yes	<input type="checkbox"/>	2: No	<input type="checkbox"/>
--------	--------------------------	-------	--------------------------

**D. 6 Which of the following problems that are mostly common?**

1: Undivided rangeland into camps/ Demolished fencing	<input type="checkbox"/>
3: Destroyed vegetation on rangeland by people crossing	<input type="checkbox"/>

**D. 7 What/who causes these problems?**

.....  
 .....

**D.8 What must be done to prevent these problems from occurring?**

**D.9 Who must be responsible for making sure that these are done?**

1: Community members		2: Sheep farmers	
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**E. WATER AND FENCING**

**E.1 Do your sheep have access to clean water?**

1: Yes		2: No	
--------	--	-------	--

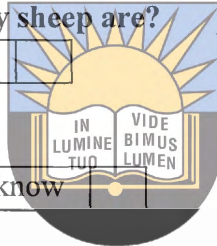
**E.2 If not, where do your sheep get water from?**

**E.3 The sources of drinking water for my sheep are?**

1: Dam/pond		2: River/spring	
-------------	--	-----------------	--

**E.4 Is the range land properly fenced?**

1: Yes		2: No		3: Don't know	
--------	--	-------	--	---------------	--



**E.5 If not, how do you keep your sheep from straying?**

**E.6 How do you describe the state of the fencing?**

1: Good		2: Fair		3: Bad	
---------	--	---------	--	--------	--

**E.7 Is the range land divided by fence into camps?**

1: Yes		2: No	
--------	--	-------	--

**F. BREEDING AND LAMBING**

**F.1 Which breed of ram do you use for breeding?**

1: Merino		2: Dohne merino		3: Don't know	
-----------	--	-----------------	--	---------------	--

**F.2 Where did you get the ram?**

**F.3 Do you separate the ram from ewes?**

1: Yes		2: No	
--------	--	-------	--

**F.4 When do you join the ram with ewes?**

1: Autumn		2: Winter		3: Spring		4: Summer		5: All year round	
-----------	--	-----------	--	-----------	--	-----------	--	-------------------	--

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**F.5 Why do you join your ram with ewes in that season?**

.....  
 .....

**F.6 Which season do your ewes lamb?**

1: Autumn	2: Winter	3: Spring	4: Summer	5: Any season	
-----------	-----------	-----------	-----------	---------------	--

**F.7 Where do your ewes lamb?**

1: In the kraal	2: On the range land	
-----------------	----------------------	--

**F. 8 Do the lambs get the first milk after birth?**

1: Yes	2: No	3: Don't know	
--------	-------	---------------	--

**G. HEALTH AND SUPPORT**



**G.1 Do you vaccinate/ dose your sheep?**

1: Yes	2: No	
--------	-------	--

**G.2 When do you dose/vaccinate?**

1: When sheep is sick	2: Follow my program	3: Depend on government program	
-----------------------	----------------------	---------------------------------	--

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**G.3 Do you dip your sheep?**

1: Yes	2: No	
--------	-------	--

**G.4 Is there any dip tank in your community?**

1: Yes	2: No	
--------	-------	--

**G.5 Where do you dip your sheep?**

.....

**G.6 Do animal health/ extension technicians visit to give you advice?**

1: Yes	2: No	
--------	-------	--

**G.7 How often do they visit you?**

1: Once per week	2: Once per fortnight	3: Once per month	
------------------	-----------------------	-------------------	--

**G.8 Are the officials available when you need them?**

1: Always	2: Sometimes	3: Never	
-----------	--------------	----------	--

## H. SHEEP SHEARING

### H.1 Do you shear your sheep?

1: Yes		2: No	
--------	--	-------	--

### H.2 Who shear your sheep?

1: Myself		2: Hire someone	
-----------	--	-----------------	--

### H.3 If you hire someone, how much do you pay per sheep?.....

### H.4 Which one is appropriate?

1: Shear my sheep in a shearing shed	
2: Shear my sheep in an old building	
3: Shear my sheep out side	

### H.5 Do you clean your shearing area/space before shearing begins?

1: Yes		2: No	
--------	--	-------	--



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### H.6 Which one is appropriate?

1: Wash/scouring wool before I sell it.		2: Sort, class and bale wool before I sell it	
---	--	---	--

### H.7 Which one is appropriate?

1: Use plastic bags to keep and bale wool		2: Use wool packs to keep and bale wool	
---	--	---	--

## I. MARKETING

### I.1 Do you have access to market?

1: Yes		2: No	
--------	--	-------	--

### I.2 Which one is appropriate?

1: Use formal market to sell my wool		2: Use informal market to sell my wool	
--------------------------------------	--	--	--

### I.3 Where do you sell your wool

1: BKB		2: CMW		3: Locally	
--------	--	--------	--	------------	--

### I.4 Which month do you sell your wool?.....

### I.5 Which one is appropriate?

1: Sell individually		2: Sell as a group	
----------------------	--	--------------------	--

**I.6 Do you always find the market for your wool?**

1: Yes		2: No	
--------	--	-------	--

**I.7 If no, what do you do with your wool?**

.....

.....

**I.8 How is you wool moved to the market?**

1: Own transport		2: Hired transport		3: Buyers transport	
------------------	--	--------------------	--	---------------------	--

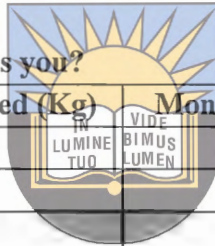
**I.9 Do you know how much does it cost to transport your wool?**

1: Yes		2: No	
--------	--	-------	--

**1.10 If yes, how much?.....**

**I.11 Which of the following best describes you?**

Year	Sheep shorn (N)	Wool obtained (Kg)	Money obtained (R)
2007			
2008			
2009			
2010			
2011			



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*N=Number*

*Kg=Kilogram*

*Rand*

**END OF THE QUESTIONNAIRE**