

Assessing the status of livestock production in the Mhlontlo Local Municipality in the Eastern Cape Province

by

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Declaration

I, Siyanda Ntweni, solemnly declare that this project is my own work, and that by means of references, have acknowledged all the sources used, that it has not been submitted to any other university for the attainment of any degree and that it complies with the Central University of Technology, Free State code of ethics and academic integrity.

Signed:

Date: 3 November 2023

Acknowledgement

All glory to God almighty and my ancestors for allowing me to complete this study. I would like to thank God and my ancestors for infusing me with the wisdom and courage to lead this project to its conclusion.

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Dedication

This thesis is dedicated to my mother, Nokwethu Ntweni and my late father Gqubhuza Ntweni. Despite not having formal education, your love and respect for education have kept me afloat and inspired throughout my life. Your aspirations and dreams have indeed come true. “*Ndibamba ngazo zozibini, Maz’enethole*”.

List of Abbreviations

Agri-SETA	Agricultural Sector Education and Training Authority
AIDA	Animal Identification Act
ARC	Agricultural Research Council
ATM	Automated Teller Machine
CASP	Comprehensive Agricultural Support Programme
DAFF	Department of Agriculture, Fisheries and Forestry
DARD	Department of Agriculture and Rural Development
FAO	Food and Agricultural Organizations
GDP	Gross Domestic Product
GFRAS	Global Forum for Rural Advisory Services
GRSA	Government of the Republic of South Africa
ISRDS	Integrated Sustainable Rural Development Strategy
LDS	Livestock Development Strategy
MDP	Mngcunube Development Programme
MLM	Mhlontlo Local Municipality
NAMC	National Agricultural Marketing Council
NDA	National Department of Agriculture
NDP	National Development Plan
NERPO	National Emergent Red Meat Producers

NGO	Non-Government Organization
SAR	South African Republic
SAWS	South African Weather Services
SPSS	Statistics Package for Social Sciences
Stats SA	Statistics South Africa
USAID	United States Agency for International Development
BKB	Boere Makelaars Beperk
CMW	Cape Mohair and Wool

Abstract

Title of thesis: Assessing the status of livestock production in the Mhlontlo Local Municipality in the Eastern Cape Province.

This study assessed the status of communal livestock production in the Mhlontlo Local Municipality. The study participants were farmers who kept one or all the three ruminants (goat, sheep, and cattle). Using a convenience sampling method, in which participants were selected based on availability and willingness, data were collected using a structured questionnaire, which consisted of open and close-ended questions to interview a total of 60 farmers. Collected data were captured and coded using Microsoft Excel and analysed by using the SPSS program.

The results from the demographics indicate that the average age was 57.7 years. The majority of respondents were male as the ratio of male to female was 83% to 17%. Only 15% of the respondents had a university or college education and the rest had either no education (45%), primary education (20%) and secondary education (20%). Of the farmers with no education, 56.7% were literate while the rest were illiterate.

The study further revealed that respondents were confronted with management challenges such as animal health and nutritional challenges, poor record keeping and poor livestock theft prevention strategy. The study reports that all the respondents (100%) had no control over breeding and mating. Only 25% of cattle respondents owned bulls, while 58% of the sheep farmers owned rams. The average calving rate was 43.8%, lambing rate 95% and kidding rate was 70.3%. Calve mortality was 24%, kid mortality was 37% and lamb mortality being 38.5%. Other production constraints included predation, theft, poor grazing land, drought, and diseases. The most dominant marketing channel was private sales (64.5%), followed by butcheries (16.1%), speculators (12.9%), auction (3.2%), abattoir (2.2%) and retail stores (1.1%). Marketing challenges experienced were poor road infrastructure (30.6%), high transaction costs (18.5%), no bank account (10.2%), poor quality animals (9.2%), poor signal reception (8.3%), discount entitlement (8.3%), lack of handling facilities (5.6%), ownership verification challenges (5.6%) and gender stereotypes (3.7%). Government intervention included provision of feed, vaccination remedies, extension services, dip, and other veterinary services.

The study recommends farmer training to equip them with key farm management knowledge.

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1. Chapter One: Background of the study

1.1 Introduction

About 30% of the earth's land surface is utilized for livestock production (Thornton, 2010). In South Africa, Goni et al. (2018), Coetzee et al. (2005) and Meissner et al. (2013) mentioned that about 70% of agricultural land is suitable for livestock production. In developing countries, particularly in the Southern African regions, livestock production is a crucial aspect of communal agriculture (Schwalbach et al., 2001). It plays a critical role in the economy of South Africa, particularly in rural areas (Katikati, 2017; Ngqulana, 2017). According to Shackleton et al. (2005), communal livestock owners keep animals for subsistent purposes such as for meat and milk consumption and as a source of income. For rural farmers, livestock represent a form of investment that can quickly be converted to cash and are kept for their provision of animal traction, manure, cash sales and many other socio-economic functions (Shackleton et al., 2005; Musemwa et al., 2010; Goqwana, 2008). Powell et al, (2004) and Peden et al., (2009), reported that livestock production is useful because it compliments cropping activities in that it provides manure, which is necessary for the maintenance of soil fertility, draught power needed for cultivation, transport, cash, and food. The generated cash is often used for various reasons which include purchasing of inputs for cropping reasons, payment for the education for children, purchasing medical remedies for sick animals, remuneration for workers, amongst others. (Muchenje et al., 2008). In the Eastern Cape, the occurrence of drought dictates that the people of this province depend on livestock and their products for livelihoods (Musemwa et al., 2008). For this reason, the Integrated Sustainable Rural Development Strategy (ISRDP, 2004) identified agriculture, especially livestock production, as the most viable means to improving food security in the rural communities and thereby eradicating poverty in the poor rural areas.

Jooste (2001) stated that a third of livestock production in South Africa comes from small scale and communal farmers. However, the highest regional contribution is found in the Eastern Cape (Goni et al., 2018; DAFF, 2019). The province contributes 24% cattle, 38% goats and 29% sheep of the total livestock numbers in South Africa.

Moreover, many of these livestock come from the communal lands in the Eastern Cape. DAFF (2006) states that 78% cattle, 40% sheep and 77% goats in the Eastern Cape originate from communal livestock production. According to Coetzee et al. (2005), in 2003, the Eastern Cape Department of Agriculture identified livestock development as a critical component of rural development and a potential mechanism to create income for rural communities and thereby addressing the problems of poverty and the enhancement of the livelihoods of the poor rural people. The above authors argued that in order that the potential contribution of the livestock production sector is realized and to improve the lives of the poor in the rural areas, there is a need to investigate and effect the establishment of the strategies linked to market access and a government supportive institutional conducive environment. Table 1.1 and Table 1.2 below show livestock numbers in the respective provinces of South Africa.

Table 1.1: South African livestock numbers (2018-2019)

Province	Cattle		Sheep		Pigs		Goats	
	Aug-18	Feb-19	Aug-18	Feb-19	Aug-18	Feb-19	Aug-18	Feb-19
	Thousands							
Western Cape	507	503	2 663	2 651	159	155	207	209
Northern Cape	442	441	5 496	5 402	20	20	474	468
Free State	2 178	2 130	4 510	4 486	114	115	217	215
Eastern Cape	3 145	3 126	6 630	6 593	88	85	2 073	2 061
KwaZulu-Natal	2 481	2 444	680	664	144	145	702	693
Mpumalanga	1 279	1 266	1 606	1 559	116	112	81	80
Limpopo	936	922	213	209	350	343	953	927
Gauteng	246	246	90	88	156	156	28	25
North-West	1 574	1 561	611	606	306	289	668	668
Total:	12 788	12 639	22 499	22 258	1 453	1 420	5 403	5 346

Source: DAFF, 2019

Table 1.2: Livestock numbers in the communal lands of the Eastern Cape Province in 2003

<i>Livestock class</i>	<i>Provincial herds numbers</i>	<i>% of national herds</i>
Cattle	1 781 617	13.1%
Sheep	2 706 576	10.6%
Goats	1 832 461	76%

Source: Coetzee et al., 2005

Ngqulana (2017), Fourie et al. (2018), Goni et al. (2018) and Duvel and Stephanus (2000) seem to find a consensus on the kind of constraints that communal and small-scale farmers are faced with. These constraints include diseases, overgrazing, scarcity of water (due to drought and overstocking), theft, inadequate and lack of information about the available markets, veld fires, lack of credit, limited money to buy input costs, poor management practices, lack of institutional support such as research (Coetzee et al, 2005), poor infrastructure, amongst others. Some of these constraints are production-related. These include poor animal husbandry, slow growth, high mortality rate, low conception rates, delays of mating, long lambing- and calving period and low slaughter weights (Mahlako, 2018).

Numerous researchers have reported that a vast number of livestock is found in the communal sector in the Eastern Cape, thus indicating that there is a potential to improve production, also emphasizing for the need to investigate the constraints, current practices and the opportunities that exist to ensure poverty alleviation through increased livestock production.

1.2 Problem Statement

Livestock production plays a significant role in the alleviation of poverty in rural areas and contributes to the development and improvement of the livelihoods of the rural people in general (Ngqulana, 2017). Sotsha et al. (2018) recognized livestock production as a useful commodity for the provision of the income and development of rural lives. Moyo et al. (2010) reported that livestock production is revered for its ability to provide food, income, and other social benefits to the rural poor.

According to DAFF (2017), livestock is produced throughout the country. The Eastern Cape has the highest numbers of livestock compared to other parts of the country, whilst the biggest contributor is the communal livestock production sector (DAFF, 2019). However, communal livestock farmers do not enjoy high returns in production. The Eastern Cape is cited as the poorest province in South Africa, and rural people are mostly affected. Thus, the question arises as to why this continued being the case when many studies revealed the Eastern Cape to be a province that has the highest number of livestock of all provinces? The fact that the highest numbers are concentrated in the communal farming sector in the Eastern Cape indicates that there are opportunities to optimise production and ensure increased income from production.

Very little research has been done in the Mhlontlo Local Municipality. Much research has been conducted to uplift rural development through agriculture, although some of the studies have failed to provide progressive recommendations that will be necessary to improve production in the rural areas. Problems of communities are not entirely the same, hence a need for this research in this municipal area. Geussens et al. (2019) indicated that a solution to communal livestock challenges must be situation-specific and not be “one size fits all”.

There is, therefore, a need to investigate the constraints and current practices of regional livestock farmers, and to evaluate the government- and extension services in an effort to determine what opportunities exist to maximize production that may lead to increased financial returns, reduced poverty and therefore, improve the livelihoods of the people of the Mhlontlo Local Municipality.

1.3 Motivation and significance of the study

Livestock production plays a crucial role in the livelihood of society and the rural communities in particular. There is an overwhelming need for researchers and government to continually seek methods to improve livestock production in the communal farming for the benefit and betterment of the lives of the rural population.

While social problems differ from one place to another, there are, however, some similarities. These similarities would then qualify the study findings to extend beyond the regional demarcations of the municipality, and most of its recommendations can be implemented in other municipalities where communal livestock production in particular, and agriculture in general, are practised. This research will also determine the constraints, potential and opportunities that exist for communal farmers. In order that problems can be solved, a thorough investigation and interrogation are critical so that exact problems may be revealed, and appropriate solutions be proposed. The government and municipalities may, therefore, use these research findings to ensure productive deployment of their limited resources to the advantage of the community.

The National Development Plan (NDP) of the Government of the Republic of South Africa envisages a poverty-free country by 2030. The government recognized livestock production as one of the viable ways to address food insecurities in the country and to develop rural communities. For this reason, DAFF (2013) aims at promoting livestock development and the reduction of poverty through increased production and the stimulation of economic activity from Agriculture. The findings of this study may then be used towards the achievement of some of these national imperatives as envisaged by the government.

This research will assist in providing solutions and recommending educated views to various strategic areas of improvement and challenges facing farming in rural areas. Furthermore, this research will assist in the destruction and or reformism of the old and traditionally held methods of production employed by many rural farmers which are not productive. The research will again assist in determining whether the potential to expand and develop rural farming exists and to what extent should the government intervene.

1.4 Research question

This study addresses the following question: To what extent does livestock production contribute to the development of the lives of the people of Mhlontlo Local Municipality and what opportunities exist for growth?

1.5 Aim of the study

The main aim was to study and assess the status of the communal livestock production in the Mhlontlo Local Municipality of the Eastern Cape Province.

1.6 Sub-objectives

The following sub-objectives have been identified:

- To determine the current practices of rural farmers;
- To determine the constraints/challenges faced by communal farmers that impede on increased production and profitability;
- To investigate the extent of the intervention of government, extensionists as well as municipal agencies; and
- To make recommendations to government to improve farm support systems.

1.7 Hypothesis

1. Government support systems for the rural farmers in the Mhlontlo Local Municipality do exist.
2. Rural livestock farmers in the Mhlontlo Local Municipality are confronted with numerous constraints.

2. Chapter Two: Literature Review

2.1 Introduction

This chapter reviews several main topics, namely, livestock production in the communal farming areas of the country, the role of agricultural extension in the communal areas, constraints/challenges faced by rural farmers, management skills and systems of these farmers, government support systems, and marketing practices in the communal areas.

2.2 An overview of livestock (ruminants) production in South Africa

Livestock production plays a critical role in the socio-economic development of rural people. In South Africa, the livestock production sector is diverse with different livestock species which include ruminants such as goats, sheep, and cattle. In a study on the number of households involved in agricultural activities conducted by the Stats SA (2013), KwaZulu-Natal was found to be the province with the highest number (or percentage) of households involved in agricultural activities. However, the Eastern Cape was cited as the province with the most livestock numbers (30%), followed by KwaZulu Natal and Limpopo. According to DAFF (2019), there were 12 788 000 cattle, 22 258 000 sheep and 5 403 000 goats in South Africa in 2019. Of these numbers, DAFF (2019) reported that 24% of cattle, 29% sheep and 78% of the goats were concentrated in the Eastern Cape. According to Stats SA (2016), there was a decline in the number of South African households engaged in agriculture. The number declined from 2.88 million in 2011 to 2.33 million in 2016, essentially signalling a decrease of 19.1% (Stats SA, 2016).

2.2.1 Small-stock production (sheep and goats)

Loubser (2018) documented that South Africa had more than 30 million heads of small-stock before the 1933 drought. However, there has been a decline in the number of small-stock in the country thereafter. Communal farmers keep small-stock for reasons connected to the ease of conversion to cash to meet immediate cash demands (Jordaan, 2012). Despite threats of predators and theft, there is a growing

shift towards small-stock production in South Africa (Loubser, 2018). One of the main reasons for this phenomenon is because most communal farmers have seen opportunities in the wool industry, particularly those farmers that keep sheep. According to Coetzee et al. (2005), in 2003, the Eastern Cape Department of Agriculture identified a need for the development of the livestock farming for small scale and communal farmers as a potential mechanism for generating income and therefore eradicating poverty and enhancing the livelihood of the poor rural communities. These efforts are, however, constrained by stock and wool theft, resulting in significant losses for the communal farmers.

In most cases, communal sheep owners are exploited by speculators who erode the wool of vulnerable farmers because these farmers usually do not know the available markets to which they can sell their wool (Venter, 2017). According to Coetzee et al. (2005), small-stock is kept throughout the country. However, opportunities for growth are highest in the Eastern Cape since most formal wool markets are in the province. Small-stock farmers generate income from wool and mohair and there is a growing shift towards wool importance. Goqwana et al. (2008) documented that the government has been instrumental in the provision of the shearing shed services, pest, and disease control in the communal areas. These authors also emphasize that the provision of sound extension services is critical in improving small-stock production in the communal lands. Ngqulana (2017) points out that fibre production is a crucial activity, with a potential to maximize output and enhance value. In order that wool improvement can materialize, factors such as shearing, classing, and packaging are essential. Communal farmers usually receive poor wool prices due to poor shearing, classing, and packaging practices. Formation of one or more wool association(s) is critical in that shearing facilities such as sheds, shearing scissors, proper classing and packaging of wool are vital as these largely determine the price that a farmer gets from the formal markets such as auctions (Coetzee et al., 2005).

2.2.2 Cattle production

There has been a decline in the number of cattle produced in South Africa between the period of 2012 and 2019. According to DAFF (2012), there were 13 853 000 cattle in South Africa in 2012. This number consists of commercial and communal

production. In 2019, the total number of cattle in the country declined to 12 788 000. Highest numbers of these cattle are concentrated in the KwaZulu-Natal and Eastern Cape rural provinces. Climate was given as the most significant influence on the reduction in numbers (DAFF 2019). South Africa was engulfed in drought in the period of 2015 to 2016. This drought severely affected cattle production in major producing parts of South Africa. According to Mmbengwa et al. (2015), communal livestock farming is generally extensive. The extensive nature of this system makes it vulnerable to climate change. Of the 12 788 000 number of cattle in South Africa, 3 145 000 are in the Eastern Cape, making 24% of the South African total. Of the 3 145 000, 78% is found in the communal sector. Stats SA (2016) revealed 3.1 million cattle in the Eastern Cape, totalling 22% of the national total. Of the 3.1 million, 65% was found in the communal lands. As seen, even though there has been a decline in the number of cattle, the contribution from communal production in the areas of the Eastern Cape continues to increase, from 65 % in 2016 to 78% in 2019 (DAFF,2019). According to Stats SA (2016), 84% of communal farmers owned between 1 and 10 cattle, and only 16% owned more than 10 cattle. According to Mmbengwa et al. (2015), most communal farmers faced problems related to production and income from their animals. Coetzee et al. (2005) ascribed the lack of market access as the causative factor to the problems indicated by Mmbengwa et al. (2015).

Cattle farming in the communal areas is considered as the means to, among others, provide animal traction, a symbol of wealth, social significance such as payment of bride-worth, slaughtering in ceremonies, particularly funerals, church, and initiation celebrations (Montshwe, 2006). Cattle farming is barely (in the context of rural farming) perceived as an operation from which cash must be generated. Sugimura (2007) argued that the cardinal idea of rural farming is not premised on profitmaking, not about job creation, profit maximization and profit-focused production, but rather a simple commodity production. That is, the nature and character of communal farming are not profit-driven but seek to ascertain food security. Van Wilgen (2009), highlighted nutrition, disease prevention and control, herd management and veld management as critical improvement areas, and advised of the importance of ensuring the establishment and formation of farmer groups and associations to escape high costs, especially those associated with animal health medicines.

2.3 Overview of the Government support systems in communal areas

There are relatively few industries in the Eastern Cape Province, thus, agriculture is the primary economic activity (Stats SA, 2013). For this reason, the government has focused its attention on the development of the rural province through support systems that encourage agricultural activities (Coetzee et al., 2005 as cited in ECDALA, 2003). The NGOs, donors and private sector organizations also assist rural business (Aliber et al., 2005). In developing countries, farmers are constrained by challenges connected to support services deliveries. These services include health services, extension, education, and training (Jenjezwa & Seethal, 2014).

The Department of Agriculture, Forests and Fisheries (DAFF), through its Comprehensive Agricultural Support Programme (CASP), provides support to subsistent and household farm producers. Communal farming thus benefits from this Programme (Goni et al., 2018). Aliber et al. (2002) argued that more attention and programs should be designed and targeted to rural areas. Many NGOs and private sector organizations assist during natural disasters, training farmers on farmer education, provision of water during drought, facilitate animal health programs, amongst others. In a study undertaken in the Eastern Cape, Jenjezwa and Seethal (2014) revealed that there is inadequate support staff. During vaccinations and testing programs, this shortage leads to the reduction in the efficiency of service delivery and thus making the program take longer to complete. As a result, Jenjezwa and Seethal (2004) further argue that animal health technicians fail to accommodate all the needs of the farmers. According to Van Wilgen (2009), the state provided many of these services, including the policy on dipping services. However, the delivery of these programs is often constrained by factors such as poor roads in the communal areas, lack of transport, and poor network signal leading to extension officers and government officials being discouraged (Morton & Wilson, 2000). In most cases, according to Morton and Wilson (2000), government and extension services are focused on crop production and, therefore, livestock production is neglected.

Access to veterinary services, as provided by government, is limited. According to Belay et al. (2013), lack and limited access to government veterinary services have led farmers resorting to traditional medicines and these medicines have produced poor results. According to Ngqulana (2017), in the Eastern Cape, the Mngcunube Development Program (MDP), whose mandate was to assist rural farmers with information and medicines struggled because farmers did not understand what it was about. Belay et al. (2013) mentioned that any program aimed at developing people is bound to fail if people do not understand the objectives of the initiative.

Furthermore, ComMark (2009) introduced a Red Meat Project in the Eastern Cape. The project was an intervention whose objective was to increase income for the communal livestock farmers in the province as the province has always been known as one that had a large number of livestock in the communal areas. The idea was to ensure that communal livestock owners received better prices for their animals through participation in formal markets. According to ComMark (2009), the project had challenges which included the lack of control over grazing and herd management by farmers which impede on increasing in the production of animals for commercial purposes. Most communal farmers are elderly people who see no need in changing the purpose for which they keep animals and the attitude of some individuals within municipalities who often stifle the prospects of success for the project.

2.4 The role of agricultural extension services in communal livestock production

Agricultural extension is central to agricultural development of smallholder and communal farmers in South Africa. There is a consensus on the definition of extension by many authors. Sebeho (2017) argued that the principal philosophy in agricultural extension is the approaches and techniques used to help farmers with their information needs. Anderson and Feder (2007) defined extension as a form of education that delivers new knowledge, information, and emerging technologies to farmers. Richardson (2006) further argued that extension must therefore respond and solve problems connected to agricultural production, addressing skills shortages and introduce farmers to the new technologies objectively aimed at improving

production. Akpalu (2013) contends that agricultural extension can be used by livestock farmers to ensure the conservation of natural and agricultural resources through the formation of livestock associations. Information such as feeding practices, pasture management, and control of animal diseases are some of the critical aspects that farmers learn through extension services (Kiptot, 2015). However, in South Africa, Duvel and Stephanus (2000) reported an escalating concern and dissatisfaction on the failure of extension officials to deliver services. This has led to a loss of confidence in the credibility and competency of the extension services in South Africa and the subsequent fading trust and commitment from extension officers (Sebeho, 2017). Lack of accountability and systematic evaluation of the work of the extension services has further aggravated the attitude that farmers have on the role of extension even when there has been a success due to lack of tangible evidence. According to Purnomo and Lee (2010), how an individual extension officer perceives problems, his/her motivation, and the depth of the knowledge about agricultural information, influences how farmers perceive the usefulness of the services delivered by the extension officer. There is a need therefore, according to Terblanche (2010), to rethink and reconsider the extension approach. Clinton and Barker (2007) suggested how changes in extension systems should be introduced so that relevant and vital information is delivered to the farmers. He proposed the following approach to improving extension:

- Changes in the methods and approaches to extension,
- Retraining and re-evaluation of extension officers,
- Revision of the content of extension services, and
- Attitude towards the current practices and knowledge.

The urgent need for the moulding of the new extension officer derives from the discovery that the current knowledge on extension service requires new capacities to respond appropriately to the new problems and developments in agriculture such as the decline in the quality and availability of water, uncertainty in both markets and climate, the rate at which soil degrades (Toillier et al., 2015).

The other problem, according to Terblanche (2010), is that extension is usually treated as a once-off activity of disseminating essential information to farmers. Extension is an ongoing process of rigorously assisting farmers with skills, information, and technologies to manage their production enterprises better. Despite extension not being ranked as the most reliable source of information by farmers, it still has a significant role to play to improve the development of communal livestock farming (Ngqulana, 2017). This perception is confirmed by Anderson (2008), whereby it is stated that extension has a significant role to play in minimizing the gap between farmers and research. It assists the farmers to adapt to the dynamic changes in the agricultural sector and offers an approach on how new technology can be adapted to survive severe agricultural conditions. Therefore, it assists in simplifying information from research to farmers and in explaining the constraints and problems from the farmers to research institutions. Nnenna and Obadike (2011) indicated that extension disseminates information through the internet, cell phones, group discussions, radio, and television.

2.5 Programs to improve communal livestock production in the Eastern Cape

According to Jordaan (2012), there has been consensus among the experts within the field of extension about the development of mentoring programs to assist the emerging and communal farmers with the necessary information required to improve their production. He further argued that experienced commercial farmers and researchers are strategic forces through which this can be realized.

The National Department of Agriculture (NDA) (2007) identified livestock as crucial and central to the development of rural communities. For this reason, a Livestock Development Strategy (LDS) was formulated. The LDS identified implementable programs and tasked the Agricultural Research Council (ARC) and National Emergent Red Meat Producer's Organization (NERPO) to facilitate the implementation of the strategy. The ARC was tasked to develop a program that would see to the marketing access by emerging farmers. The primary objective was to ensure the availability of the marketing opportunities for emerging and communal livestock farmers so that these farmers could partake in the formal red meat value

chain (NDA, 2007). NERPO was tasked to identify smallholder farmers and offer them technical support services ranging from production to marketing of their livestock. This program identified access to marketing as the ultimate point if communal farmers must graduate from subsistence to commercial farming. For this reason, in the Eastern Cape, two programs (Red Meat Project and Mngcunube) were introduced as will be discussed below.

2.5.1 The Eastern Cape Red Meat Project

ComMark Trust, which was a development trust in the Eastern Cape, identified poor development programs. Most of the cattle in the Eastern Cape were found in the rural communities, thus, the Eastern Cape was the first province to benefit from the program. The main objective of the programme as cited by ComMark (2009) was “to increase the income of communal cattle farmers by assisting them in realising higher prices for their cattle”. It is clear, according to Ngqulana (2017) that the underpinning objective here was to motivate communal farmers to take an active role in the formal Red Meat marketing channels. Following analysis in the Eastern Cape by ComMark in 2005, in an attempt to develop a consolidated programme for the communal farmers in the province, urgent challenges were identified. These problems included a market linkage programme, a training programme for rural farmers and the promotion of better animal husbandry. With the help of this project, farmers were exposed to grading, classifications, market systems and abattoir procedures. Through this project, major achievements were realized since farmers became aware of the existence of formal markets and the farmers’ perceptions of formal markets were transformed. According to ComMark (2009), the objective is that communal farmers may succeed and be transformed to commercial farmers, gain knowledge about the formal market process, and develop the ability to negotiate with the buyer, and other essential aspects. In assisting the communal farmers in the Eastern Cape, ComMark identified activities that must be implemented and listed them as organizing training days, and trips to commercial auctions and abattoirs. During the training days, the emphasis was on the economic importance of selling animals when animals are young other than the traditional way of keeping the animal and selling it later when it is old. Communal livestock farmers conservatively used informal marketing channels in the village to market their animals. The task of the

Eastern Cape Red Meat Project carried by ComMark involved drawing the market to the villages by organizing auctions and bringing regular buyers to the villages. By November 2006, 1 600 cattle were sold in the formal markets (ComMark, 2009). However, according to ComMark (2009), this project, like any other, was not immune to challenges. Several challenges characterized the project. Some of these challenges included the following:

- The communal land tenure systems and the resultant lack of control over grazing conditions and herd management make it very difficult for the individual farmer to increase the production of animals for commercial purposes,
- Communal farmers are typically elderly retired men who are not career farmers and so often do not see the value in changing their ways or the use for which they keep cattle, and the
- Attitudes of individuals within the municipalities and extension officers have a significant impact on the involvement of the NDA, and therefore the implementation of the programme.

The project also achieved numerous successes in the province listed as follows:

- A market approach to the red meat sub-sector is now on the list of the Department of Agriculture and Rural Development,
- Higher prices are starting to be realized by emerging farmers,
- Farmers have gained an understanding of market-related pricing and grading,
- Farmers are beginning to understand the value of selling young stock and the numbers of weaners presented at sales points are increasing steadily, and
- ComMark's program has involved the traditional authorities. Negotiations with these authorities have helped to shape and define the program.

Due to budgetary constraints, ComMark Trust ceased the program. It was taken over by the National Agricultural Marketing Council (NAMC) and has expanded to other provinces in the country.

2.5.2 Mngcunube Development Program

According to Burgess (2016), a livestock development program was initiated in the Eastern Cape as a strategic intervention to develop livestock farmers in the former Transkei. Elundini District Municipality was the first in the province to benefit. The primary aim of the program was the identification of the constraints that hindered the developmental prospects of communal livestock farmers. Burgess (2016) further noted that the main problem at the start of the program was finding experienced farmers that were willing to mentor inexperienced farmers. The achievements of the program included bringing closer to the farmers the animal medical remedies that farmers could get without travelling long distances, understanding of which medicines to use for which diseases, as well as the successful transfer of knowledge and agricultural information to the emerging rural farmers.

In a review and analysis of the program, Jordaan (2012) indicated that the fact that the farmers were IsiXhosa speaking people and the mentors used were fluent in the language, was critical in assisting the adoption and acceptance of the program by the farmers. According to Karanja (2014), language plays a pivotal role in the perception of the possible success of an extension program. Extension officials must always be conversant in the language of the farmers to which extension services are delivered. Successful transfer of knowledge happens when there is no obstruction in communication. The regular visits by mentors to the farmers created an atmosphere of trust and confidence and that promoted learning. The activities of the program were mainly village visits where knowledge about health management, markets and general management skills was transferred. According to MDP (2008), intervention on animal medicines and the correct diagnosis of the disease treated with the correct medicine was cited as the main factor that contributed to increased production and revenue for the farmers. As stated by Jordaan (2012), mortality and lambing rates were the two indicators of success for the program. The success of a sheep enterprise is judged primarily by these two factors. According to Jordaan (2012), the mortality rate decreased from more than 20% per year to less than 0.5% for adult sheep. Lamb mortality decreased from 40% to 5% for farmers that participated in the program while there was an increase from 48% to 63% in terms of lambing percentage. Farmers' average annual income increased from R650 to R20956, totalling R56 million for the region. This program was eventually extended to other

municipalities in the former Transkei and covered a large number of farmers. Figure 2.1 portrays a picture of sheep in a village of the Elundini District Municipality.



Figure 2.1: Communal sheep near Mount Fletcher where the Mngcunube project was based.

2.6 Overview of agriculture and the role it plays in poverty reduction

According to Karanja (2014), agriculture provides a livelihood to 75% of the people living in rural areas of Africa despite these areas having the highest concentration of poverty. This poverty is mainly due to low income from agriculture. Karanja (2014) further ascribed low agricultural productivity as the basis of low income from agriculture. In Kenya, Karanja argues that 26% of the country's GDP comes from agriculture, while agriculture constitutes approximately 65% of the country's total export and 70% to the informal employment in Kenya.

In the 1930s, agriculture constituted 20% of South Africa's Gross Domestic Product (GDP). However, there was a decline in the contribution of agriculture over the years (Satyal, 2007). Currently, agricultural production accounts for only $\pm 5\%$ of the country's GDP. Key activities are maize, wheat, fruits, sugarcane, vegetables, sheep (wool and meat), goats and cattle. However, Bresciani and Veldes (2007) argued that agricultural contribution to poverty reduction extends beyond the agricultural

contribution to GDP. Two segments characterize the agricultural sector in South Africa. The first is the commercial section that mainly comprises white farmers and the second one is the subsistent section that is characterized by emerging black farmers (DAFF, 2012). Characteristic features exist in contrast between the two. The former is characterized by broad access to land, advanced technologies, and vast production while the latter is characterized by limitations connected to lack of access to land and institutional support (Coetzee et al., 2005). Apartheid and its discriminatory policies are given as the basis for this dichotomy (DAFF, 2012).

The green revolution in Asia in the 1970s and 1980s provides a profound case study concerning the role of agriculture as an instrument of poverty reduction when proper strategies are developed, and resources channelled towards the improvement of this sector. According to Christiaensen et al. (2011), through the adoption of science-based technology, subsistent agriculture was transformed into modern commercial agriculture and agriculture was rapidly transformed and there was a reduction in the poverty levels of the country. It is claimed that no developing country has ever achieved poverty reduction through agriculture only, yet no country has achieved it without agriculture playing a role (Thirtle & Piesse, 2003).

2.7 Livestock production systems

“Production environments, and the intensities and purposes of production, vary greatly within and across countries. Agricultural animal systems have been categorised based on agro-ecological opportunities and demand for livestock commodities” (Steinfeld et al., 2006).

Steinfeld et al. (2006) provided a comprehensive analysis and description of the world animal production systems. According to the authors above, livestock production systems can be divided and categorized into four main classifications: landless livestock production systems (which may be monogastric or ruminants), grassland-based production (where crop production is minimal), mixed rainfed systems (where rain cropping system is combined with animals) and mixed irrigation systems (where a large proportion uses irrigation concurrently with livestock). According to Thornton (2010), the choice of a particular production system is a

function of the climatic and ecological factors in a specific environment. Livestock producers must, therefore, study the role of these factors to understand and adopt a system that is not in conflict with these factors. Steinfeld et al. (2006) further add that the purpose of production and the environment in which this production occurs significantly influence the choice of the systems.

2.7.1 Cattle production systems

Cattle production systems can be classified into the following five main categories (Casey & Maree, 1993).

- Mixed farming system: this system is subsistent in nature, where a farmer keeps a limited number of animals to feed on home-grown fodder.
- Pastoral system: this system is practiced by nomadic people who are largely focused on survival than market orientation.
- Ranch system: on this system, animals are kept in a large expanse of land and this system is commercial.
- Free-range system: animals can roam around freely during the day and return to the kraal at night.
- Organic system: animals can roam freely and feed on natural feeds. In this system, there are high animal welfare standards.

2.7.2 Small-stock production systems (Sheep and Goats)

2.7.2.1 Sheep production systems

According to Mahlako (2018), there is a variation in sheep production systems from extensive free ranging, controlled grazing, and no grazing feedlots. Steinfeld (2006) argued that the production environment influences the type of operation, reasons for production and the demand for livestock products. Maree and Casey (1993) advised that extensive production systems are suited for wool production, particularly with Merino sheep. Maree and Casey (1993) mentioned that there are four production systems for sheep:

- Extensive sheep production system (rangeland only).

- Semi-extensive production system (rangeland supported by irrigated pastures).
- Silage intensive system.
- Pasture intensive system.

While all these systems are essential and profitable, Louw (2012) indicated that extensive systems where there is direct grazing on the natural pastures have the lowest input costs. During winter and lambing, it is usually the case that pastures are not sufficient to cater for the needs of the ewes. For this reason, Maree and Casey (1993) advised that irrigated pastures must be utilized as supplementary feeding. Morris (2017) and Kilgour et al. (2008) indicated that climate unpredictability is a significant risk in traditional extensive production systems. This risk is because the climate has an influence on plant growth and therefore the availability of forage to sheep. This risk is especially prominent and prevalent in winter when sheep are in their poorest body condition. Thus, Morris (2017) further suggests that there is a need to ensure that modern and traditional sheep production systems are flexible to cope with the problems of pasture shortages should climate change proceed at the forecasted rates.

2.7.2.2 Goat production systems

Escareno et al. (2013) reported the total worldwide number of goats to be 617 million. Of this number, 97,3% were reported to be in the developing countries. Of the 617 million goats, 65,7% were reported in Asia, 27,4% in Africa, 3,5% in Europe, and 3,0% in America. Goat production thrives on grazing on communal areas with high bush encroachment (Escareno et al., 2013). In Southern Africa, 50% of the goat population is found in South Africa, with the Eastern Cape contributing most to these numbers (Visser & Koster, 2017; DAFF, 2019). According to Monteiro et al. (2017), goat production is highest in both mountainous and forest areas. They can survive harsh conditions in the steep slopes and rocky mountainous areas.

Monteiro et al. (2017) categorized goat production systems into two main categories, namely the extensive- and intensive production systems respectively.

a) Extensive production systems

Goats in the extensive production systems are characterized by access to large amounts of lands, feeding on natural pastures. According to Monteiro et al. (2017), production in extensive systems utilizes family labour, which is often the second source of income. Usually, goats reared under this system wield poor economic value because these goats do not receive supplementary feeding, are often unsheltered, and are raised under the most climatic adversities (Monteiro et al, 2017). It appears that extensive production can assume two grazing systems, namely, the mobile and sedentary. The former implies seasonal movement of goats with herdsman to areas in search of feed. The latter implies that goats are freely released from the kraal during the day for access to pastures in the surrounding environment and returned to the kraal at night. The extensive goat production system is not very productive; however, it is essential in the maintenance of rural landscape because it prevents or lessens the occurrence of forest fires in areas where bush encroachment is untapped (Mahanjana & Cronje, 2000).

b) Intensive production systems

Intensive production systems involve increased use of concentrated feeds to supplement natural pastures. Animals are not dependent on grazing for their feed needs (Monteiro et al, 2017). Efficient feed ration to meat and milk production is enabled to improve breeds because of balanced feeding practices (Escareno et al., 2013). This system means a high number of animals kept in a specific unit area. According to Monteiro (et al, 2017), goats that are kept in intensive grazing must have a high fertility and growth rate than adaptability to the environment.

2.8 Agricultural constraints in communal farming

Globally, livestock production is constrained by several challenges, and communal livestock farming is mostly affected by these challenges. This section shall review the challenges that face livestock production in the communal areas that impede them from developing their farming operations.

While many authors have unanimously agreed on the nature of challenges/constraints that usually face communal livestock production, Ngqulana (2017) identified and grouped these agricultural constraints in communal farming into four major categories. These are:

- Production constraints,
- Economic (marketing and credit access) constraints,
- Environmental constraints, and
- Support services constraints.

These constraints will respectively be discussed in succeeding paragraphs.

2.8.1 Production constraints

In a study conducted in Nigeria by Adesehinwa et al. (2004) on livestock production constraints, it was revealed that pest and diseases were major factors constraining livestock production in communal farming. They further argued that, in most cases, diseases and pests are responsible for the increased cost of production in livestock. Diseases and pest prevalence resulted in complications during birth, reduced birth rate and ultimately in a reduction in the number of animals that farmers keep. The above is confirmed by Belay et al. (2013), where they mentioned that animal health is a constraining factor in livestock production. Assefa et al. (2013) argued that the problem with livestock diseases is that farmers do not have adequate knowledge and information on disease control mechanisms and that those who have this knowledge are often hindered by lack of access to appropriate animal medication.

In the same study, Assefa et al. (2013) stated that feed availability or the shortage of feed is one of the significant production constraints that farmers generally grapple with. In that study, the authors revealed that diseases constituted 67.7% of the total constraints that farmers faced. According to Pen et al. (2009), feed shortage was also perceived as one of the major constraints that contributed to production problems in the communal farming systems. The authors mentioned that the striking problem with feed inadequacy is that animals are subjected to long distances being herded in search of feed. The movement of animals from one place to the other leads to a decrease in the weight of animals (Matibvu et al, 2012). This results to farmers and animals moving for approximately 5 hours to and from grazing lands

that have adequate feed, particularly for farmers that kraal their animals. The problems of feed shortages in communal farming are mostly connected to overgrazing of the grazing land. The reason is that there is generally a consensus amongst many authors about the lack of grazing and pasture control in this type of farming (Mahlako, 2018). Tolera et al. (2012) and Mutibvu et al. (2012) mentioned natural pastures and crop residues as the primary feed sources in the communal livestock production areas. Overgrazing in communal land system often leads to the extinction of indigenous grasses. Jones et al. (2010) attributes such occurrences to overgrazing, and this results to the domination of the palatable indigenous species of grasses by alien species.

Another important production constraint that researchers find consensus on is water scarcity. In a study by Assefa et al. (2013), the second biggest problem was revealed to be water scarcity. According to Katikati (2017), water is a vital nutrient for animals as it influences the animals' feed intake and overall health. Thus, animals must have access to clean and fresh water. Water sources must be managed effectively to ensure that water is available throughout the year (Hangara, 2011). Mutibvu et al. (2012) identified water scarcity as a critical constraint that hinders the development of communal livestock farming. Amenu et al. (2011) reported rivers, dams, boreholes, springs, and wells to be the main sources of water in communal areas. The main challenge that many rural farmers face concerning water is that usually water sources are found in far distances, where farmers travel 2 to 5 km to get their animals to water sources (Amenu et al., 2011). According to the authors, another problem connected with water is the fact that the quality of the water given to animals is mostly very inferior, especially after rain. Walking distances to water sources may lead to weight loss, and poor water quality affects intake which in turn may be to the detriment of livestock (Mutibvu et al., 2012). The loss of weight and poor water quality further lead to the reduction in milk yield and growth rate of the animals (Lukuyu et al., 2009).

2.8.2 Environmental constraints

Environment plays a critical role in agricultural activities, and these activities also affect the environment. It is unfathomable to suggest development in agriculture

without linking it to the natural resources on which agrarian production relies. According to Lemaire et al. (2014), agricultural production in the world has focused on a need to mitigate food shortages to ensure food security. However, this endeavour seems to conflict with the agenda of reducing agricultural contribution and offset the downgrading that agriculture does to the environment (Lemaire et al., 2014). According to Tilman et al. (2002), agricultural systems have resulted in escalating negative effect on the environment. Steinfeld et al. (2006) stated that there is a perception that livestock production is the major contributor to global warming. Meissner et al. (2012) revealed that the recent figures suggest that livestock production contributes between 5% to 10% to global warming in South Africa. In Zimbabwe, Sivotwa et al. (2007) mentioned that the rise in temperatures during spring was a significant causative factor in the occurrences of diseases.

Climate change and global warming are a reality in the world and could influence food production and security. Mare et al. (2014) stated that climate change might lead to a reduction in crop and livestock productivity. Drought is estimated to be the costliest natural disaster (Hlalele et al., 2016). Due to drought, natural vegetation and water quality deteriorate and in Zimbabwe, this was perceived as one of the critical problems that faced cattle production (Matibvu, 2012). According to the South African Weather Services (SAWS, 2017), the year 2015 registered a devastatingly low annual rainfall and was thus recorded the driest year since 1904. The low rainfall referred to above, came with many challenges for livestock producers, particularly in the Kwazulu-Natal province, which was hit hard, and 40 000 heads of cattle perished (SAR, 2015).

Scholtz et al. (2013) mentioned two critical points about livestock production which relate to the environment. Firstly, livestock is argued as the world's largest user of land resources. In South Africa, it is generally accepted that 70% of the land is suitable for livestock production purposes (Meissner et al., 2013). The land is a critical environmental resource without which agricultural production is not possible (Zander et al., 2013). The availability of land to livestock producers is an essential aspect of production. Zander et al. (2013) highlighted that land availability and access determines the amount of feed available to livestock and thus significantly influences livestock development. Secondly, livestock is suggested as the users of

vast amounts of water, particularly in the production of beef. Water is very important in livestock for meat and milk production (Mekonnen et al., 2019). Although direct water uses by animal accounts for only 1.3%, much water is available to the animal through forage and pastures. Water provides nutrients to the animal and influences feed intake and health of the animal (Katikati, 2017). In the communal areas, water sources for animals are usually available at far distances (Amenu et al., 2011 and Matibvu et al., 2012). This distance is problematic in that farmers are forced to herd their animals to these sources, leading to many hours being wasted on movement, ultimately to the reduction in animal weight (Matibvu et al., 2012).

2.8.3 Support services constraints

In addition to other types of constraints that challenge communal farmers, availability and delivery of support services are essential aspects of constraints that require consideration. A detailed description of the types of support services that the government renders to communal livestock farmers in South Africa is featured in the preceding pages. Even though the government has support services provided to communal farmers, much research in the communal sector continues to reveal support services as constraints to their operations (Ngqulana, 2017).

2.8.4 Economic constraints

2.8.4.1 Marketing constraints

A market is defined as a place where sellers and buyers meet. According to Shane and Delmar (2004), the beginning point in marketing is the planning of the market. In developing the market plan, the authors suggest that the farmer must study the environment in which the farming business will be operating. The study provides information on consumer needs, preferences, and spending patterns (Shane and Delmar, 2004). The study, according to the authors, must further investigate aspects such as prices, sales, competitors, etc. Moichwanetse (2004) reported another scenario in a study conducted in Madikwe District. The author stated that communal farmers do not seek information about markets and do not know the price of livestock. However, it appears that marketing is not always a significant marketing constraint in rural farming. Pen et al. (2009), in a study conducted in Cambodia,

marketing was ranked as the least gripping constraint in livestock production by the farmers.

Marketing institutions are the cardinal determinants of the economic performance of livestock enterprises in that they determine how market transactions are organized (Kherellah & Kirsten, 2001). The authors further highlight that these institutions are important since they generally provide more certainty in human interactions. According to Coetzee et al. (2005), marketing should play a fundamental role in the process of transforming small scale farmers to commercial farmers. Thus, marketing should provide the necessary motivation for farmers to improve their income. Musemwa et al. (2008) stated that communal livestock farmers fail to attract buyers to their areas. According to these authors, this failure is due to numerous reasons, but lack of marketable livestock and poor livestock conditions are the most striking. Strydom et al. (2008) stated that there are low livestock numbers per farmer, and an average weight of animals is generally low in comparison to those of the commercial farming sector. Makhura (2001) stated that perception of lack of marketable livestock and poor condition of animals to be the reasons why buyers do not buy livestock in the communal farming or, at worst, the communal farmers are offered low prices that lead to farmers refusing to sell their animals. These perceptions are usually given as the reason why there is poor marketing institutions visibility in the communal areas. According to Coetzee et al. (2005), it is when productivity is improved that demand for services provided by a market system is created, and also as more specialization in farming systems take place. This improved productivity stimulates economic activities and leads to increased income (Coetzee et al., 2005).

Ainslie et al. (2002) found that the number of livestock marketed from the small-scale sector in the Eastern Cape to be 10% of the total herd. According to Coetzee et al. (2005), this number is deficient when compared to the 23 – 25% of the whole herd found by Coetzee et al. (2005) in the commercial sector. Coetzee et al. (2005) further ascribed the low market off-take rate in the communal farming sector to reasons connected to cultural values and inadequate production systems rather than market failures.

According to Montshwe (2006), small scale farmers are confronted with problems connected to access to market information, and this exposes them to market

weakness. He indicates that these farmers rely on informal marketing networks such as friends, family, and traders. Montshwe (2006) contends that, however, these people may not always have up to date and reliable market information and this compromises the very essence of giving this information. According to the author, the implication here is that market-related decisions might be taken by communal farmers premised on this compromised information. In a study done by Musemwa et al. (2008), the marketing constraints that cattle producers in the Eastern Cape faced with are poor infrastructure, high transaction costs, diseases, and lack of information. Coetzee et al. (2005) added the unwillingness and inability to adopt livestock identification and poor condition of livestock as other constraints that communal farmers face.

The following marketing challenges are prevalent in communal areas:

a) Poor infrastructure

According to Mahabile et al. (2002), lack of marketing facilities is a severe constraint in livestock marketing. Chakwizira et al. (2010) stated that it is the constitutional right of every citizen to have access to the necessary infrastructure. They suggested that infrastructural support is an essential basis and important foundation that allows the stimulation of socio-economic activities, growth, and development. Coetzee et al. (2005) categorized infrastructure into physical (communication, transport, and roads) and institutional infrastructure (market information, security, and animal diseases control). Most of the communal farmers are in remote areas which are far from the major markets (NDA, 2005). Musemwa et al. (2008) opined that this could be the reason for the inadequate supply of livestock to formal markets by small scale farmers. Lokesha and Mahesha (2016) mentioned that improvement in the infrastructure leads to market expansion, the economy of scale expansion and the general increase in market operations. Lokesha and Mahesha (2016) further added that the improvement in infrastructure may lead to subsistent produce demanded in the commercial markets. Sound road conditions help agriculture by breaking down village isolations, spreading of education and creating a general sense of awakening (Lokesha & Mahesha, 2016). In Ethiopia, Tegegne et al. (2013) reported transport to be the most critical infrastructural constraint in the livestock marketing systems. Marketing facilities such as sale pens and loading ramps are considered as some of

the many factors that constrain the ability of the small-scale farmers in marketing their animals (NERPO, 2004).

b) High transaction costs

Most communal farmers are in remote areas. These areas are characterized by poor road conditions which result in high transaction costs and ultimately reducing the price that buyers are willing to pay for the animals (Musemwa, 2007). “Transaction costs include, among others, the costs of searching for a partner with whom to exchange, screening potential trading partners to ascertain their trustworthiness, bargaining with potential partners (and in some cases, officials who can hold up trade) to reach an agreement, transferring the product (this typically involves transportation, processing, packaging, and securing title, if necessary), monitoring the agreement to see that its conditions are fulfilled, and enforcing (or seeking damages for any violation of) the exchange agreement” (Musemwa, 2007).

It appears, according to Mahabile et al. (2002), that the distance from the farms or village to the markets has a significant influence on the transaction costs due to costs associated with transporting the animals from the farm to the marketplace. Since farms are far away from the markets, farmers incur higher transportation costs. These challenges usually demotivate farmers from participating in distant formal markets (Musemwa et al, 2008).

c) Lack of and inadequate information

According to Stats SA (2016) and Coetzee et al. (2005), agricultural information is key to providing farmers with the capacity to make rational decisions and equip farmers with negotiation abilities to prevent exploitation by established and better knowledgeable buyers during transactions. Agricultural information is also important in that it directs policy development and informs strategies on poverty, food security, environmental sustainability, and rural development. Tegegne et al. (2013) defined information needs of farmers as information on prevailing production techniques, market information, product demand, quality and quantity of the demanded product and prices opportunity. Montshwe (2006) observed a significant gap in agricultural knowledge in the villages. Communal farmers continue being uninformed of the

current production techniques, trends in the market and prices despite considerable progress being made to ensure that communal farmers get information. The provision of this information is usually through radio, television, and personal communication. However, according to Montshwe (2006), this has not yielded much gain because communal farmers struggle with access to this intervention and where there is access, farmers are often barred by language, considering that most of this information is offered either in Afrikaans or English.

d) Poor livestock condition

Togarepi et al. (2016) stated that the lack of grazing land, poor pasture or grasses, lack of rainfall and problems of fencing of the grazing land in communal farming are some of the contributing factors to poor livestock conditions in Namibia. Extreme degradation of the grazing land and poor grazing are considered as the reason for poor livestock condition in the communal areas (Coetzee et al., 2005). Lack of supplies of feed supplements, vaccines and the general genetic inferiority of animals are cited as the reasons for the lack of interest in the animals by traders and speculators. The poor condition of livestock also influences the prices that buyers are willing to pay for the animals. These prices are usually low; thus, the farmers elect not to sell their animals.

e) Unwillingness and inability to adopt livestock identification

The perpetual reluctance of the communal farmers to register their animal brands contributes to their marketing failure. According to Coetzee et al. (Coetzee et al., 2005 as cited in USAID, 2003), three points are offered as the justification or reasons for small scale farmers being reluctant to registering their identification brands. The first one is that since there is no fence generally in the communal areas, animals may graze alongside the roads and cause accidents for which farmers do not want to take responsibility. Secondly, there are registration costs as well as the costs associated with the procurement of branding equipment, and lastly, the lack of facilities to brand the animals. According to Coetzee et al. (2005), this reluctance reduces the traceability of animals to the original owner, and this negatively affects the prospects of future marketing.

2.8.4.2 Types of markets for livestock farmers

a) Auctions

An auction is the public sales of goods and property to the highest bidder. Nkosi and Kirsten (1993) offered a similar definition where they mentioned that auctions are established places of business where livestock are gathered at certain time intervals and sold to the highest bidder in a public bidding setup. Various agricultural goods are traded throughout the country (Cason & Gangadharan, 2004). Buyers could be people buying for farming purposes, speculators, household use, butchers, etc. (NDA, 2005). According to Nkosi and Kirsten (1993), auctions can be operated by auctioneering companies. The auctions that are operated by auctioneering companies do not follow specific time intervals. These companies operate auctions as more surplus in livestock occurs (Nkosi & Kirsten, 1993). Coetzee et al. (2005) mentioned two government-initiated programs introduced in the Eastern Cape to improve livestock marketing. Two programs were established: Land Care Project, which is renowned for its success in enhancing wool production, and the Agrilink Project, whose objective was to initiate livestock auctions in the rural areas. However, according to Coetzee et al. (2005), these projects ceased to exist following a political change in South Africa that saw the integration of the then Ciskei and Transkei into the modern-day Eastern Cape. Another reason for the ceasing of the projects can be attributed to the general perception that rural farmers have about livestock auctions. These perceptions were highlighted by Nkosi and Kirsten (1993) where they reported that many rural farmers mentioned, amongst others, that low prices, not enough buyers, that buyers do not value farmers' animals, that auction points are too far and the dishonesty of auctioneers to be reasons for not supporting auctions.

b) Informal markets/Private sales

According to Nkhori (2004), free-market sales in communal areas are usually the most used method of marketing livestock. Nkosi and Kirsten (1993) mentioned that communal livestock farmers prefer private sales because of the simplicity of the marketing activity, the fact that there are limited costs associated with marketing, and because farmers can determine the prices for their livestock. Nkhori (2004) stated

that the costs of livestock sales in the informal market are low because private sales eliminate the involvement of the middleman in that animals are bought directly from the farmer's gate. Nkosi and Kirsten (1993) mention that the communal owner perceives formal marketing forms as giving low prices for their animals. However, it is difficult to know the accurate number of animals sold through informal markets because these sales are usually unrecorded (Nkosi & Kirsten, 1993). Livestock sales are generally made during the festive season and Easter holidays because migrant labourers would be back in the villages for holidays in which they would have traditional ceremonies where these animals are slaughtered (Coetzee et al., 2005).

c) Abattoirs

Another option for communal farmers is that they can sell their animals to abattoirs. Abattoirs are the least used marketing channel (NDA, 2005). According to NDA (2005), the reasons that are offered for this option are that; abattoirs are located far from the farmers, there is a high risk of selling animals through this channel since animals may be rejected based on health, and the charges involved in the usage of this channel. Musemwa et al. (2008) contend that it is usually of limited economic value to communal livestock farmers to use this channel as most of these farmers generally sell 1 or 2 animals. Musemwa et al. (2008) advised that, however, small-scale farmers may still benefit from this channel provided that they form group markets where they sell animals as a group in order to ensure that they enjoy the economy of scale and ensure shared responsibility for the costs involved in getting the animals to the marketplace.

d) Speculators

Speculators are those buyers that take the risk of buying animals with the hope to sell these animals at a higher price in future. Coetzee et al. (2005) stated that due to weak negotiation abilities of the farmers, they sometimes sell animals at far below the market price. Speculation is often perceived as an exploitation of the farmers in that farmers usually have poor bargaining powers and is thus dominated by the speculators (Coetzee et al., 2005). Speculators usually determine the terms of engagement, and through control, dictate these conditions. One of the reasons for

this perceived exploitation could be that speculators provide their own transport and loading facilities.

e) Butcheries

Musemwa et al. (2008) suggest that communal farmers can also consider selling their animals directly to butchers. Butchers buy directly from the farmers or buy animals from the auctions. In a study by Nkhori (2004), reasonable price and durable bargaining power in price determination influence the perception of farmers about this marketing channel.

f) Feedlots

Another available option to farmers is the exploration of selling their animals to feedlots. Farmers can opt to sell animals when they are still young to be finished and fattened in the feedlots (Gwin, 2007). However, communal farmers prefer to sell their animals through informal markets due to lack of knowledge about how other channels operate.

2.8.4.3 Access to credit

According to Goqwana et al. (2008), the lack of and inadequate financial assistance provided to rural farming is one of the main challenges that impede agricultural development, especially in this kind of farming. Chisasa and Makina (2012) stated that access to credit for small scale farmers is a challenge in many developing countries. Isaga (2018) in Tanzania, and Qwabe (2014) mentioned that lack of finance is a leading hindrance to the development of the communal farmers. According to Qwabe (2014), the challenges of accessing credit from formal financial institutions by small-scale farmers have been enduring for many years and these challenges constrain the development of this agricultural section. The challenge of the formal financiers is the provision of agricultural credit that satisfies the unique requirements of the whole agricultural sector (commercial and the emerging sector). Qwabe (2014) further stated that even though there have been strides to address the problems of credit access by communal farmers, studies reveal that a large number of small-scale farmers continue to experience issues linked with access to credit facilities. The small-scale sector carries with it, the risks and uncertainties which are

inherent with any agricultural sector. Qwabe (2014) suggests that financiers should put stringent collateral arrangements for smallholder farmers. According to Isaga (2018), commercial financing institutions do not find investing in small scale farming profitable due to the small economy of scale. Credit is granted, among other things, based on collateral arrangements (Isaga, 2018). In many cases, commercial banks deem the collateral offered by small scale farmers insufficient to qualify them for a loan and because productivity is generally low in this section of agriculture (Wattanapruttipaisan, 2003).

In South Africa, formal financial institutions have not found appropriate methods to encourage access to agricultural financing for emerging farmers.

2.9 Important management aspects in production

For a business to prosper, practical and sound management is critical. Management can be defined as a concept that refers to the process of getting activities done more efficiently and effectively through the involvement of other people. Therefore, it appears that decisive management is central in directing and steering the organization to realize its objectives. Makapela (2009) stated that, within the livestock farming context, management is linked with factors such as proper control of animal health, animal handling, breeding methods and nutrition. He further suggests that it is of paramount importance that farmers or managers know the production potential of grazing and animals. In order that small scale farming may be profitable, sound management skills are necessary (Mahlako, 2018). Important aspects of management are discussed briefly hereunder.

2.9.1 Grazing management

Vallentine (2001) defines grazing management as the practice of manipulating animal grazing to ascertain results based on animal, plant, land, and economic response. The pressing idea is to supply quantity and the quality of forage required by the grazing animal to achieve the production intended. There is a consensus on the principles of grazing management strategies. Dubeux and Sollenberger (2020)

suggested that these strategies include changes in the stocking rates, stock methods and methods to manage defoliation.

According to Finch et al. (2014), grazing management necessitates keeping the balance in the grazing needs of the stock against the potential of the grass and needs a good knowledge of both. It is influenced by the conditions of the farm and the livestock production system in place. According to Smet and Ward (2006), the production systems, objectives and property right differ fundamentally between the communal and commercial farming systems. Communal production systems are mostly pastoral, and members of the village share the grazing land and there are usually no coordinated pasture management strategies. In communal areas, the general perception is that animals kept there exceed the carrying capacity of these areas (Goqwana et al., 2008). Communal grazing system is criticised for exceeding the carrying capacity of the grazing land and therefore putting at risk land degradation (Van der Westhuizen et al., 2005). According to Van der Westhuizen et al. (2005), in Southern Africa, overgrazing is perceived as the most significant cause of rangeland degradation. Jacobo et al. (2006) stated that a proper grazing system such as rotational grazing and keeping a sufficient number of animals must be practised to maintain soil cover in the grazing land.

2.9.2 Nutrition

Proper nutrition is a critical aspect of a successful production system. Feed usually accounts for the highest input cost connected to animal production in production systems where feeding is not only limited to natural pastures (Maree and Casey, 1993). According to Thornton (2010), poor nutrition is one of the significant production constraints in small-holder systems, particularly in Africa. Field and Taylor (2016) emphasize on the importance of ensuring availability of quality feed resources, forage conservation and supplementation as these improve the performance of animals. Knowledge of basic nutrition and feeding is essential to understand adequate feeding and management (Field & Taylor, 2016). Smith (2006) classified essential nutrients into water, energy, proteins, minerals, and vitamins.

Nutrition plays a significant role in the growth of young animals. If these young animals do not receive adequate nutrition, retardation in growth occurs. In a study

conducted in Madikwe District, Moichwanetse (2004) found that communal farmers in the area did not supplement their cattle during winter and summer. The implication for this is that cattle may suffer from deficiencies in minerals, especially phosphorus and calcium. When farmers do not provide supplementary feeding and practice rotational grazing, a low calving rate and extended breeding season may occur, while animals may lose good body conditions and not sell in markets (Moichwanetse, 2004).

In small-stock production, nutrition techniques such as flushing are usually used a few weeks before breeding to ensure that ewes (thin ewes in particular) are fat and in a sound body condition for mating (Martin et al., 2004). Flushing leads to increased lambing rates and a shorter breeding season (Martin et al., 2004). Small-stock production is usually characterized by natural vegetation as the source feed, however, when drought is prevalent, and animal diseases are widespread, there is an increased vulnerability to feed insecurity. Ewes that are in good body condition during breeding are more likely to have multiple births and can conceive after their first service (Martin et al., 2004).

2.9.3 Animal Health

Diseases and health problems of animals are linked with management and poor nutrition (Nyam, 2017). In both large and small-stock production, herd health management plan is essential. The general idea is to ensure prevention of diseases rather than curing animals when the diseases have occurred. A correct combination of management and nutrition may help curb the scourge of diseases in small holder farming systems.

According to William (2005), in managing disease problems, identification of the disease is the first stage. However, according to Minjauw and Mcleod (2003), rural and small-scale farmers do not have sufficient knowledge of animal health. Some of them cannot diagnose the occurrence of diseases, cannot identify the prevalence of diseases, and formulate the type of corrective action required. Poor health condition of communal livestock may be due to lack of knowledge and the high costs of animal health. Mastitis, ticks and tickborne diseases are the most common in small holder farming systems (Manjauw & Mcleod, 2003). Successful livestock production

requires a proper animal health program that must include vaccinations, dipping, dosing, and vitamin supplementation (Field & Taylor, 2016).

2.9.4 Breeding management and selection

Breeding management generally refers to the selection of breeding animals, control of mating and exclusion of unproductive animals from the herd through culling (Makapela, 2008). However, the reasons for breed selection and management are commonly more on adaptive traits than production traits (Munyai, 2012). Makapela (2008) further stated that breeding improvements are influenced by genetic traits and are manageable using good rams, the selection of ewes that are genetically advanced, and the culling of less productive animals. It is difficult to select for different characteristics. Makapela (2008) advised that farmers must choose for a specific goal. However, according to Van Ryssen (2003), when selection is done to improve the economic value of an animal, it simultaneously applies to several traits.

According to Bergh (2004), to improve production, it is critical to ensure the proper reproductive performance of the breeding herd by implementing a proper breeding season management programme. Various animals require different breeding season management techniques. According to Simm et al. (2004), on traditional selection methods, selection of breeding animals is a once-off process. According to Maree and Casey (1993), breeding seasons in small-stock production include both autumn and spring seasons. Both seasons have their advantages and disadvantages. Bulls and rams must be prepared before mating can ensue. Aspects such as fertility testing, nutrition of the bull or ram, body condition, and sheath washing are critical areas that require special attention before the breeding season.

While farmers have no control over other male animals mating with their female animals, Bergh (2004) stated that breeders must focus on scrotal circumference of rams for production traits of perceived breeding values. Scrotal circumference is an excellent reference point (Bergh, 2004).

2.9.5 Transportation and handling of animals

Transportation of animals generally gives rise to many stressors which cause trauma to animals. Warris (2000) describes this process as stressful in the life of an animal. The animal gets exposed to unfamiliar conditions as they are handled and loaded onto trucks and bakkies. Lack of space, the noise of the vehicles, lack of food and water, vibrations, amongst others, are the most significant stressors during transportation (Warris, 2000). As a result, it is said that animals lose about 3% of their body weight during travel and lose their appetite upon arrival. Animals may even fall during travelling, resulting in injuries.

Handling in agricultural context refers to how animals are touched, moved, and interacted with during husbandry processes. People who are involved in animal husbandry should ensure that they interact with animals in a calm, careful, considerate, respectful way and ensure that animals are moved in the normal speed. It is perceived that animals that are correctly handled are easier to handle than animals that are handled roughly.

2.9.6 Record keeping and financial records

According to Moichwanetse (2004), record keeping is crucial in agriculture in that it forms a practical basis on which decision making is benchmarked for solving problems, identifying management priorities, and planning marketing and production goals. A proper record system provides sufficient information that enables the farmer to decide whether to continue with farming or to venture into other enterprises where there is a possibility of increased profits (Moichwanetse, 2004). Normal farm records account for production and financial management of the farm. The absence of documents and the poor recording systems complicate attempts to deal with management and production practices that influence the overall productivity of the farm (Moichwanetse, 2004). In agriculture, there are norms, standards, and tendencies on which the successful management of the farm is based. Farm records, according to Pirelli (2000), are critical in comparing the management capacity of the farmer against these norms. The general production records that farmers should keep include animal census, mortality records, diseases occurrence, lambing and/or calving records, feed conversion records, mating records, culling and

breed selection records, gender of the new-born animals, their weights, date of birth and assets of the farm (Pirelli, 2000). Over and above production records, financial records include financial statements and budgets such as an income statement, balance sheet, cash flow, as well as enterprise budgets. Small-holder farming is generally characterized by poor recording systems, and usually comprises hand records of their operations since most of them have limited access to a computer or are computer illiterate. According to Pirelli et al. (2000), this process consumes much time when these records must be retrieved.

2.9.7 Key knowledge during breeding

Successful reproduction in animals requires properly planned stages of reproduction. According to FAO (n.d.), during mating, a proper plan is critical because it influences the seasonal length of breeding. It leads to a shortened lambing and calving season which permits efficient scheduling of mating, calving/lambing and animals can be divided into smaller groups which are easy to handle. All breeding animals must be in good condition before mating can start. Adequately managed mating results in improved labour utilization and improved efficiency in management. According to FAO (n.d.), the age of the breeding animals requires serious attention in that it influences the quality of offspring. Breeding animals must be examined for health before being selected for breeding purposes. FAO (n.d.) stated that early breeding of ewe lambs/heifers leads to increased flock output. However, according to Kintzel (n.d.), breeding ewe lambs/heifers requires good management levels. Bulls/rams must be in good body condition before mating because they tend to lose weight during mating since they do not eat much. A careful mating season is important to avoid weaning animals on poor veld conditions particularly for farmers that rely on natural pastures for feeding.

2.10 The role of infrastructure in agriculture

Inadequate infrastructure facilities characterise rural areas. A large number of rural people are dependent on agriculture. Agricultural infrastructure plays an essential role, particularly in the context of developing countries (Lokesha & Mahesha, 2016). In agriculture, road infrastructure plays a vital role in increasing agricultural

production (Lokesha and Mahesha, 2016). Road infrastructure influences the transportation of agricultural produce to markets and consumers (Chakwizira et al., 2010). Rural roads linkage is one of the important aspects for rural development because it allows access to economic services and maximises agricultural income. According to Adepoju and Salman (2013), transportation and communication in infrastructure have a significant impact on agricultural productivity which may exceed the impact of other aspects that influence agricultural development such as extension, education, and research.

3. Chapter Three: Research Methodology

3.1 Introduction

This chapter demonstrates the method that the researcher employed in conducting the study, focusing on the research design, study area, sampling method, data collection, data analysis and limitations of the study.

3.2 Research Design

According to Mahlombe (2018), research design implies the methods that the researcher uses to conduct the study. It also stipulates the number of the participants in the research. From the design, it must be clear how results will be achieved. The design must demonstrate how the research integrates the various aspects in a coherent manner to address the study problem. Research design must include the study area, sampling procedure, data collection method and data analysis. Generally, research design assumes either a qualitative or quantitative approach. The choice for which method to employ is determined by the nature of the phenomenon under study (William, 2007). The present study employed a quantitative approach. Because secondary information sources will not be able to test the hypotheses of this study, primary information was gathered via a structured questionnaire survey method, with both closed and open-ended questions.

3.3 Study Area

This research was done in the Mhlontlo Local Municipality, Eastern Cape Province. This local municipality falls under the broader OR Tambo District Municipality. The municipality is constituted by two rural towns: Qumbu and Tsolo, lying on the eastern side of the Eastern Cape Provincial border alongside the N2 route between Umtata and Mount Frere and R396 between Tsolo and Maclear. It is bordered by the King Sabatha Dalindyebo Local Municipality to the south and Nyandeni Local Municipality to the east, both falling under the greater OR Tambo District Municipality. It is further bordered by the Umzimvubu Local Municipality to the north and Ntabankulu to the

north-east (both under Alfred Nzo District Municipality) and Ulundi Local Municipality to the north (falling within the Joe Gqabi District Municipality). The municipal offices are in Qumbu with a satellite office in Tsolo. Figure 3.1 provides a map of the greater area while the study area is encircled in red.



Figure 3.1: Indication of the study area (red circle) in the Eastern Cape (extracted from: <https://ec.cetc.edu.za>)

The municipality covers an area of 2826 km² and has a population density of 66,6 people per km². In 2015 the municipality had 193 000 people which constitutes 0,4% of the South African population, with a population growth of -0,52% (Mhlontlo Local Municipality, 2017). The municipality is largely dominated by Xhosa-speaking people with more than 80% residing in rural villages and less than 10% living in informal urban settlements (Mhlontlo Local Municipality, 2017). Most farmers in the municipality rely on livestock production and insignificant production of maize and other crops. The unemployment rate is 45,6%. Mostly, families are supported by men who work as migrant labourers in the mines across the country. It only has one Agricultural college: Tsolo Agricultural College that was only recently established. The Municipality consists of more than 80 000 households and is divided into 26

wards. It is engulfed with very low literacy levels (44%) (Mhlontlo Local Municipality, 2017). Agriculture is the most primary economic activity.

3.4 Sampling Procedure

The study used a total of 60 communal farmers from different villages in the study area as respondents. The researcher approached extension staff in the study area to use their platforms to interview the farmers. The extension staff linked the researcher to agricultural associations in the municipality. The researcher approached these associations for assistance with the farmers' contacts for the interviews. The associations called the farmers from different villages in the municipality for a meeting in which the researcher presented the purpose of his visit. In that meeting, the researcher presented the purpose of the study, the study objectives and assured the farmers of their right to refuse participation. The leadership of the associations furnished the researcher with the data base of the associations. The researcher called the farmers to set appointments for the interviews. Farmers who were available for the interviews were scattered across the municipal area. The selection of the participants (60 farmers) was based on their willingness to participate and their availability during the data collection period.

Different categories of livestock were covered. These livestock included sheep, goats, and cattle. The choice for focusing on these animals is motivated by the fact that rural farmers predominantly keep these types of livestock.

3.5 Data Collection

Data collection ensued from September to November 2020. Interviews were in the form of a structured questionnaire that consisted of open and closed-ended questions. Open-ended questions permit the interviewee to respond expressly to the questions without being limited by options as in the case of closed-ended questions (Mahashi et al., 2019). Although Mahashi et al. (2019) argue that these questions (open-ended) must be minimal to avoid difficulties in data analysis, much opportunity were provided to allow documenting additional- or supportive information (e.g., reasons for certain answers). Close-ended questions are important for soliciting

sufficient information from the respondents without wasting much of their time and they allow for easy coding of data. The questionnaires were administered by the researcher on a personal interview basis. This choice was motivated by the fact that interviewer-administered questionnaires are filled quicker and thus save time. The advantage of personal interviews administered by the researcher is that difficult concepts that the respondents may struggle to comprehend, are explained, and simplified, while the interviewer obtains detailed and accurate information. Personal interviews with the respondents ensure that sufficient information is also obtained from the illiterate respondents, while interviews were also conducted in the home language of the respondents, thus reducing the chance for any misunderstandings or incorrect interpretations of questions. Although the questionnaire was drafted in English, the researcher was also able to communicate with respondents in their home language (isiXhosa) to ensure proper understanding of information required. Farmers were visited and interviewed in their homes and that was convenient for them and improved willingness to participate. The scheduled home visits also contributed to a more organised process of data collection, thus saving time and costs for the interviewer.

3.6 Data Analysis

The data collected from the respondents were coded and analysed using the Statistics Package for Social Sciences (SPSS 16.0) program. Microsoft Excel 2007 was used to capture the raw data. This made it easy to analyse quantitative data such as frequencies, percentages, means, standard deviations and a T-test to determine correlations and tendencies.

3.7 Research ethical consideration

Ethical consideration in research is crucial to ensure avoidance of the possible violation of the rights of the participants and to enforce a strict adherence to the university policy. Participation by any individual to this study was by choice. Participants were advised of their rights to refuse to participate and discontinue anytime they wished. The purpose of the study and how the study will benefit the

respondents was explained to all respondents. Any information shared by the respondents was treated as strictly confidential and not used for any other purpose except that which was connected to the achievement of the objectives of the study. The questionnaires were anonymous, thus guaranteeing confidentiality of the information shared by the participants.

3.8 Limitations of the study

The challenges imposed by the ongoing global pandemic made it difficult for the researcher to conduct this research project with ease. Some farmers used the government-imposed Covid-19 regulations as the reason for their reluctance to accept meeting appointments with the researcher. This scepticism was, however, justified because the majority of the farmers (respondents) were older than 50 years and therefore were more at risk should they be infected by the virus. Another challenge faced by the researcher was that farmers were sceptical of being interviewed by a stranger, citing that stock theft was prevalent in the area and they could not easily agree to interviews by a person they did not know. However, this scepticism was alleviated by the researcher's presentation of the questionnaire's objectives and study purpose in the presence of association leadership and extension officials. The latter thus convinced farmers of the authenticity of the study.

The last obstacle was that farmers were spread widely across the area. This widespread implied high costs of transportation since the researcher used public transport. In some instances, the researcher would struggle to get transport from some villages after 12:00 midday which presented a significant challenge for the researcher. Many respondents complained about the length of the questionnaire, as it took approximately 2 hours to complete. As a result, they may have given answers that were not thoroughly considered, only to get through the questionnaire, thus to some extent compromising the quality of the data.

4. Chapter Four: Results and Discussion

4.1 Introduction

The purpose of this study was to assess the status of communal livestock production in the Mhlontlo Local Municipality of the Eastern Cape Province. This chapter serves as the presentation and the interpretation of the findings or results of the study. Descriptive statistics such as percentages, counts, mean, tables, charts, standard deviation, and frequencies are used to present the findings of the study. The demographic information, land tenure or access, sources of income for the farmers, objectives of the farmers, sources of information and perceived usefulness of this information and herd or flock characteristics, farming experience and number of people in the household are discussed.

4.2 Demographic Information

Demographic information accounts for a crucial component of information in research. Demographic information defines elements such as age, gender, household characteristics (e.g., the power relations pertaining to decision-making and the number of people in a particular household), marital status, employment status and education level. According to Gbadamosi (2013), demographics are essential in that they help the researcher to understand why different households take certain decisions and thus making it easy to study the population of the study.

4.2.1 Age distribution of the respondents

According to Ngqulana (2017), agriculture is dominated by elderly people who are largely illiterate. It is important to be cognizant of this fact when planning strategies for agricultural development. Age helps the developmental worker to find better ways of addressing older farmers. Age is vital in that it influences decision-making and interest in farmers (Lubambo, 2011).

Figure 4.1 below summarizes the distribution of the respondents' age. The age of the farmers is grouped into four categories as demonstrated in the table.

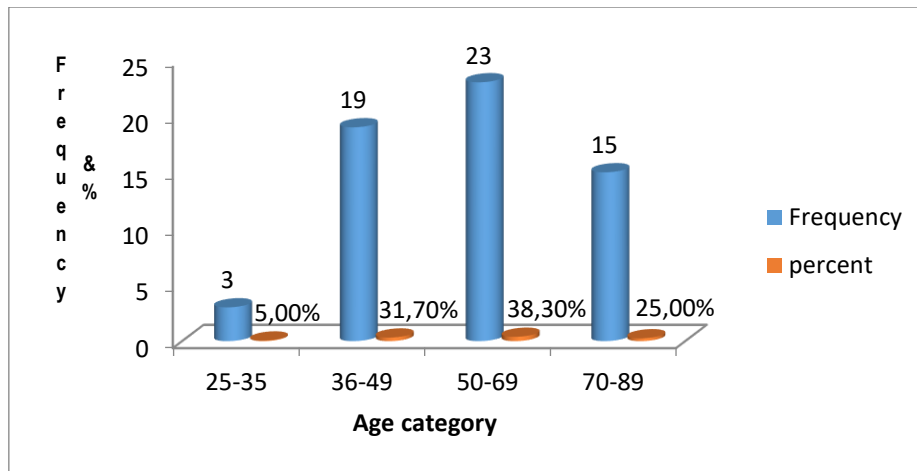


Figure 4.1: Age distribution of the respondents in the study area

The age of the respondents ranged from 32 to 89 years, with the mean age and standard deviation being 57.7 ± 13.96 . These results are comparable with the findings of a study by Katikati (2017) of which the average age of respondents from selected communal areas of the Eastern Cape to be 57.63 ± 13.44 years. However, these averages differ with the study by Jizana (2020) of which the mean age and standard deviation of respondents representing communal farmers of the Eastern Cape to be 47.66 ± 11.149 years. As illustrated in Figure 4.1, it can be seen that young people constituted only 5% of the respondents in the study. This poor participation of young people in farming might be an indication that the youth would rather migrate to the cities in search of better jobs and other opportunities (Mthi et al., 2020). The sample indicates that most (38.1%) of the respondents were in the age group of between 50-69 years, followed by the group from 36-49 years (19 or 31.7%), and the 70-89 years group constituting 25% (or 15) of the respondents.

4.2.2 Gender distribution of the respondents

Figure 4.2 below illustrates the gender distribution of the 60 respondents interviewed in the study.

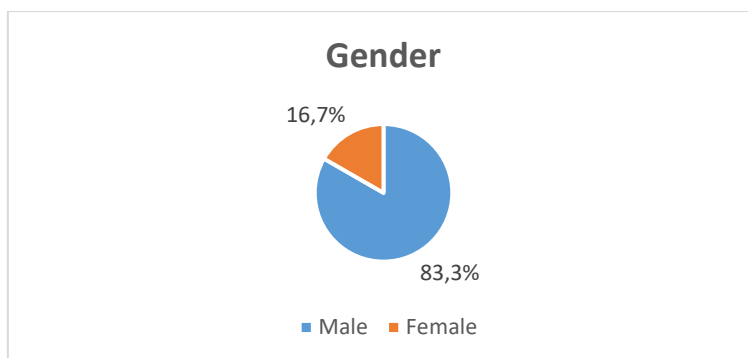


Figure 4.2: Gender distribution of respondents in the study

It is evident from the study that the number of males was higher (83.3%) than that of females (16.7%). Interestingly, these findings are much similar to the study conducted by Katikati (2017) of whom the male and female respondents constituted 88% and 12% respectively. According to Lubambo (2011), females are generally more involved in growing vegetables than keeping animals.

4.2.3 Marital Status

Table 4.1 below shows the marital status of the interviewed farmers.

Table 4.1: Marital status of the respondents in the study area

<i>Status</i>	<i>Frequency</i>	<i>Percentage %</i>
Married	35	58.4
Widowed	15	25.0
Single	6	10.0
Divorced	2	3.3
Separated	2	3.3
<i>Total</i>	<i>60</i>	<i>100</i>

The majority (58.4%) of the respondents indicated that they were married, followed by 25% of the respondents who are widowed, while the remaining percentage was accounted for by other options as indicated in the table. The study by Mthi et al., (2020) in the Eastern Cape reported similar trends. The reason for high percentage in married respondents may be attributed to the relative high age of the dominant age group of respondents. The option of divorce occupied the lowest number (3.3%). This low percentage in divorce may be ascribed to traditional beliefs that do not

recognize divorce as a method of ending marriages within the amaMpondomise tribe from which all participants originate. Marital status is an important phenomenon in rural areas. Married people receive more respect than their unmarried counterparts (Mahlombe, 2018). Single respondents constituted 10% of the study. These respondents (single) largely came from the youth age group in the study.

4.2.4 Educational level

The level of education of a farmer influences the adoption of the new innovative knowledge and technology which are necessary to enhance agricultural productivity. Lack of education is notably one of the significant challenges in agriculture (Mahlako, 2018). The following figures (Figure 4.3 and 4.4) indicate the highest qualification obtained by the respondents as well as the literacy rate of the group with no education.

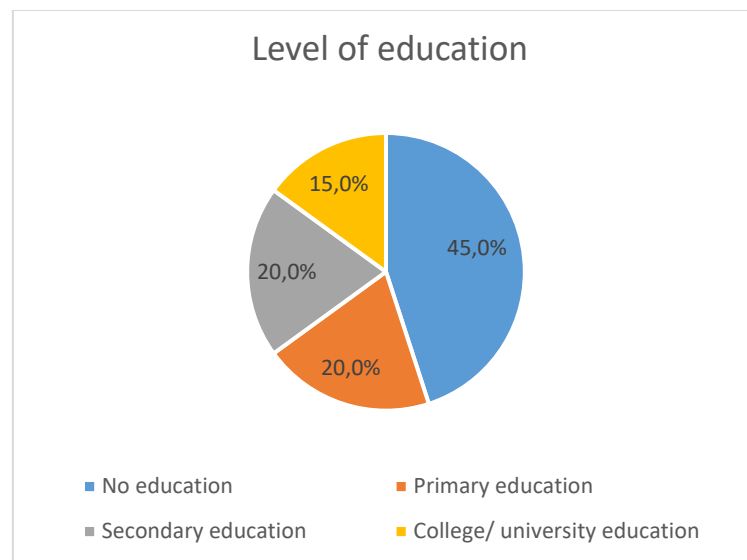


Figure 4.3: Highest qualification obtained by respondents in the study area Gender distribution of respondents in the study

From the sampled 60 farmers, 27 (45%) had no education, 12 (20%) had a primary education, 12 had a secondary education (20%) while only nine respondents (15%) indicated that they had a college or university education. Musemwa et al., (2007), stated that education is important in farming as it plays a role in the success of the farming business by influencing decision-making. The high percentage of respondents with no education is attributable to the average age of the respondents,

i.e., the older respondents who grew up in an era when schooling was not a priority in these communities. The 15% (9) of the respondents who had a university qualification were largely the youth of the sampled population. Young people are now exposed to more educational opportunities since the advent of democracy. This exposure to educational opportunities explains the difference between educated sampled younger respondents and the uneducated older respondents.

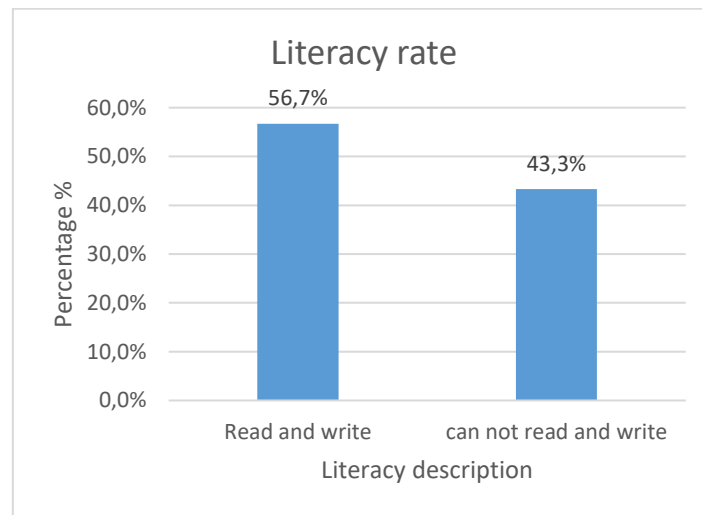


Figure 4.4: Literacy rate of the respondents with no education in the study

Although the results (Figure 4.3) show that 45% had no education, 56.7% of these respondents were able to read and write (Figure 4.4). According to Mthi et al., (2020), literacy is essential as it influences record keeping which is a necessary component of sound management ability of the farmer.

From the 9 respondents who indicated that they had post-school qualifications, only 2 respondents had an agricultural qualification, with only one having a short course certificate in agriculture. Most of the other respondents from this group specialized in education and engineering.

4.2.5 Household size

According to Stats SA (2018), the average national family size in South Africa is 3.3 members. Knowing household size is important in order to understand the number of people that are dependent on the farming business. This knowledge is key to

understanding the socio-economic conditions of the farmers. Table 4.2 below illustrates the family sizes of the sampled respondents.

Table 4.2: Household size of the respondents

<i>Household size</i>	<i>Number of respondents (n)</i>	<i>Percentage of respondents (%)</i>
1 - 5	16	26.7
6 - 10	32	53.3
11 - 15	12	20.0
	<i>Total: 60</i>	<i>Total: 100</i>

The study had a mean household size of 7.5 members. Most of the respondents (53.3%) had a family size of 6-10 members, followed by 1-5 (26.7%) and 11-15 (20%) family sizes, respectively. Gracinda et al., (2018) in their study reported an average family size of 7.2 members in Mozambique. The average family size of 7.5 members more than doubled the average 3.3 members national family size as reported by Stats SA (2018). A large family size imposes challenges connected with increased demand for food, clothing, healthcare, and education.

4.2.6 Farming experience

Ndoro et al., (2014) stated that experience improves the farmers' capacity to understand the benefits of technology and to properly interpret agricultural information. Respondents were asked to mention the number of years they have been in livestock farming. The mean experience and standard deviation were 23.77 ± 15.49 years, with the minimum being 4 years and maximum 55 years. Normally, communal farmers are migrant labourers. When asked about farming experience, they tend to count from the year in which they bought their first stock. This response does not necessarily reflect the years in which these farmers have been hands-on. Experience is vital in livestock farming because the more experienced the farmers are, the greater their ability to handle prevalent risks in agriculture and their decision-making improves as they gain more experience. By conducting the Pearson correlation test, it was found that there is a significant correlation ($P < 0.05$) between age and farming experience as older farmers tend to

have more experience than younger farmers. Although the number of years an individual farmer has been on farming is justifiably used to determine their experience, it does not always reflect the true experience as it may be derived from an extensive knowledge and practical skills acquisition in a short period.

4.2.7 Reasons for keeping livestock

The reasons for farmers to keep animals or to farm are key to understanding the direction of their farming operation. Usually, where the reason to farm is to make money, the way the individual farmer will manage their farming operation will be different from circumstances where farming is engaged for subsistent purposes. Thus, management and income can also be influenced by the overall objective of the farming business. In the questionnaire, respondents were requested to provide reasons why they are farming with animals (Table 4.3).

Table 4.3: Respondents' important reasons for keeping animals

<i>Reasons</i>	<i>Number of reasons (n)</i>	<i>Percentage of responses (%)</i>
Social functions	33	27.5
Investment for education of children	23.4	23.4
Source of income	19	15.8
Social dignity	17	14.2
Consumption by household	13	10.8
Provision of draught power	10	8.3
	<i>Total: 120</i>	<i>Total: 100</i>

When the information in Table 4.3 is considered, it is evident that most responses (60.8%) were linked to subsistence farming as only 15.8% of the responses indicated livestock production as a source of income, and another 23.4% as “investment for education of children”, implicating that animals will be converted into cash. However, the 27.5% responses relating to “social functions” may either be that animals will be slaughtered for own use (i.e., own funerals, lobola, traditional ceremonies, etc., or that they will be sold for cash to other people that will then use it for social functions). Furthermore, it must be kept in mind that the question allowed

for multiple responses, thus it was possible for a single respondent to indicate e.g., both “source of income” and “consumption by household”. Current results contrast with Nkosi and Kirsten (1993) who reported that respondents in Lebowa kept livestock for commercial purposes.

4.2.8 Source(s) of income for the respondents

Figure 4.4 below illustrates the major sources of income for the respondents. When respondents were asked if farming was their major source of income, 57 farmers (95%) of the 60 respondents indicated that farming was not their major source of income while only 3 respondents (15%) said farming was their major source of income. Because the majority of respondents did not rely on farming as the main source of income, it was important to determine what other sources of income were considered major sources by the respondents. Figure 4.5 shows what these sources are.

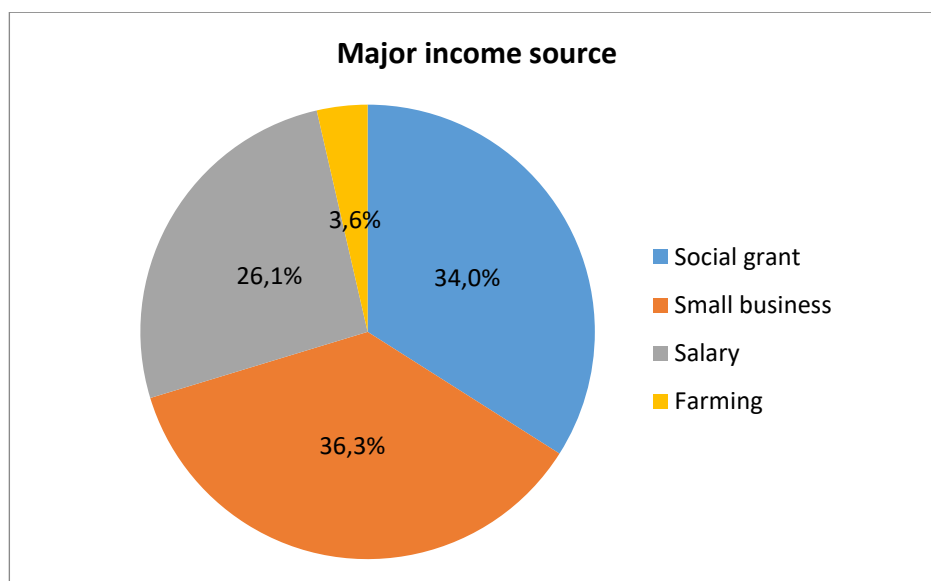


Figure 4.5: Indication of the main sources of income for the respondents

It is evident that small businesses (36.3%) were the major source of income for the respondents, followed by social grants (34.0%) (both old people pension and child support grants) and salaries (26.1%). That farming was described as not being a major source of income can be attributed to the reasons for keeping animals which were reported earlier where respondents engaged in farming to meet their social function needs and consumption (subsistence). Under circumstances where farming

is practised for commercial reasons, it is likely that farming is always indicated as the major source of income. These findings contrast with those of Mahlomme (2018) who reported that 40% of the farmers listed farming as their major source of income. Table 4.4 below shows the extent of total income from the major sources of income of the respondents. A Pearson correlation test was conducted to determine the correlation between an increase in livestock and income generated from such increase when animals are sold. It was found that there is a significant correlation ($P < 0.05$) between income and increase in livestock numbers over the two years (2018-2020).

Table 4.4: Total income per annum of the respondents from the major source(s) of income

<i>Total income (R)</i>	<i>Number of responses (n)</i>	<i>Percentage (%)</i>
0 - R20,000	10	16.7
R20,001 - R40,000	26	43.3
R40,001 - R60,000	7	11.7
R60,001 - R80,000	4	6.7
R80,001+	13	21.6
<i>Total</i>	<i>60</i>	<i>100.0</i>

Majority of the respondents (43.3%) fell in the bracket of R20,001 to R40,000, followed 21.6 % falling into the R80,000 and more bracket, while 16.7% were on R0 to R20000 bracket. It is evident that 71.7% (43 of 60) earned less than R60,000 per year.

4.3 Sources of water and water supply

The respondents (representing communal farmers in the MLM), were asked if there was a water supply in the area. Sixty-three-point three percent of the respondents indicated that there was no water supply in the area while 36.7% indicated that there was a water supply. The majority of respondents used rivers (50%). Other respondents (15%) used cement dams, 11.7% ground dams, borehole and well each

8.3% and springs only 6.7%. The results for the available water sources for farmers' animals in the study area are illustrated in Table 4.5 below.

Table 4.5: Main water source for animals in the study area

<i>Main water source</i>	<i>Number of respondents (n)</i>	<i>Percentage % of responses</i>
River	30	50
Ground dam	9	15
Cement dam	7	11.7
Borehole	5	8.3
Well	5	8.3
Spring	4	6.7
<i>Total</i>	<i>60</i>	<i>100</i>

The perceived quality of water was rated as relatively good (56.7%), while other respondents described water quality as muddy (40%) and only 3.3% respondents described water quality in the area as salty. In the Omaheke region of Namibia, Hangara (2011) reported similar results. When respondents were asked how many times they took their animals to the water source to drink, 61.7% indicated that their animals had unlimited access to water, 33.3% are taking their animals only once per day to the water source and 5% of the respondents taking animals twice daily to the water point. Those respondents who took their animals only once per day to the water source were farmers who kraaled their animals far from the water point.

When respondents were asked if water was adequately available through the year, 51.7% of the respondents stated that water was not available throughout the year, while 48.3% responded to the affirmation. The respondents whose animals would not get adequate access to water were further asked how their animals get access to water during water-deficient seasons and what distance, if any, were the water sources away from their animals. The minimum distance was 0.3km and maximum was 5km, with the mean distance being 1.1km to the water source. Table 4.6 below shows measures taken by the respondents during water-scarce periods.

Table 4.6: Measures taken by respondents during water-scarcity periods

<i>Measures</i>	<i>Number of responses (n)</i>	<i>Percentage number of responses %</i>
Animal driven to far-away rivers	19	59.4
Fetch water using ox-wagon	7	21.9
Animals taken to other villages until there is enough water	4	12.4
Wait until it rains	2	6.3
	<i>Total: 32</i>	<i>Total:100</i>

It is clear from Table 4.6 above that most respondents (59.4%) drive their animals to the areas where they can get water to drink, while 21.9% preferred fetching water using ox-wagon, 12.4% taking animals to other villages where they have relatives until water recovers in the sources in their villages and only 6.3% taking risks with their animals and wait until it rains. The average years (in 10 years) in which drought occurs in the study areas was 6.1 years. The perceived reliability of the water sources was indicated to be relatively good in summer and autumn while poor for winter and spring.

Water is an important nutrient in animals. Poor water quality may lead to deterioration in animal condition. Thus, it is always essential to ensure that animals have adequate access to water and that water supply must be reliable for sound farming.

4.4 Land access, rights and size

Communal farmers are central and instrumental in addressing the problem of poverty and food insecurity. However, according to Mothae (2017), they have, amongst others, been constrained by poor access to land. Access to land influences the ability of the farmers to take key farming decisions. In communal areas, the authority, rights, and responsibility to allocate and control land rest with community leaders (Communal Land Rights Act, 11 of 2004). In most cases, women farmers are marginalized and have access and rights to land based on marital status. Mothae (2017) argued that even in instances where women are married, their access and rights to land are always secondary and limited.

Respondents (representing farmers in the MLM) were asked about land ownership in the area in which they grazed their animals. Land ownership was understood to inherently imply the access and rights that farmers had over the land. The study reports that all respondents (100%) were using community land which is under the custody of traditional leadership. No respondents were using rented/leased land.

Limited land rights constrain small-holder farming. The Communal land system regulates how the land is used, imposes herd sizes and dictates the types of crops to produce. Mahlombe (2018) stated that communal farmers have limited operational rights because community leadership appropriates the rights to land and imposes how the land must be utilized.

A question was asked about the size of the land in which these respondents were operating. Fifty-eight sampled farmers (96.7%) did not respond to this question because they did not know the size of the land. The lack of knowledge about the land size concurs with Fan and Chan-Kang (2005) who stated that rural farmers do not know the size of the land they farm in. The other two respondents who responded indicated that the numbers they gave could not be relied upon based on the continuous expansion of the residential places which is attributed to the rise in human population and the need for the accommodation of this rise. Thus, the rise in human population and the need to accommodate it, significantly affects the prospects of increasing productivity because there is limited land available for grazing. These results concur with those of Mahlombe (2018) where farmers mentioned that planting agricultural crops and the allocation of land for human settlement significantly hindered livestock development in the study area.

Respondents were further asked if they would wish to expand their grazing. The purpose of this question was to determine whether respondents had an interest in taking agriculture as a potential major adventure they would like to venture into. Eighty-eight percent (52 of 60) of the respondents responded to the affirmative. Most of the respondents who did not wish to expand their grazing land were women who expressed their marginalization in agriculture, made prevalent by poor and limited land rights and indicated that they were easy targets for livestock theft. Respondents who would wish to expand their grazing land were further asked to provide reasons for their wishes. Thirty-eight respondents (or 51.3% of the sample) wanted to

increase their production, eleven respondents (14.9%) were interested in adequate grazing for their animals, twelve respondents (16.2%) indicated that they would want to fatten their animals to ensure good chances of conception and better market prices, while thirteen respondents (17.6%) were interested in migrating to commercial farming. There is evidence from the above reasons that communal farmers are significantly hampered by insufficient land rights and access. In a study by Khapayi and Celliers (2016), insufficient land rights and access were one of the identified factors constraining communal farming.

4.5 Herd/Flock Information and Breed Preference

4.5.1 Herd/Flock Information

The following table demonstrates the livestock numbers owned by respondents in the study area. Herd/flock count gives an indication of the objectives of farming. Communal farming is generally characterized by lower herd counts compared to commercial farming. This situation may be attributed to the reasons the individual farmer engages in farming. Table 4.7 below illustrates the average number of animals owned by the respondents.

Table 4.7: Average number of animals owned by the respondents in MLM

<i>Livestock category</i>	<i>Number of respondents (n)</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>
Goats	22	4	68	31.61
Cattle	45	2	87	16.16
Sheep	60	15	441	64.43

The above results demonstrate that respondents owned more sheep than other livestock cattle and goats. The ease of selling sheep compared to other animals may be speculated as the reason why they preferred farming with sheep than other livestock. In a national survey in South Africa, Scholtz et al., (2008) found that mean cattle number for communal farmers to be 19 cattle. The studies have similar trends when considering herd size of different animal types. Moreover, when the Pearson correlation test was conducted to determine if education has an influence on the

increase in livestock owned by the respondents in the previous years, results from the test indicate a significant correlation ($P < 0.05$).

4.5.2 Livestock breeds preference

Of the 41 sampled farmers that responded to this question, the dominant cattle breed was Nguni (66.1%), with Brahman (33.9%) listed as the only other option. According to the respondents, the choice for the Nguni cattle breed was due to its perceived adaptability to harsh environmental conditions. Forty sheep farmers (97.6%) were farming with Merino sheep while only 2.6% farmed with Pedi breed. Only 12 goat farmers from the total of 22 goat farmers responded to the question and 66.6% indicated that they farmed with Xhosa-Indigenous goat, with Angora and Imbuzi-Indigenous goat each constituting 16.7%.

4.6 Agricultural Extension and Support Services

According to Sebeho (2017), a critical aspect that defines agricultural extension is the technical advice and the provision of agricultural information by extension staff. Both technical advice and agricultural information assist farmers in making sound farming decisions. Sebeho (2017) further recommends that the interaction between farmers and extension officers must take place monthly.

Respondents were asked about their access to advice and information from government institutions. Ninety percent of sampled group had continuous access to government advice, while 8.3% did not have access. Only one sampled farmer did not respond. Respondents were further requested to state their source(s) of information, how they received that information and the kind of information they were given. The responses of the respondents on these questions are presented in the following table and discussed thereafter.

Table 4.8: Sources of agricultural advice for the respondents in the Mhlontlo Local Municipality

<i>Source of advice</i>	<i>Number of responses (n)</i>	<i>Percentage of responses (%)</i>
Extensionist	56	35.7
Farmer association	50	31.8
Television	18	11.5
Print media	10	6.4
Internet	8	5.1
Local agricultural shows	4	2.5
Other farmers	4	2.5
Nampo	3	1.9
Research institutions	2	1.3
Commonage meetings	2	1.3
Study group	0	0.0
<i>Total:</i>	<i>157</i>	<i>100</i>

Table 4.8 above shows that 35.7% responses rated the extension officer as the most common source of information. The farmer association, which all respondents were members of, was considered as the second most common source (31.8%), followed by other sources in the order in which they are tabled. As it can be seen, no respondent depended on study groups for agricultural advice. The absence of study groups may be attributed to the general lack of awareness about the importance of the study groups in communal areas.

Respondents were further requested to state the frequency of their interaction with the extension officers. Most (89.5%) indicated that they met with the extension officer more than once a month, 5.3% once a month, 3.5% every two months and 1.8% twice a quarter. Respondents who met the extension officer twice a quarter and every two months mentioned the poor state of the roads and limited cell phone coverage as some of the reasons for the irregular visits. The standard practice in this area is that extension officers are mostly visiting farmers in groups. Group visits (workshops) make it easy for extension officers to disseminate information to a large audience using limited resources and time. Similar findings were reported in Sebeho (2017) and Mahloko (2018) who rated extension officers as the most important sources of information for communal farmers. The following table displays the kind of

information that respondents received. From Table 4.9 below, it can be seen that credit advice was rated as least important information offered by the department according to farmers.

Table 4.9: The type of agricultural information offered to the respondents by the extension staff of the Department of Agriculture and Rural Development

<i>Type of information</i>	<i>Number of responses (n)</i>	<i>Percentage of responses (%)</i>
Animal health	56	24.3
Market advice	54	23.5
Production planning	49	21.3
Pasture management	34	14.8
Assistance with weather services	19	8.3
Credit advice	18	7.8
<i>Total:</i>	<i>230</i>	<i>100</i>

Respondents were also questioned regarding their access to credit. The Pearson correlation test revealed no significant difference ($P > 0.05$) between educational level and access to credit, signalling that the most important consideration in credit access is collateral certainty.

The above results gave an overview of the demographical characteristics of the respondents, while Chapter 5 will focus on the production-, marketing- and management practices and constraints of communal livestock farmers in the study area.

5. Chapter Five: Production, marketing and management practices and constraints of respondents

5.1 Introduction

This chapter focuses on the practices and constraints pertaining to production, marketing, and management of livestock farmers in the MLM.

5.2 Management practices and constraints

According to Makapela (2008), the concept of farm management implies that the individual farmer should have control over the direction of his farming business. Joubert (2013) reported that the Agricultural Sector Education and Training Authority (Agri-SETA) identified poor management skills amongst small-scale farmers as one of the key constraints. In assessing the status of livestock production in the MLM, it was important to determine the management practices and constraints of farmers in the area.

5.2.1 Breeding management

In determining breeding practices of farmers in the area, the respondents in the study were asked whether they had control over the breeding season and if so, in which months were they mating their animals? The results revealed that all respondents (100%) have no control over the contact with bulls and rams of other farmers that may mate with their own animals as they are sharing communal grazing areas. The implication is that it is thus difficult to have specific months (breeding season) in which animals are mated. The present results are compatible with the findings of Molefi et al., (2017) who reported that 91.5% farmers practiced continuous breeding in the Chief Albert Luthuli Municipality. Similar results were reported in the Omaheke region of Namibia by Hangara (2011) where 74% farmers practiced uncontrolled breeding. The reason for this breeding practice can be explained by the general lack of proper infrastructure such as fences and inadequate grazing land that characterize communal farming and, in some instances, farmers do not have knowledge on how to plan breeding and also may have no bulls/rams. In

the Molefi et al., (2017) study, 68.5% of farmers did not have own bulls and relied on bulls of the other farmers. However, Mthi et al., (2020) reported that most of the farmers had their own breeding bulls. Communal farming system complicates breeding choice of farmers and affects breed purity due to females being left with males continuously in the grazing land. None of the respondents test their bulls/rams for fertility.

5.2.2 Animal health management

Proper animal health entails a normal functioning body of an animal without the presence of a disease or with the ability to resist illness. Diseases in animals must be addressed because they are responsible for huge economic losses for the farmer as they limit production (Bebe et al., 2003).

5.2.2.1 Source of advice for sick animals

It was important to determine where the respondents sought advice when their animals are sick. Of the respondents in the study, 82% were making use of the state veterinary technician. Figure 5.1 displays the sources of advice that respondents are using in their quest to obtain information on animal health issues.

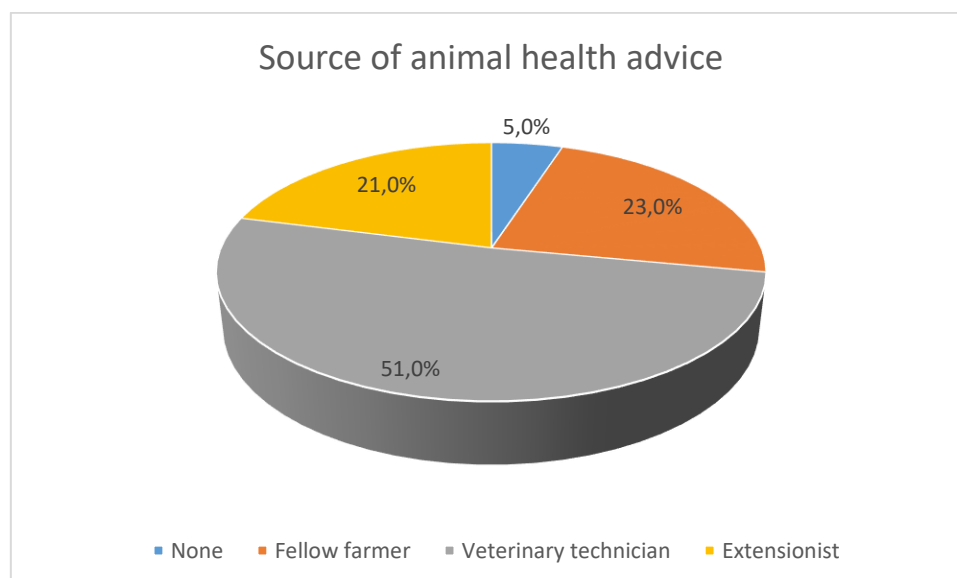


Figure 5.1: Sources of animal health advice for the respondents in the study area

The number of responses in Figure 5.1 were 96 responses. Thus, some respondents used more than one source of advice for animal health. The majority of the responses indicate that veterinary technician (51%) was mostly used, while others sought advice from other farmers (23%), extensionist (21%) with only an insignificant number (5%) not seeking any advice. The average distance from the villages to town where respondents find the state veterinarian was 41.9km. While this distance is reasonable, farmers struggled to access the veterinary technician because financial resources are not always available and during the rainy season, poor roads militate both the respondents and veterinary technician from frequently visiting one another.

5.2.2.2 Vaccination of animals

In the study sample, 93% of respondents vaccinated their animals. Respondents not vaccinating their animals complained of either the high cost of medicines or were old and did not have anyone to take their animals to the vaccination centre to benefit from the state vaccination program. Nowers et al., (2013) stated that vaccination programs in communal farming are mostly carried out by the state. Figure 5.2 below demonstrates the diseases that the respondents vaccinate their animals against.

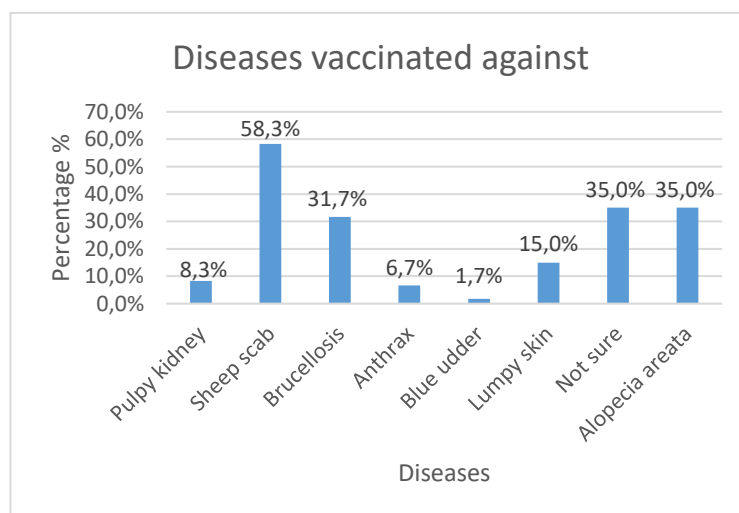


Figure 5.2: Diseases against which the respondents vaccinate their animals

This question allowed for multiple answers, thus it is possible that respondents may have chosen multiple answers. The responses indicate that sheep scab (58.3%), Alopecia areata (35%) and Brucellosis (31.7%) were three diseases mostly vaccinated against. Other diseases included lumpy skin (15%), pulpy kidney (8.3%)

and anthrax (6.7%). Twenty-one respondents of the total 60 sampled farmers (35%) indicated that they were not sure which diseases they vaccinated against but only followed a vaccination program administered by the state. In the study by Makapela (2008), pulpy kidney was found to be the most disease vaccinated against. However, in the current study, pulpy kidney was amongst the least important diseases vaccinated against. The assumption could be that farmer in the MLM are not embattled with the disease. Responses varied when respondents were asked when they vaccinate their animals. Thirty-one farmers (52%) followed a health management program, 48% of respondents (n=29) vaccinated only when a need arises.

5.2.2.3 Parasite control

a) *Internal parasites control.*

The present study reports a significant number of respondents (88%) who control internal parasites, with only seven respondents not controlling internal parasites. Respondents not controlling internal parasites mentioned that the high cost of remedies was the main reason hindering them from dosing their animals. All respondents that are controlling parasites, used a dosing method to apply the remedies. Figure 5.3 demonstrates the internal parasites controlled by the respondents.

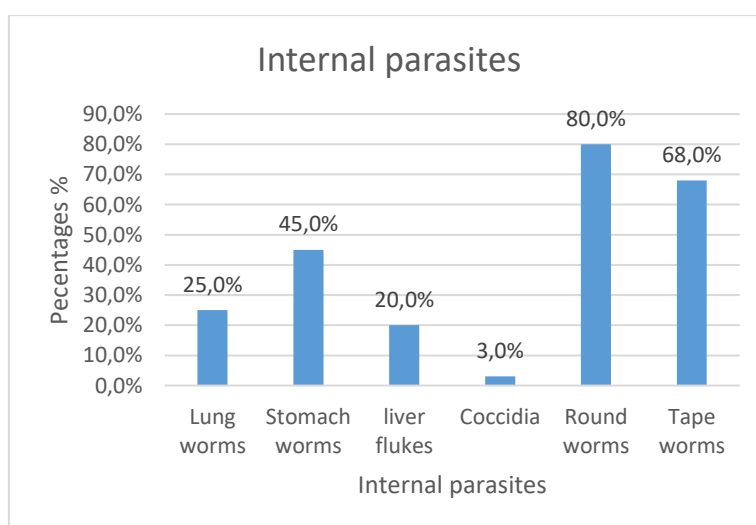


Figure 5.3: Internal parasites controlled by the respondents in the MLM

From Figure 5.3 above, a significant portion of the responses indicate that respondents struggled with round worms (80%), tape worms (68%) and stomach worms (45%) as the most common internal parasites in the area. Internal parasites harm internal organs in animals. According to Waller (2006), proper biological control and key grazing strategies also play a role in the process of controlling parasites.

b) External parasites control

All respondents in the study area controlled external parasites. The fact that all respondents controlled external parasites could be associated with the intervention applied by the state animal health program in this region as most respondents relied significantly on state-sponsored remedies such as dipping chemicals. The present study reveals that the most important external parasite was sheep scab amongst the respondents with sheep in the study area. These findings find consensus with Makapela (2008) and Ngqulana (2017) where sheep scab was rated the most treated external parasite in the study area. Table 5.1 below indicates how respondents controlled external parasites.

Table 5.1: Indication of the methods used by the respondents to control external parasites

<i>Method</i>	<i>Number of responses (n)</i>	<i>Percentage of responses (%)</i>
Dipping	48	44.9
Hand picking	40	37.4
Pour on remedy	12	11.2
Tick grease	7	6.5
<i>Total</i>	<i>107</i>	<i>100</i>

Dipping was employed by most respondents (44.9%), followed by handpicking as the second most common method used by respondents. Katikati and Fourie (2019) found that dipping was amongst the most common external parasites control methods used by farmers in the Amathole District Municipality. In Hangara (2011), dipping was rated the second most frequent method applied while pour on remedy was found to be the most common practice employed by farmers. According to the respondents, dip chemical is provided by the state as part of the state's animal health intervention in the MLM. By conducting the Pearson correlation test, it was

found that there is a significant correlation ($P < 0.05$) between the way that respondents control parasites and how they make use of the DOA veterinarian.

5.2.3 Record keeping

Record keeping is a very important management practice. According to Makapela (2008), detailed record keeping is difficult in communal areas. All respondents in the MLM knew the number of animals they had. The same results were reported in Makapela (2008). Regarding detailed record keeping, only 43% of respondents kept records. The records that the respondents kept were herd numbers, sales records, birth, and mortality records. A Pearson correlation test was conducted to determine whether there is correlation between age, farming experience, literacy level and educational level and the way in which respondents keep records. The results from the test indicate that there is a significant correlation ($P < 0.05$) implying that those who had more experience, able to read and write and have better educational levels tendered to keep good records. However, when Pearson test was conducted to determine whether any true relationship existed between record keeping and farm income, it was found that there was no significant correlation ($P > 0.05$), implying that the way records are kept had no implications on the income generated by the farmers. When this study is compared with others, the results are in contrast with Hangara (2011) where only 5% of respondents indicated that they were keeping records.

The high percentages in the number of respondents that kept records in the MLM could be associated with the success of an extension program and agricultural advice workshops conducted in the study area. However, 57% of respondents do not keep records. The reasons for failing to keep records were that respondents did not see the benefits of keeping records (54.5%), poor numerical abilities (27.3%) and illiteracy (8.2%). While progress has been made to train farmers on the importance of record keeping, there remains a challenge of training these farmers on the best record keeping methods.

5.2.4 Livestock kraaling

In a study by Gusha et al., (2018), 90% of communal farmers in communal areas of the north-Eastern Cape Province were kraaling their animals. Jizana (2020) found comparative results for communal farmers in the Middleburg area. However, the results from this study reveal that all respondents (100%) were kraaling their animals. In communal areas, animals are kraaled for various reasons and respondents were probed to provide their reasons for kraaling animals. All respondents indicated that they kraaled their animals to prevent theft, 42% mentioned that it provides them with the opportunity of monitoring animal health (e.g. observe diseases), 33% mentioned that it is way of protecting their stock against predators, 17% of respondents see it as a way to collect manure which is then used as a fertilizer for cropping fields, and 8% use kraaling to prevent animals from straying into the cultivated fields at night and damage crops. Table 5.2 demonstrates the average grazing hours for their animals.

Table 5.2: Average summer and winter grazing hours for the different livestock species of the respondents in the study area

<i>Livestock type</i>	<i>Mean</i>	<i>Standard deviation</i>
Cattle	11.91	0.28
Sheep	8.72	0.49
Goats	8.88	0.34

The number of hours between sheep and goats did not differ much while average grazing hours for cattle differed with sheep and goats. The common reason amongst the respondents for longer grazing hours for cattle is linked to a perception that cattle require longer grazing hours because they are larger ruminants. The rest of the hours were spent in kraals because all of the respondents kraal their animals at night (as discussed earlier in the paragraph).

5.2.5 Animal Identification

The South African Department of Agriculture and Rural Development demands that all livestock owners should have a registered livestock identification mark and apply marking of ruminants. According to Act No:6 of the Animal Identification Act (AIDA) (2002), unique identification serves as the first line defence against stock theft and

simplifies the task of tracing stolen animals. The respondents in the study area were all adhering to livestock identification. Ninety-eight percent of the respondents with sheep/goats used the ear-notching identification approach, while 5% of respondents used ear-tagging and 45 respondents branded their animals. The 45 respondents who branded their animals were cattle owners which was the total number of cattle owners participants. The ear-notching approach is observably favoured above ear-tagging in the communal areas. However, ear-notching and ear-tagging are not acceptable methods according to the Animal Identification Act. It is evident that identification was done only as a compliance with the department and over concerns of livestock theft and not necessarily as an important management practice. Identification plays a critical role in selecting animals based on their reproductive performance (Moreki et al., 2012). For example, marking ewes that have multiple births to keep their lambs for production.

5.2.6 General Livestock Management

Table 5.3 below shows general management practices employed by the respondents in the study area.

Table 5.3: Livestock general management practices performed by the respondents of the study

<i>Management practice</i>	<i>Number of respondents (n)</i>
Kraaling	60
Castration	60
Vaccination	57
Branding	45
Dehorning	42
Provision of supplement feed	21
Ear-notching	9
Ear-tagging	8
Weighing of new-borns	3

All respondents castrated and kraaled their animals. In the case of cattle, respondents castrated bulls to ensure that they have an adequate number of oxen which are used for provision of animal traction. General castration for sheep and goats was to create wethers and steers which are market-favoured. Kraaling was done for multiple reasons with livestock theft prevention being a chief reason. Vaccination was ranked as one of the mostly practiced activities (n=57). The state plays a key role in ensuring vaccination by providing remedies. Livestock identification was done by all respondents. Forty-two respondents dehorned their animals and only 3 respondents (sheep farmers) (5%) were weighing new-borns. Communal farmers struggle to weigh new-borns because they usually do not have access to a scale as was the case with the sampled farmers.

5.2.7 Nutrition and feed supplementation

Feeding and proper nutrition constitute a key management practice. In determining management practices of farmers in the study area, it was critical to assess feeding practices of farmers. Provision of feed followed the typical communal farming routine. Communal farmers struggle to buy feed for the animals. In most cases, because of the high cost of feed, they prefer to feed animals during natural disasters like droughts because DARD normally intervenes in such instances. Respondents were asked how they ensured fodder availability throughout the year. The results indicate that 56.7% of respondents planted pastures in the cropping fields, 18.3% kept crop remains in storerooms and 25% depended squarely on provision by DARD. Table 5.4 displays major types of feed that are commonly used by the respondents.

Table 5.4: Major types of feed provision in the study area

<i>Type of feed</i>	<i>Number of respondents (n)</i>
Maize	57
Lucerne	52
Crop residue	45
Rested veld	14

The typical pattern in communal areas is that livestock depend on natural resources for their nutritional requirements. This practice prevails in communal areas due to

high costs of feed. Ninety-five percent of respondents provided extra feed for their animals only during drought. From the researcher's interaction with the farmers during the administration of interviews, it emerges that, although it could not be quantified, there is a difference in terms of animal growth subject to supplementary feeding compared to those that do not get supplementary feeding. Respondents used various feed types (more than one). The average period of time that supplementary fodder was provided was 6.16 weeks. Supplementary feeding has multiple benefits. According to Makapela (2008), supplementary feeding results in improved milk production which is necessary for lactating animals. It was, however, essential to determine what was/were the source(s) of the supplementary feed. Figure 5.4 below illustrates the sources of feed.

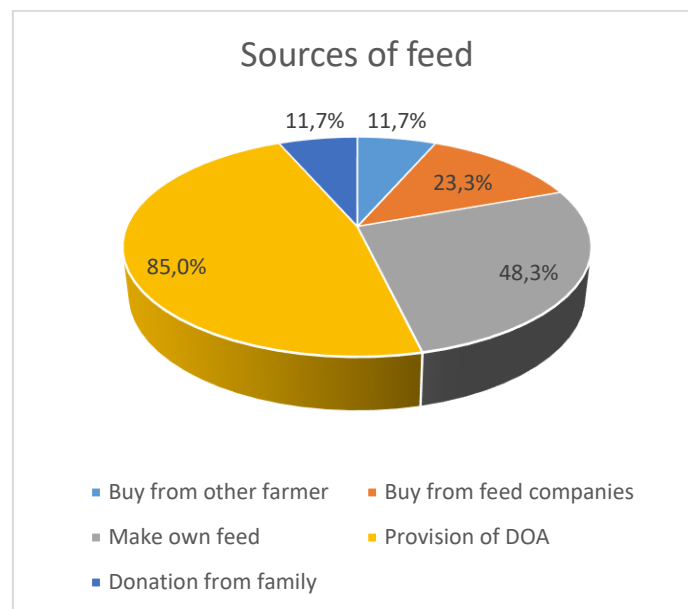


Figure 5.4: Indication of the sources of feed in the study area

It can be deduced that most respondents (85%) depended on the provision of feed by the department during a natural disaster. Only 11.7% (n=7) of respondents bought feed from other farmers. These other farmers are crop producers who do not keep livestock and sell their produce at cheaper prices compared to formal feed market prices. Forty-eight percent of respondents (n=29) made their own feed from crops planted both in the cropping fields and in gardens of their allocated residential land. According to Goni et al., (2018), in the communal areas of the Eastern Cape, each household is provided with cropping field, a small portion of residential area with garden, while grazing land is communally owned. Twenty-three-point three

percent of the respondents (n=14) buy feed from feed companies. The 14 respondents who buy from feed companies belong to the minority of respondents who owned a substantial number of livestock. In seasons where there are sufficient natural feed resources, respondents do not feed their livestock.

5.3 Production practices and constraints

5.3.1 Mating practice

Mating control is a critical production practice that has multiple benefits. The key reason for controlled mating is to ensure that animals can calve, kid or lamb when the pasture condition in the grazing land is good. Calves, kids, and lambs put a great demand on the breeding animals. It is vital to plan for the calving and lambing season to ensure that it happens simultaneously with peak grass quality. According to Burnett (2019), the benefits of mating control is that it leads to breeding animals which have a good body condition and ensures that breeding animals can return to heat earlier. On the progeny (calves, kids, and lambs), it also results in good condition and their marketability is increased because they are attractive to buyers.

All respondents did not have control over mating. Respondents cited that it was impractical to control mating under their farming conditions. Rams/bulls and ewes/cows are thus, permanently kept together, forage together and can mate any time. Hangara (2011) associated poor or no control over mating to inadequate infrastructure (e.g. fencing) that defines communal grazing. A lack of or poor infrastructure hinders agricultural development. Furthermore, the problem is aggravated by the inability of communal farmers to work together by grouping and separating all bulls/rams from the females for specific periods.

In trying to determine key mating practices, respondents were asked to state the age in which they mated their animals. While respondents did not have control over mating, the study finds that the respondents who owned sheep and goats reported their first-time ewes to naturally mate at an average age of 19 months for first-time ewes and 20 months for first-time does. The average mating age for first-time sheep and goats contrasted with Kosgey (2004) who reported that the average mating age for these animals was 10-11 months in Kenya. Heifers mated at a mean age of 46

months. In a study conducted by Tada et al., (2013) in the Eastern Cape, the average mating age of heifers was 48 months.

5.3.2 Livestock herd/flock composition

A normal productive herd structure is one that has more females than males. Respondents were asked questions to determine if they understood and practiced this key production practice. In the study area, there was a total of 724 cattle, 731 goats and 3875 sheep owned by the sampled farmers. The difference in numbers between sheep and the other two classes (goats and cattle) suggests that farmers in the study area preferred sheep to goats and cattle. In other studies (e.g., Mahanjana and Cronje, 2000), sheep were also the most preferred livestock. The justification for this preference can be ascribed to the ease of selling of sheep compared to goats and cattle. Table 5.5 displays the sheep-, cattle-, and goat herd structure in the MLM.

Table 5.5: Composition of the respondents' sheep flock, goat flock and cattle herd

<i>Flock /herd composition</i>	<i>Number of animals (n)</i>	<i>Percentage of animals (%)</i>
<u>Sheep</u>		
Ewes	1570	40.5
Lamb ewes	749	19.3
Wethers	380	9.8
Lambs	1111	28.7
Rams	65	1.7
	<i>Total:3875</i>	<i>Total:100</i>
<u>Goats</u>		
Kids	226	30.9
Bucks	29	4.0
Wethers	150	20.5
Does	326	44.6
	<i>Total:731</i>	<i>Total:100</i>
<u>Cattle</u>		
Oxen	97	13.4
Calves	187	25.8
Heifers	132	18.3
Cows	291	40.2
Bulls	17	2.3
	<i>Total:724</i>	<i>Total:100</i>

The above results demonstrate that the average number of female animals outnumbered male animals. An animal herd or flock must be dominated by female animals to ensure continuity of reproduction and good production. These results are comparable with Tokozwayo et al., (2018) who reported that herds of animals were dominated by female animals in the Eastern Cape. Similarly, in a study conducted by Mahanjana and Cronje (2000) in the Eastern Cape, does outnumbered males.

5.3.3 Ratio between males and females

If the data provided by the respondents is analysed, the bull:cow ratio can be calculated as 1:25. The total number of cows and heifers was 423 and that of bulls was 17. Essentially each bull serviced 25 female cattle. This ratio is in line with the industry norm of 1: 25-30. Only 16 respondents farming with cattle (36%) reported that they had bulls, thus comparable with the study by Ngqulana (2017), whereby only 25% of respondents owned bulls. The ratio of ram:ewe was 1:36. The total number of rams in the flock of the sampled farmers was 65. However, only 35 respondents (58%) owned rams. This means that there were other respondents who kept more than one ram. The ram:ewe ratio is relatively lower than the national standard of 1:50. The ratio of buck:doe was 1:11. This was considerably higher in comparison to that of sheep and the standard ratio of 1:40.

5.3.4 Calving, lambing, and kidding rates

The mean calving rate in the study was 43.8%, lambing rate 95% and kidding rate was 70.3%. A significant volume of literature has reported calving rate to range from 20% to 40% in communal areas. Nthakheni (2006) reported a calving rate of 35.6% in the communal farming of Limpopo, Ngqulana (2017) found an average of 21.19% and Hangara (2011) reported 31.5%. Although the mean calving percentage reported in the present study is slightly higher than those reported by the mentioned authors, there is insignificant difference between the current findings with the widely reported mean calving percentage in the literature. The current results indicate a lambing percentage of 95%. In the study by Makapela (2008), similar results were reported where the average lambing rate was 94%. The kidding rate of 70.3% reported in this study contrasts the 38.3% rate reported by Nthakheni (2006). However, these findings are more in line with Mahanjana and Cronje (2000) who

reported a kidding rate of 76% for first-time does and 64% for mature does in the Mgwalana district of the Eastern Cape.

5.3.5 Miscarriage

It was difficult to determine the number of miscarriages in the study area. The lack of key knowledge on how female animals are diagnosed for pregnancy makes it impractical for the respondents to know the number of their animals that get miscarriage. Because female animals are kept with male animals throughout the year, it makes it difficult to practice some of the key production practices such as diagnosis of pregnant animals. Respondents cited that they did not know which animals had conceived post mating. The birth of offspring was the only way through which they knew which animals had conceived. Traditionally, as also revealed in the study by Jizana (2020), communal livestock farmers experience incidents of miscarriage more than their commercial counterparts.

5.3.6 Approaches employed by the respondents to manage unproductive breeding animals

Respondents employed three different measures in dealing with breeding female animals that did not give birth in a production year. Figure 5.5 below illustrates different measures taken in managing unproductive animals.

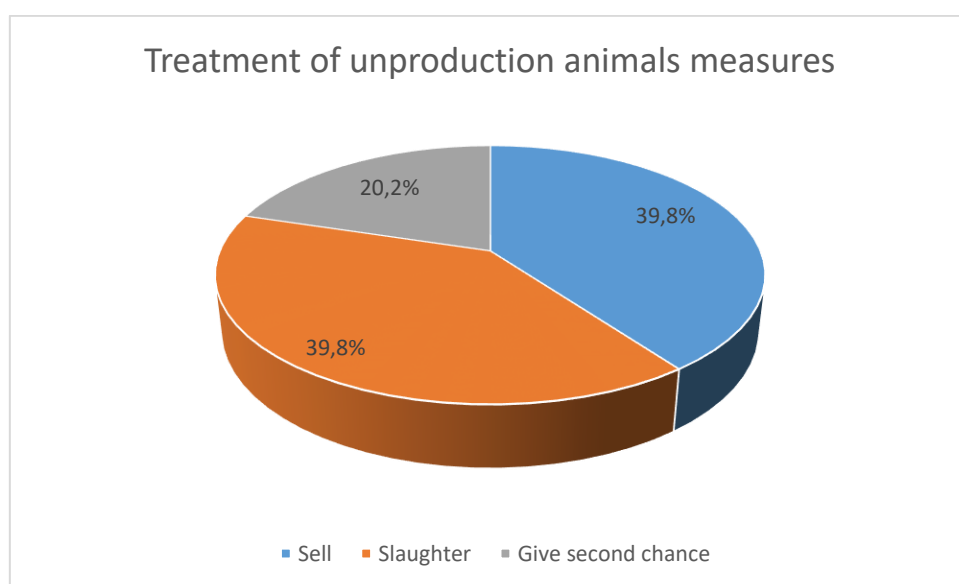


Figure 5.5: Management of unproductive animals

As can be seen in Figure 5.5 above, 51 respondents, constituting 39.8% of the total 128 responses, sold animals that failed to conceive and bear an offspring, 51 respondents (39.8% of the total 128 responses) slaughtered unproductive animals while only 26 farmers (20.2% of 128 total responses) indicated that they kept the animals for second chance after which they sell or slaughter them if the situation persists. As can be seen from the number of responses (128 responses versus 60 respondents), some respondents apply more than one of the above strategies. Animals are culled when they fail to conceive, experience abortion and struggle with mastitis among other reasons (Heravi et al., 2012).

5.3.7 Mortality

The lamb mortality rate was 38.5%, followed by kid mortality rate of 37% while the mortality rate for calves was 24%. Numerous authors have reported high mortality rates under communal farming. Nthakheni (2006) reported calf mortality of 15.7% in his study, while the mortality rate for lambs was reported to be 81.82% by Makapela (2008) in his study area. The present mortality rate of calves can be aligned with the findings of Nthakheni (2006), while there is a difference in lamb mortality rate between the current study results with Makapela (2008). Nthakheni (2006) further reported a kidding rate of 16.6% in Mpumalanga which was lower than the present finding of 37% kidding mortality. The major causes of mortality in communal areas are, amongst others, drought and diseases (Hangara, 2011).

5.3.8 Weaning practices

The weaning practices employed by the respondents followed typical practices in other communal areas. Respondents depended on natural weaning where kids, lambs and calves are permanently kept with their mothers until they are naturally weaned. Given the extent of poor record system, weaning rates were estimated from the birth rates and mortality rates and were calculated to be lower than birth rates. Weaning rates are generally lower in communal farming systems due to multiple challenges such as those imposed by poor management and production practices.

5.3.9 Identified production constraints

Respondents were asked to state factors that affect their production. The responses from the respondents are summarized in Table 5.6 below.

Table 5.6: Production constraints affecting farmers in the Mhlontlo Local Municipality

<i>Factors</i>	<i>Number of responses (n)</i>	<i>Percentage of responses (%)</i>
Theft	60	37.0
Predation	34	21
Poor grazing land	34	21
Drought	17	10.5
Diseases	16	9.9
Finances	1	0.6
<i>Total:</i>	<i>162</i>	<i>100</i>

The above percentages are calculated from the total number of responses as respondents were given the opportunity to list more than one factor. Theft was mentioned by all respondents as the most severe constraint that they were grappling with, while only one respondent mentioned finance as an important constraint. In Uukwaluudhi district of Namibia, Duvel and Stephanus (2000) reported that 80% of the farmers mentioned theft as a problem. According to Maluleke et al., (2016), the small towns of Qumbu and Tsolo (which fall within the MLM) were always ranked either number one or two respectively on national statistics of livestock theft. Livestock theft in the area is thus prevalent. According to Clack (2013), livestock theft is the largest challenge in livestock production. While theft critically affects both commercial and communal production of animals, it is relatively more severe in communal farming due to the relatively small number of animals (economy of scale). In the early 1990s, in the same region, a conflict raged between farmers and thieves where farmers could no longer bear both the emotional and financial anguish imposed by livestock theft. This era resulted in mass murder of the thieves and farmers (Clack, 2013).

The second most mentioned constraint was predation (21%) and poor grazing land quality (21%). Poor grazing land is explainable on the basis of overstocking and overgrazing in communal areas (Nthakheni, 2006). Many farmers under communal

tenure systems have few animals although mostly in communal areas overgrazing is always one of the highly rated production constraints. There is apparently evidence of a need to transform the land tenure system in communal areas. Goqwana et al., (2008) argue that because rural people are dependent on agriculture for livelihood, stock reduction strategies are not ideal to deal with the crisis of overgrazing as these strategies are not beneficial to farmers. There is an urgent need for government to avail land to communal farmers if livestock is to make a significant contribution to rural development. Predation was mainly by jackals and affected the respondents as much as poor grazing.

5.4 Marketing practices and constraints

5.4.1 Marketing methods

There is ample consensus on the literature that points to poor marketing abilities of small-scale farmers. In most cases, this poor ability can be ascribed to lack of access to key marketing facilities, no access to information and poor infrastructure. In understanding marketing practices of the farmers in the study area, it was critical to determine the methods these respondents use to market their animals. These methods are summarized in Table 5.7.

Table 5.7: The different marketing methods used by respondents in the Mhlontlo Local Municipality

<i>Marketing method</i>	<i>Number of responses (n)</i>	<i>Percentage of responses (%)</i>
Sell to interested buyers and farmer approach people who have events that require animal slaughtering	33	34.7
Announce during community gatherings	32	33.7
Ask family and neighbours to spread the word	17	17.9
Social media	13	13.7
<i>Total:</i>	<i>95</i>	<i>100</i>

Many of the respondents (34.7%) approach potential buyers who have announced that they will have ceremonies. In rural areas, dates of intended ceremonies are

reported to the chief who then announces it to the whole village. Respondents use this opportunity to market their animals. The second method was a direct announcement by the respondents during community gatherings (33.7%) without waiting to hear about the ceremony dates, followed by 17.9% of respondents who ask neighbours and family members to spread the word. Only 13 respondents (13.7%) indicated that they used social media. Given that the average age and illiteracy rate were high, respondents who used social media explained that they were assisted by their children who are skilful in using social media and by younger respondents. In a study by Musemwa et al., (2007), a significant portion of farmers in Lukhanji district marketed their animals through their neighbours, family, and friends and buyers who approach farmers when they have events. According to Paquette (2013), social media has been utilized to reach potential buyers with little resources employed. It appears that there is a strong indication that social media is more preferred by young people than older people. The reason for this could be that young people are more exposed to educational opportunities, eager to experience things and willing to pursue technological innovation.

5.4.2 Markets where respondents sold their animals

Figure 5.6 below displays the markets where respondents preferred to sell their animals.

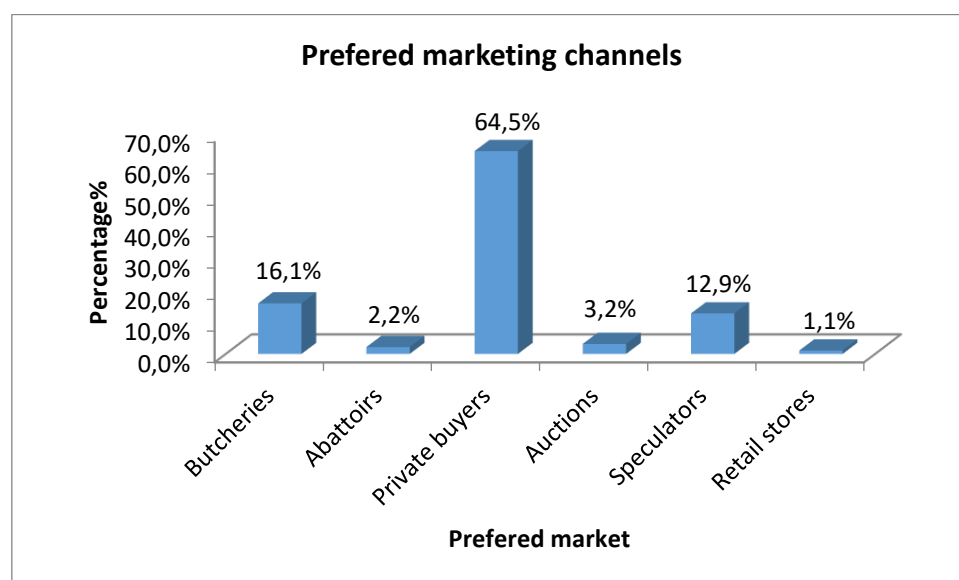


Figure 5.6: Preferred markets by respondents in the Mhlontlo Local Municipality

According to Musemwa et al., (2008), the choice of the marketing channels that farmers use is determined by the cost of using that channel in comparison to its subsequent value. Under circumstances where the cost of the channel exceeds the value, farmers will not use that channel. The present results can be aligned with Duvel and Stephanus (2000) who found that communal farmers use private buyers to sell their animals. The choice of private buyers appears to emanate from the low transaction cost involved with this channel because animals are bought directly from the farmer's kraal. However, according to Musemwa et al., (2007), the challenge about this channel is that farmers tend to get exploited because they sell to friends or family who exploit their proximity to farmers to negotiate prices down. In some instances, the above authors mentioned that buyers tend to buy on credit. The problem with credit buying in the context of communal farming is that there are usually no extra costs incurred by the buyers even if they take long to pay.

Local butcheries channel was the second most used channel utilized by respondents to market their animals while auctions, abattoirs and retail stores covered the remainder. The poor access or exploration of formal markets such as feedlots, auctions and abattoirs result from the general lack of information about markets, poor roads networks, lack of marketing facilities, the fact that formal markets are located far from the communal areas which lead to increased transaction costs. Respondents who indicated that they explore formal markets were fewer and owned transport to these areas. However, these respondents complained about the poor prices that they fetch in these markets. Musemwa et al., (2008) attributed this low price to the age and body condition of the animals sent to these markets. Coetzee et al., (2005) make a strong case for the need to improve marketing in the rural areas. The authors propose various strategies for improving the marketing ability of farmers such as provision of marketing infrastructure, increased dissemination of marketing information, etc.

5.4.3 Other animal products sold by respondents

It was clear that respondents sold live animals. They did not sell animal products such as meat, milk etc. The general practice in communal farming is that farmers sell

live animals and only use animal products for home consumption. However, the present findings report that respondents also sold wool. Wool was sheared from October to December. Table 5.8 shows people who are responsible for shearing sheep.

Table 5.8: People responsible for shearing sheep in the area

<i>Responsible person</i>	<i>Number of responses (n)</i>	<i>Percentage of responses (%)</i>
Family member	36	35.3
The farmer himself	34	33.3
Employee	17	16.6
Village boys	8	7.8
Shearing team from BKB	6	5.9
Shearing team from CMW	1	0.9
<i>Total:</i>	<i>102</i>	<i>100</i>

According to the respondents, wool grower associations like CMW and BKB only sheared sheep herds of 200 animals or more. Wool markets existed in the towns of Maclear and Gqebera (former Port Elizabeth) which are a distance away. The average distance to the markets was 347km. Gqebera is located approximately 530km from the MLM. The indicated low average distance is because there were respondents who sold their wool to private buyers located in Maclear town, just 45km from the study area. Mahlako (2017) also reported that major wool markets were in Gqebera. When respondents were probed about the price they received per kg for their wool, those who sold their wool through BKB indicated that they did not know the price their wool fetched per kg and that such details were known to BKB and never shared with them. Respondents further indicated that they tried in vain to get BKB to disclose the price they received per kg for the wool and accepted whatever amount BKB gave. The respondents who sold their wool to private buyers in Maclear did not have a scale to measure the weight of their wool before selling it. They depended on the scale of the private buyers who come to their villages to collect wool. According to Mangisoni (2006), small-scale farmers are often made to believe that their products are of low quality and therefore accept poor prices for their produce. Farming associations can help to train farmers on the best wool shearing practices to ensure a better price for better classed wool.

The above results emphasize the importance of providing communal farmers with the necessary marketing infrastructure such as a scale, loading ramps etc. and knowledge to prevent possible exploitation.

5.4.4 Mode of transportation frequently used by respondents to the markets

Table 5.9 illustrates that respondents in the study area used different types of methods to transport their animals to the markets they supply.

Table 5.9: Mode of transportation frequently used by respondents to get their animals to the marketplace

<i>Mode of Transportation</i>	<i>Frequency (n)</i>	<i>Percentage of respondents</i>	<i>Percentage of responses (%)</i>
Drive animals on foot	54	90.0	51.0
Buyer's transport	32	53.3	30.2
Own vehicle	12	20.0	12
Drive animals with horses	8	13.3	7.5
<i>Total</i>	<i>106</i>	<i>176.6</i>	<i>100</i>

The evidence from the table above indicates that respondents sold their animals within the municipality. The dominant mode of transportation as indicated by 54 respondents, who accounted for 90% of the total 60 respondents, was driving animals on foot to the buyers' homes, or the buyers would come on foot to the respondents' home. Thirty-two respondents of the 60 sampled respondents (53%) indicated that buyers used own transport. Respondents who required transportation were those who sold wool through BKB to markets in Gqebera while other respondents sold wool from their home. Because villages are a distance apart, other respondents used their own vehicles to deliver the animals to buyers. According to respondents, the challenge about delivering to the homes of buyers is that transportation costs are incurred by the farmer which leads to increased transaction costs. Respondents do not charge transportation costs because buyers would rather buy from other farmers who offered free transportation services. Only eight respondents used horses to drive animals to their buyers. As it can be seen from Table 5.9 above, respondents used a combination of these transport modes depending on the distance to the markets and convenience. Formal markets such as

auctions, abattoirs and feedlots were not considered because they are available at far distances from the municipality and require large numbers of animals to be sold. The above results slightly differed with Mahlako (2017) who reported that the dominant mode of transportation in the Maluti-a-Phofung Municipality was own transport (52%) followed by hired transport (28%) and buyers transport (20%). In the present study, none of the respondents used hired transport.

5.4.5 Selling price determination and factors influencing the price

All the respondents set the price themselves for their animals. The reason for this can be attributed to the fact that respondents sold their animals to private buyers who are within the study area. Nkhori (2004) stated that private sales were most preferred by communal farmers because these sales allow farmers to determine their prices. The above author further highlighted that private sales cut the middleman and offer farmers greater profits. When speculators and other middlemen are involved in the chain, communal farmers tend to be exploited in that speculators determine the prices for animals. Respondents were further asked to state factors that influenced the pricing of their animals. These factors are summarized in Figure 5.7 below.

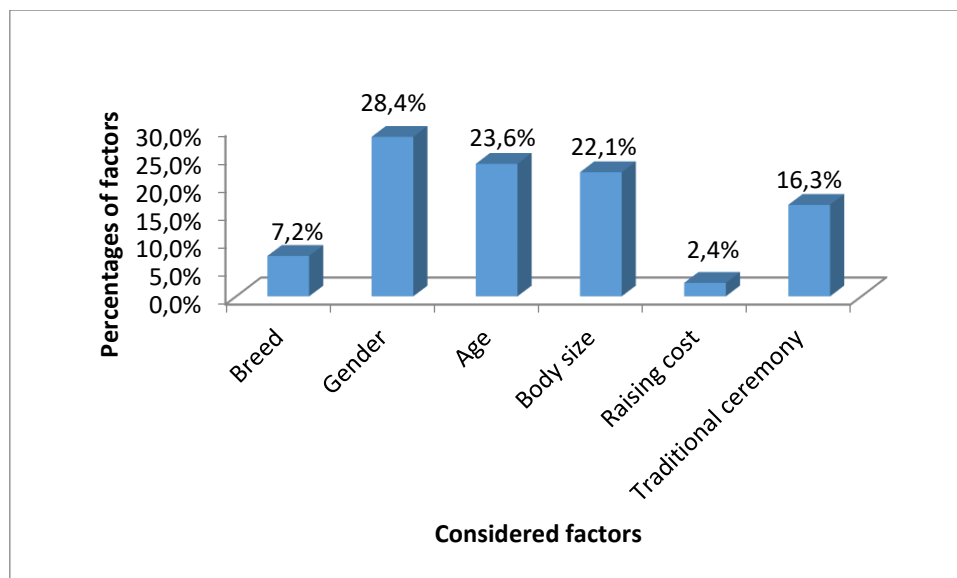


Figure 5.7: Factors influencing the selling price of the animals

Twenty-eight-point four % of the total responses indicated that respondents (n=59) based their prices on the gender on the animal. Male animals are commonly more

expensive compared to female animals. Nkhori (2004), as well as Duvel and Stephanus (2000) revealed that oxen were mostly sold compared to cows and heifers in their study areas. Respondents stated that their preference for selling male animals at higher price than female animals originated from the perception that male animals are fatter than females and that buyers, for cultural reasons, prefer male animals. In the traditional rural households, there are certain rituals such as *izila* that require male animals to be slaughtered. The age of the animals (23.6%) was also critical as respondents charged a higher price for older animals than younger animals. The body of the animal (22.1%) was ranked as the third factor that respondents considered when selling their animals. The bigger the body, the higher the price that a farmer would charge. Soji et al., (2015) mentioned that animals were priced on visual appraisal of the live weight of the animal which is further confirmed by this study. The fourth factor was the traditional ceremony concerned (16.3%). Due to the nature of communal farming (which is characterized differently from commercial farming where the focus is strictly on profit), various other sentimental reasons are considered when selling animals. This sentimental approach appears to emanate from the fact that rural communities are constituted by related households which makes it difficult for farmers to demand prices worthy of their animals. Breed (7.2%) and the cost of raising the animals (2.4%) were rated as least important factors. The cost of raising the animals usually applies to those farmers who incur costs for raising their animals through feed, supplements, medical remedies etc. However, it can be speculated that the reason this factor is considered less important is that the source of grazing for communal animals is grass which does not impose financial costs to communal farmers.

5.4.6 Price and age tendencies of animals sold

The average number of animals sold by respondents in the previous twelve months was categorized according to the composition of the herd/flock. The average number of animals sold was 9 sheep wethers, 6 goat wethers, 11 ewes, 6 nannies, 2 cows and 3 oxen. These findings assent to Duvel and Stephanus (2000) who revealed that farmers in Namibia preferred to sell oxen than cows. Female animals were sold as cull animals because of their age. Similar results were reported by Makapela (2008) who found that farmers sold wethers and cull ewes. The author attributed the low

sales rate of lambs to low lamb survival tendencies in communal areas. A large portion of the study sample (63%) sold between one and five animals, followed by 17% of respondents who sold six to ten animals, 8% of respondents who sold 11-20 animals, 4% of respondents selling 21-30 animals and 8% of respondents who sold more than 31 animals per year. The study by Goni et al., (2018) in the Eastern Cape communal household farming, where respondents sold between one and two animals per year, with 58 respondents (83%) selling only one animal (especially cattle) assents with the current findings. The average age at which respondents sold their animals is displayed in Table 5.10 below.

Table 5.10: Average age (months) at which respondents sold their animals

<i>Livestock category</i>	<i>Minimum (months)</i>	<i>Maximum (months)</i>	<i>Mean age (months)</i>	<i>Standard deviation</i>
Cattle	36	84	58.36	17.62
Sheep	18	48	27.40	9.40
Goats	18	48	33.13	12.25

The minimum and maximum age at which respondents sold their cattle was 36 and 84 months respectively, with a mean age of 58.36 months. The present results are comparable with the study of Duvel and Stephanus (2000) who revealed that communal farmers in Namibia preferred to sell animals between 4-6 years. According to the above authors, the preference to sell animals at that age significantly contributes to low off-take rates in communal farming. Sheep and goats were sold at a minimum age of 18 months. Sheep were sold at 27.4 months maximum while goats were sold at 33.13 months maximum. The average prices at which animals are sold are indicated in Table 5.11.

Table 5.11: Average price (Rands) at which respondents sold their animals

<i>Category of animals</i>	<i>Minimum price (Rands)</i>	<i>Maximum price (Rands)</i>	<i>Mean price (Rands)</i>	<i>Standard deviation</i>
Sheep wethers	1300.00	1700.00	1540.00	79.08
Goat wethers	1700.00	2200.00	1947.73	134.06
Ewes	800.00	1100.00	924.49	75.06
Nannies	1000.00	1600.00	1111.11	202.76
Lambs	1200.00	1300.00	1250.00	70.71
Cows	7500.00	9000.00	8291.67	450.17
Oxen	8000.00	12000.00	11000.00	-

In order to put the above average prices for out-of-hand sales of live animals in context, it was found necessary to determine the auction price as well as the slaughtering price for such animals at the time (when the study was conducted). The following calculations were made:

a) Slaughtering prices at the time:

- Weight of Merino ewe is 47 kg. Dressing % is 44%, thus carcass weight of 20.68 kg. Class C meat price ±R62/kg. Income from abattoir for ewe will thus be R1282.16/ewe.
- Weight of Merino wether (6-tooth) is 50 kg. Dressing % is 44%, thus carcass weight of 22.0 kg. Class B meat price ±R70/kg. Income from abattoir for wether will thus be R1540.00/wether.
- Weight of Nguni cow is 500 kg. Dressing % is 50%, thus carcass weight of 250.0 kg. Class C meat price ±R39.50/kg. Income from abattoir for cow will thus be R9875.00/cow.

b) Prevailing auction prices at the time:

- Boer goat Ewe - R 1 122.22
- Store Cow - R 6 900.00
- Fat Cow - R 10 605.38
- Mutton Sheep - R 1 319.56
- Nguni Heifer (251 - 280kg) - R 7 000.00

- Trade Ox - R 7 250.00
- Slaughter Ox - R 12 400.00

Thus, given the average age when animals were sold (Table 5.11), in some cases the farmers' out-of-hand price would have been lower (ewes and cows) and in other cases higher (sheep wethers) than expected abattoir price, although it depends on the body condition of the animals that were sold. (It is doubtful that these animals reached the commercial-based weight as assumed in the above calculations, thus they probably materialised a much higher price than the abattoir slaughtering price especially considering the low or no market costs when they sold animals to local private buyers).

Various factors determine auction and abattoir price. According to Swanser (2005), interaction of physical characteristics such as weight, breed etc., time of sale and market location determine the price of an animal in the auction. Market forces such as demand and supply influence the price that an animal fetches in the market. When there is a demand for a particular type of an animal, prices escalate (Swanser, 2005).

While sales occurred throughout the year, most of the sales occurred in June and December, with few animals being sold towards the Easter weekend. Respondents were further asked to provide reasons for electing to sell their animals at those specific times. The most important reason for selling animals this time was that traditional ceremonies (45%) were mostly performed during June and December. Few ceremonies occurred during the Easter weekend where respondents sell animals to be slaughtered at religious gatherings. Twenty-six percent of the respondents indicated that they had no specific reason for selling that time, while 22.5% of the respondents considered the body condition of animals. The least mentioned reason (6.2%) was that schools would reopen soon after these months and the money would be needed to pay for important school needs of their children. According to Coetzee et al., (2005), these months in which most sales occurred coincided with the homecoming of migrant labourers who work outside Eastern Cape and would need animals to slaughter for traditional purposes. Groenewald and Jooste (2012) contend that this seasonality of the informal marketing is an

impediment for communal farmers as they can fall victim to speculators and can struggle to sell their animals before the high demand marketing season used in communal farming. Sales that occurred throughout the year often included selling specially for funeral cases and in some instances when animals were bought as foundation stock by other farmers and for dowry payment.

5.4.7 Marketing constraints faced by respondents

Numerous studies have been conducted with the aim of transforming subsistent farming into commercial farming. These attempts are in line with the need to develop rural areas and combat widespread poverty in these areas through livestock. However, this transition is only possible if rural farmers have adequate access to markets (Coetzee et al., 2005). A rich volume of literature has reported market access by smallholders to be a crucial constraint against the materialization of this transition. It is against this background that a need arose to determine what are these market-related constraints that affected farmers in the study area. Numerous marketing constraints have been identified and are presented in Table 5.12 below.

Table 5.12: Constraints affecting farmers when marketing their livestock

<i>Constraints</i>	<i>Number of responses (n)</i>	<i>Percentage of responses (%)</i>
Poor roads infrastructure	33	30.6
High transportation costs (distance)	20	18.5
No bank account	11	10.2
Poor quality animals	10	9.2
Poor network signal	9	8.3
Relatives' entitlement to a discount	9	8.3
Lack of handling facilities	6	5.6
Ownership verification challenges	6	5.6
Gender stereotypes	4	3.7
<i>Total:</i>	<i>108</i>	<i>100</i>

5.4.7.1 Lack of infrastructure

The present study reports that lack of or poor infrastructure such as roads, loading ramps etc. (30.6%) is the most important constraint that the respondents battle with.

Respondents indicated that even when speculators and other buyers from outside their villages were interested in their animals, they were always discouraged by the conditions of the roads, and this limited them from selling locally. Numerous scholars have reported identical conclusions concerning infrastructure in communal areas (Coetzee et al., 2005, & Musemwa et al., 2008). One of the critical interventions in farming is rendering of support services as such key infrastructure amongst others. Infrastructure such as road play an important role in ascertaining increased agricultural production. The role played by transport infrastructure for instance, is assumed to exceed the role of extension and research (Adepoju and Salman, 2013).

5.4.7.2 High transport costs

While most sales occurred within the study area, villages constituting the area were distant apart. In some instances, selling would require transportation (18.5%). There was no hired transport. Respondents used own or buyers transport to market their animals. Long distances between villages combined with poor road conditions increase transaction costs (Musemwa et al., 2007).

5.4.7.3 Poor network signal

Poor network signal (8.3%) was cited as one of the constraints that affected farmers in the study area. According to the respondents, extension staff would be discouraged to go into these areas due to poor cell phone reception. Consequently, respondents would miss out on key marketing information that would be shared by these officials. Sometimes interested buyers would try in vain to call farmers to ask for the availability of animals to sell.

5.4.7.4 No bank account

Most of the respondents were old people and illiterate, therefore did not have a bank account. Surrounding businesses that were interested in buying animals from the respondents were discouraged by the fact that respondents did not have bank accounts (10.2%) for the deposits. Respondents cited their unfamiliarity with ATMs as the reason for not having a bank account. This finding can be explained by the average age and the education levels of the respondents. Age and literacy influence

the adoption of innovation. Toole (2019) highlighted that it is important for farmers to open bank accounts in order to save money to buy inputs and also to exercise self-control over unsparing spending. Bank accounts allow buyers to directly send the money to the farmer's account, reduces risk of crime, encourages saving and accountability for funds. Although some respondents had no bank account and were sceptical of opening accounts, they indicated that they would have loved to have accounts so that buyers would send the money directly to their bank accounts because respondents indicated that criminals often take advantage of the farmers' age and come later to steal the money paid to the farmers.

5.4.7.5 Poor quality animals

Poor body condition of animals (9.2%) was rated as the fourth marketing constraint in the study area. Lack of supplementation and poor grazing land especially during winter are the reasons for low quality in communal animals. According to Makhura (2001), low quality body condition of animals leads to farmers fetching poor prices for their animals. Speculators often refuse to pay good prices for animals which are of poor body condition. According to Ndoro et al., (2015), there is a great need for farmers to organize communal feedlots which must be used to feed animals during dry season to improve their body condition. According to these authors, such a program would improve the price that these farmers receive for their livestock.

5.4.7.6 Lack of handling facilities

Lack of handling facilities constituted 5.6% of the responses. Respondents cited that lack of the key marketing facilities such loading ramps, scale etc. impeded them from selling their livestock outside the study area. The low number of responses on handling facilities was because few farmers cited it as an important constraint because majority of respondents sold locally where they drove animals on foot or by horses to the buyers. Mahabile et al., (2002) also found that lack of marketing facilities was a problem in their study area.

5.4.7.7 Social relation complexity (entitlement to discount on account of proximity)

The nature of rural areas is that they are constituted largely by related households. These households would exploit their proximity and relationship to farmers and entitle themselves to discounts (8.3%). There is a great need to graduate communal farming from subsistent farming to commercial farming where the purpose will be to make profit if this type of farming must contribute significantly to rural development. Transition to commercial farming would make farmers treat their farming as business where sentimental elements of friendship and proximity will be secondary.

5.4.7.8 Ownership verification challenges

The other problem was the unavailability of the chief (5.6%) when farmers want to sell their animals. It is an established tradition in villages to get a permit from the chief that allows the farmer to sell their animals. This permit only certifies ownership of the animal. Farmers present the chief with a card that records the number of animals the farmer has so that the chief can issue a permit that certifies the ownership of the animals. In circumstances where the chief is unavailable, there is difficulty in selling. This practice is used as a strategy to curb the prevailing livestock theft.

5.4.7.9 Gender stereotypes

Four female respondents (3.7% of responses) faced a challenge of gender stereotypes. These respondents pointed to the tendency of buyers treating female farmers with disrespect. Families that are female headed are usually taken advantage of, based on their gender. Buyers often bargain more for low prices with female farmers than they do with male farmers. As a result, female farmers invite male relatives during transactions in order to avoid being taken advantage of. These respondents indicated that sometimes buyers refuse to buy from women because these buyers perceived women as a threat to their dominance. In a study by Gumede et al, (2018), women farmers were confronted with numerous challenges amongst which include price lowering demand from the buyers since most female livestock keepers in communal areas are windowed and therefore do not have a male household head to protect them against victimization.

6. Chapter Six: Conclusions and Recommendations

6.1 Conclusions

Livestock production in the Mhlontlo Local Municipality is clearly dominated by males and older people. Young people would prefer to migrate to the cities in search of employment, entertainment, education and other reasons, while women do not participate much in agricultural activities. The fact that there is minimum participation of women signals the need to transform this sector.

The communal livestock production sector in the Mhlontlo Local Municipality is evidently confronted with numerous challenges especially production, management, and marketing. While farmers performed most of the key management practices such as branding, castration, vaccination, dipping, livestock identification etc., various other management challenges such as poor nutrition, poor recording and improper health treatment were identified. While kraaling animals was done for key management reasons such as identification of possible sick animals, theft prevention was strikingly highlighted by all the respondents (100%) as the most important reason. The problem of theft is widespread in the study area such that farmers are beginning to lose confidence in the ability and willingness of the relevant law enforcement institutions to curb the problem, which is rather disappointing and discouraging for the farmers.

Respondents did not plan the mating of animals as they depended on natural mating and weaning. Poor infrastructural development such as fencing and limited land rights can be attributed to the poor production planning by these farmers. Rams and bulls are permanently kept with female animals, thus stifling the possibility of a planned production. While lambing rate was not entirely bad for all species, this was downplayed by the corresponding high mortality rates. The average lambing and kidding intervals were both one year while calving was two years. These long intervals can be ascribed to the dependency on natural weaning of the offspring, which prevents the animals from returning to heat earlier.

Marketing of animals was largely dominated by private sales. The distance to the markets is long and requires transportation costs, hence farmers preferred to sell locally. Other discouraging factors to sell their animals in formal markets were the state of road infrastructure, poor signal reception and the general unfamiliarity with formal markets such as auctions and abattoirs. The other challenge was the lack of marketing facilities such as loading ramps and scales to measure the weight of the animals before they can be sold. BKB sold the wool on behalf of the farmers while other farmers directly sold their wool in close-by markets where they received extremely poor prices. Some of these farmers used different types of marketing channels which amongst others, included selling to retail stores, auctions (although few, usually sold wool through BKB to formal auction in Port Elizabeth) and butcheries.

The third objective of this study was to determine the extent of extension and government support services to the farmers in the study area. The study reported that extension services included information on market and credit advice, animal health training, pasture management, production planning and weather service as important services. While extension staff offered services to farmers, they were often constrained by poor roads and discouraged by poor network signal in many remote villages. Government intervention (support services) through DARD included feed provision during drought, veterinary services, dip, vaccinations and shearing training. This intervention was, however, not sufficient to cater for the specific needs of individual farmers due to a limited budget.

6.2 Recommendations

Numerous challenges that revealed the status of livestock production in the Mhlontlo Local Municipality were discussed in the dissertation. These challenges were linked to management, production, and marketing while others unmasked the inadequacy of government support services to the farmers in the study area.

6.2.1 Recommendations regarding management

The present study recommends that the extension staff must work closely with the farmers and workshop them on the best management principles for a successful farming operation. Workshops should be tailored to address problems such as poor nutrition, record keeping and animal health. Farmers must begin to take serious animals health and nutrition as these factors contribute largely to survival and body condition of animals.

6.2.2 Recommendations regarding production

The solution to the problem of production control is when the farmers come together and agree on the best practices that will allow them to control critical production parameters such as mating control, breeding season control, weaning, etc. This will make it easier to use the preferred bulls or rams for their animals which would give them their preferred traits. The second solution is that government must intervene with adequate land where farmers can even lease the land so that farmers can then plan their production.

6.2.3 Recommendations regarding marketing

The thesis discussed numerous marketing challenges that constrained farmers. The most important was that formal markets were available at far distances from the study area. Thus, farmers resorted to private sales from which they did not always receive good prices. In order for farmers to exploit the opportunity to participate in formal markets, they need to belong to an association (which they already do) which must be subsidized by the government in order that they can sell their animals as a group at the formal markets and thus reducing the high costs of transporting the animals to these formal markets. The other constraint was the price in instances where speculators bought the animals, farmers complained about poor prices. The study recommends that farmers must be workshopped to understand the important aspects which are considered when animals are sold and be abreast with the market trends and that would give them bargaining power. The lack of proper marketing facilities can be resolved if farmers came together and bought and maintain some of these facilities.

6.2.4 Recommendations regarding government support services

The study recommends that government speedily addresses the issue of road infrastructure. Ample evidence is documented in the literature about this challenge. Government must build sustainable and quality roads which would enable buyers and sellers to easily locate each other. The other intervention from government is the provision of quality rams and bulls in order to improve the genetic structure of the animals. The problem of theft is rampant in the area. It is recommended that police cells in the area must be established in order to ensure police visibility. The rate of retrieval of stolen animals is relatively low, thus a need to improve on this service by government is critical. Government should also subsidize the purchasing of marketing facilities.

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Appendix A: Article

AN ASSESSMENT OF THE EXTENSION AND GOVERNMENT SUPPORT SERVICES IN COMMUNAL LIVESTOCK PRODUCTION IN THE MHLONTLO LOCAL MUNICIPALITY OF THE EASTERN CAPE PROVINCE, SOUTH AFRICA.

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ABSTRACT

Livestock farming is a critical component of rural economies. Rural development initiatives must take into cognisance the potential contribution of livestock as a strategy to alleviate poverty. However, communal livestock farming is hindered by several constraints. Improvement in extension and government support services could be beneficial to livestock owners. A study to assess the extension and government support services was conducted by interviewing 60 farmers in the Mhlontlo Local Municipality using a structured questionnaire. A significant portion of the study sample had low educational levels with only 15% having university qualifications. The interviews were conducted in isiXhosa. The ratio of male to female was 0.83 to 0.17. The mean age was 57.7 ± 13.96 . The sources of information most frequently used by farmers were extensionist (92%), farmer association (83%) and television (30%). Market and credit advice, animal health, pasture management, production planning and weather services were important information provided by the extension staff. Intervention from the Department of Agriculture included feed, veterinary services, dip, and drugs for vaccination. Poor meetings attendance by farmers undermines the work of extension. Lack of trust in the extension programs was highlighted as a major reason for farmer's reluctance to implement advice from extension services.

Keywords: Mhlontlo Local Municipality, Communal livestock farming, extension, and support services.

1. INTRODUCTION

In South Africa, Goni, Skenjana & Nyangiwe (2018), Coetzee, Montshwe & Jooste (2005) and Meissner, Scholtz & Palmer (2013) mentioned that about 70% of agricultural land is suitable for livestock production. In developing countries, particularly in the Southern African regions, livestock production is a crucial aspect of communal agriculture (Schwalbach, Groenewald & Marfo, 2001). It plays a critical role in the economy of South Africa, particularly in rural areas (Ngqulana, 2017). According to Shackleton, Netshiluvhi & Mathabela (2005), communal livestock owners keep animals for subsistent purposes such as meat and milk consumption and as a source of income. For rural farmers, livestock represent a form of investment that can be converted to cash quickly and are kept for their provision of animal traction, manure, cash sales and many other socio-economic functions (Musemwa, Mushenje, Chimonyo & Mapiye, 2010; Goqwana, 2008). Powell, Pearson & Hiernaux (2004) and Peden, Tadesse, Misra, Amed, Ayalneh, Herreo, Kiwuwa, Kumsa, Mati, Mpairwe, Wassenaar & Yimegnuhal (2009), reported that livestock production is useful because it compliments cropping activities in that it provides manure, which is necessary for the maintenance of soil fertility, draught power needed for cultivation, transport, cash, and food. This cash is often used for various reasons which include purchasing of inputs for cropping reasons, payment for the education of children, purchasing medical remedies for sick animals, remuneration for workers, etc. (Muchenje, Dzama, Chimonyo, Taats & Strydom & 2008). In the Eastern Cape, the occurrence of drought dictates that the people of this province depend on livestock and their products for livelihoods (Musemwa et al., 2008). For this reason, the Integrated Sustainable Rural Development Strategy (2004) identified agriculture, especially livestock production as the most viable means to improving food security in the rural communities and thereby eradicating poverty in the poor rural areas. According to the National Livestock Statistics (2019), the Eastern Cape is the highest in livestock, namely cattle (24%), goats (38%) and sheep (29%) of the total livestock numbers in South Africa. Moreover, many of these livestock come from the communal lands.

However, communal livestock farming is hindered by several constraints. Numerous studies have reported similar constraints under communal farming. These

constraints include diseases, overgrazing, scarcity of water (due to drought), theft, inadequate and lack of information about the available markets, veld fires, lack of credit, limited money to buy inputs, poor management practices, lack of institutional support (Coetzee *et al*, 2005), poor infrastructure, lack of information, etc. Some of these constraints are production related. These include poor animal husbandry, slow growth, high mortality rates, low conception rates, delays of mating, long inter lambing and calving periods and low slaughter weights (Mahlako, 2018). The fact that much research has found that high livestock numbers are kept in the Eastern Cape indicates that there is a great potential to improve production in the province and thereby reduce poverty. Improvement in extension and government support services could be beneficial to livestock owners. In light of the above, the current study was undertaken to assess the extension and government support services in the study area.

2. MATERIALS AND METHODS

2.1 Study site

This study was undertaken in the Mhlontlo Local Municipality which falls under the OR Tambo District Municipality of the Eastern Cape Province. The municipality covers an area of 2826 Km² and has a population density of 66,6 people per m². In 2015 the municipality had 193000 people which constituted 0,4% of the South African population, with a population growth of -0,52% (Mhlontlo Local Municipality, 2017). The municipality is largely dominated by Xhosa-speaking people with more than 80% residing in rural villages and less than 10% living in informal urban settlement (Mhlontlo Local Municipality, 2017). The Municipality consists of more than 80000 households and with 26 wards. Subsistent agriculture dominates the municipality.

2.2 Sampling method and data collection

A convenient sampling technique was employed to select participants who kept livestock in the study area. A sample of 60 farmers was selected and interviewed using a structured questionnaire. The questionnaire consisted of open and close-ended questions. Interviews were individual and researcher administered. The

advantage of interviews administered by the researcher is that the researcher was able to get detailed information from the farmers. Over and above the demographic details of the sampled farmers, other important aspects that were investigated were extension support, veterinary services, land ownership, herd information and other government support provided to the farmers. Considering that most farmers were not conversant in English in which the questionnaire was designed, interviews were conducted in isiXhosa.

2.3 Data analysis

The data obtained from the questionnaire were coded and captured in Microsoft Office Excel and analyzed using the Statistics Package for Social Sciences Program.

3. RESULTS AND DISCUSSION

3.1 Demographic details

Most of the participants were males who represented 83.3% of the total participants. The majority of female farmers were widows who inherited livestock from their deceased husbands. These findings are consistent with the general perception that communal livestock farming is dominated by males. Mahanjana and Cronje (2000) and Mthi, Nyangiwe, Thubela, Nyalambisa, Madyibi & Yawa (2020) reported similar results. The average age was 57.7 ± 13.96 . This study agrees with Katikati (2017) who reported an average age of 57.63 ± 13.44 in the selected districts of the Eastern Cape. While exact reasons for the high mean age are unclear, it can be possibly attributed to the economic crisis imposed by political uncertainty that engulfed the country in 2008 which led to massive retrenchments of workers and the recent outbreak of Covid-19 that is devastating the world. Migrant factory and mine workers returned home and focused on farming while youths were emigrating to find opportunities in the cities (Mthi et al., 2020).

Table 1: Demographic details of the farmers

Respondent details	Number of respondents (n)	Percentage (%)
Gender		
Male	10	83.3
Female	50	16.7
Age		
25-35	3	5
36-49	19	31.7
50-69	23	38.3
70-89	15	25
Education level		
No education	27	45
Primary education	12	20
Secondary education	12	20
Tertiary education	9	15
Marital status		
Single	6	10
Married	35	58.4
Divorced	2	3.3
Widowed	15	25
Separated	2	3.3

Most of the farmers had very low education, with fewer farmers indicating that they had a college or university education. Musemwa, Chahwiza, Sikuka, Fraser, Chimonyo & Mzileni (2007), stated that education is important in farming as it plays a role in the success of the farming business by influencing decision-making. The high percentage of farmers with no education is attributable to the average age of the farmers. The majority (58.3%) of the farmers indicated that they were married, followed by 25% of the farmers who are widowed, while the remaining percentage was accounted for by other options from table. Mthi et al., (2020) reported similar results in the Eastern Cape. The reason for high percentage in married farmers may be attributed to the average age and the dominant age group of the farmers. The option of divorce occupied the lowest number (3.3%). This low percentage in divorce

may be ascribed to traditional beliefs that do not recognise divorce as a method of ending marriages within the amaMpondomise tribe from which all participants come. Marital status is an important phenomenon in rural areas. Married people receive more respect than their unmarried counterparts (Mahlombe, 2018). Single farmers constituted 10% of the study. These farmers (single) largely came from the youth age group in the study.

3.2 Important source(s) of information

Respondents were asked to state their source(s) of information and how they obtained that information. The responses of the farmers to these questions are presented in the following table and discussed thereafter.

Table 2: Sources of agricultural advice for the farmers in the Mhlontlo Local Municipality

<i>Source of advice</i>	<i>Number of responses (n)</i>	<i>Percentage of responses (%)</i>
Research institutions	2	1.3
Extensionist	56	35.7
Print media	10	6.4
Farmer association	50	31.8
Commonage meeting	2	1.3
Internet	8	5.1
Television	18	11.5
Nampo	3	1.9
Local agricultural shows	4	2.3
Other farmers	4	2.3
	Total:157	Total: 100

The table above clearly shows that 35.7% responses rated extension officer as the most important source of information for the farmers in the MLM. The farmer association which all respondents were members of was considered as the second most important source.

The low percentage of farmers that used research institutions as their source of information may be ascribed to the low educational levels reported earlier. Understanding that scientific research is difficult to the uneducated rural and commercial farmer, the task of extension services must be to bridge the gap that exists between research and farmers.

Farmers were further requested to state the frequency of their interaction with the extension officers. Eighty-nine percent indicated that they met with the extension officer more than once a month, 5.3% once a month, 3.5% every two months and 1.8% twice a quarter. Farmers who met extension officer twice a quarter and every two months mentioned the poor state of the roads and poor network signals as some of the reasons the extension officers raised as preventing them from meeting the farmers more than once a month. Extension officers visited farmer in groups. Group visits (workshops) make it easy for extension officers to dissipate information to a large audience using limited resources and time. These results agree with Sebeho (2017) and Mahlako (2018) who rated extension officers and the Department of Agriculture as the most important sources of information for communal farmers. However, not all farmers frequently attended meetings, and this undermines the work of extension.

3.3 Type of agricultural information offered by the extension officer (s)

The type of information provided to the farmers is summarised in table 3 below.

Table 3: Type of agricultural information offered to the farmers by the extension staff

<i>Type of information</i>	<i>Number of responses (n)</i>	<i>Percentage of responses (%)</i>
Market advice	54	23.5
Credit advice	18	7.8
Production planning	49	21.3
Pasture management	34	14.8
Assistance with weather services	19	8.3
Animal health	56	24.3
	Total: 230	Total: 100

Animal health was ranked as the most important information from agricultural extension (24.3%), followed by marketing advice (23.5%), production planning (21.3%), pasture management, (14.8%), weather services assistance (8.3%) and credit advice (7.8%). The above results address the contention of Raidimi and Kabiti (2019) in their review of the role of agricultural extension to food security who stated that agricultural extension must advise farmers about knowledge which is critical for farmers to adapt their operations to changing climatic conditions. Moreover, the above authors stated that success of farming is determined by access to markets and an increased production and further insisted that agricultural extension must address these factors. Thus, it is apparent that the extension staff in the study area aligned its program to address these factors. While key information about credit was provided, it is clear that this information does not give the intended results as farmers continue to be excluded from financial assistance by formal institutions. Some of the farmers who applied for a loan from banks and other key financial institutions were not granted the loan on the basis that they did not have corresponding collateral which would be claimed by these institutions should the farmers fail to repay. The present results concur with Isaga (2018) who reported that only 1.9% of farmers in Tanzania used loans from banks to finance their farming business. In the same study, Isaga (2018) further attributed poor access to credit from formal financial institutions by smallholders to a lack of education and collateral possessions by the farmers. The general perception about education is that farmers can make informed financial decisions which are desirable by banks to facilitate the granting of the loan.

3.4 Infrastructure

When farmers were asked to state constraints that they faced, poor road infrastructure was mentioned by most of the farmers. It is evident that government did little to improve roads. Good roads allow access to remote areas and are perceived as an important factor that encourages investment and marketing. Under circumstances where the condition of roads is poor, marketing is affected. Poor road network results to increased transport costs. According to the farmers, bad roads militated them from visiting state the veterinary during rainy weather as the area has gravel roads.

3.5 Government intervention on animal Health

Eighty-two percent of the farmers (n=49) were making use of the state veterinary technician. It was important to find out where these farmers sought advice when their animals are sick. Figure 1 below displays the sources of animal health advice for farmers that in the study area.

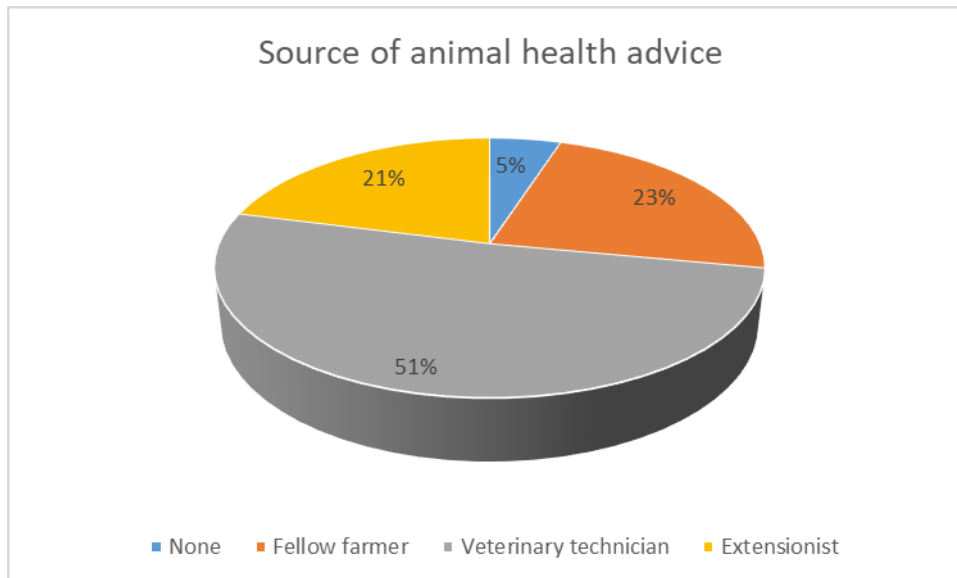


Figure 1: Sources of animal health advice

The number of responses in figure 1 were 96 responses. Thus, other farmers did not use only one source of advice for animal health. The majority of the farmers (n=49) used state veterinary technician (51%), while others sought advice from other farmers (23%), extensionist (21%) and only an insignificant number (5%) not seeking any advice.

In the study sample, 93% of farmers vaccinated their animals. Farmers who did not vaccinate animals either complained of the high cost of medicines or were old and did not have anyone to take their animals to a vaccination center for a state vaccination program. These results are similar to those of Katikati (2017) where 88.3% of respondents vaccinated their animals and 11.7% did not. The state carried out the vaccination program twice a year. Nowers, Nobumba, & Welgemoed (2013) stated that vaccination programs in communal farming are mostly carried out by the state. Figure 2 below demonstrates the diseases that farmers vaccinate against.

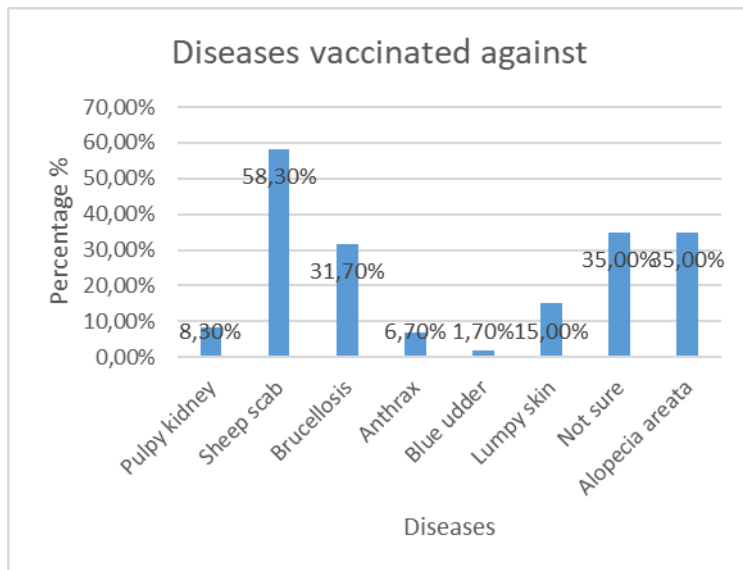


Figure 2: Types of diseases against which animals are vaccinated.

Responses varied when farmers were asked when they vaccinate their animals. Thirty-one farmers (52%) followed a health management program, 58.3% of respondents (n=35) vaccinated only when a need arises and 10% of the respondents (n=6) vaccinated anytime.

3.6 Provision of animal feed by government

Provision of feed followed typical communal farming routine. Communal farmers struggle to buy feed for their animals. In most cases, because of the high cost of feed, they prefer to feed animals during natural disasters like drought because the DALRRD normally intervenes in such instances. Farmers were asked how they ensured fodder availability throughout the year. The results indicate that 56.7% of respondents planted pastures in the cropping fields, 18.3% kept crop remains in storerooms and 25% depended squarely on provision by DALRRD.

The typical pattern in communal areas is that livestock depend on natural resources for their nutritional requirements. This practice prevails in communal areas due to a high cost of feed. 95% of respondents provided extra feed for their animals during drought. Table 3 below demonstrates major types of feed that farmers provide to their animals during feed scarcity.

Table 3. Major types of feed provision in the study area

<i>Type of feed</i>	<i>Number of responses (n)</i>	<i>Percentage of responses (%)</i>
Lucerne	52	31.0
Maize	57	33.9
Crop residue	45	26.8
Rested veld	14	8.3
Total	168	100

According to Makapela (2008), supplementary feeding results in improved milk production which is necessary for lactating animals. The present work agrees with a study by Mthi et al., (2020) who identified crop residue as important supplementary feed in communal farming areas. It was, however, essential to determine the source(s) of the supplementary feed. Figure 3 below illustrates the sources of feed.

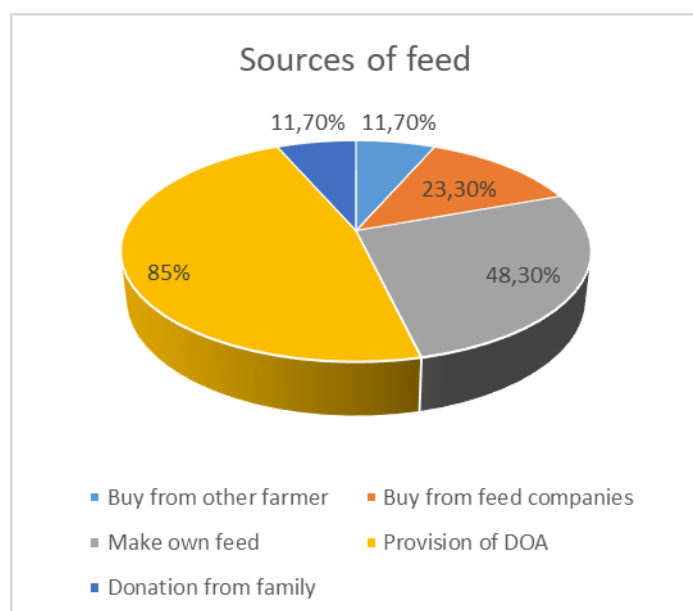


Figure 3: Indication of the sources of feed in the study area

It can be deduced that most farmers (85%) depended on the provision of feed by the department during natural disasters. Only 11.7% (n=7) of respondents bought feed from other farmers. These other farmers are crop producers who do not keep

livestock and sell their produce at cheaper prices compared to a formal feed market price. 48% of farmers (n=29) made their own feed from crops planted both in the cropping fields or in gardens of their allocated residential land.

CONCLUSION

Livestock keeping is confronted by numerous constraints in the Mhlontlo Local Municipality. Programs to improve production in the area have been introduced by government. Some of these programs include extension services, feed and animal medical remedies provision and state veterinary services. However, it appears that government has done little to improve road infrastructure which is a key factor that influences marketing. Poor roads increase transaction costs during marketing. For this reason, it appears that farmers will continue to struggle to exploit formal marketing opportunities which are possible when roads are properly constructed and maintained. Communal farmers in the study area do not have adequate financial resources to maintain roads and depend on government. Government must improve roads condition to ensure an increased possibility for formal marketing.

Despite the key and massive extension advice provided to the farmers, they appear to lack confidence and trust in extension and as a result, they find it difficult to implement advice from extension staff. According to the researcher's interaction with the farmers, this poor trust in extension originates from the swine flu in 2007 for which farmers were not remunerated as promised. The failure by government to compensate farmers led to farmers losing trust in extension programs even when these programs are genuine.

While government in the past has made efforts to encourage farmers to exploit formal wool markets by improving wool production through a ram exchange program, farmers in the study area did not benefit from this program due to lack of organized farmers groups. Recent attempts to organize farmers associations are applaudable. Due to a disorganized association, farmers did not benefit from the ram exchange program.

The study advises farmers to properly organise and coordinate their farmers association or co-op to benefit from other government initiatives such as the Ram

Exchange Program of the Department of Agriculture and Rural Development aimed at promoting key traits which are necessary to improve the quality of their livestock to ensure marketability and better wool growth for those farmers who are engaged in sheep farming.

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Appendix B: Pictures taken during data collection



Appendix C: Questionnaire

Title of the questionnaire: **Assessment of the current farming practices of communal livestock farmers in the Mhlontlo Local Municipality**

Student: Siyanda Ntweni

Objective of this questionnaire:

The main aim is to study and assess current management, marketing and production practices of communal livestock farmers in the Mhlontlo Local Municipality.

Research ethical considerations:

- Information provided by the respondent is strictly confidential. It will not be used for any other purpose not linked to the achievement of the objectives of this study.
- Participation is by choice.
- Participants are advised of their right to discontinue should they wish to do so.

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Contents of the questionnaire:

1. Biographic Information
2. Land Particulars and Water Supply
3. Herd Information
4. Grazing Management
5. Health Management
6. Feed, Nutrition and Supplementation
7. Credit Information
8. Extension/Agricultural Advice
9. Marketing Information
10. Record Keeping
11. Equipment
12. Production Management and Breeding Practice
13. Livestock General Management

NB: Instructions to the farmer (respondent):

- a) The farmer is requested to answer all the questions and provide accurate information as far as possible.
- b) Please mark with an X on the appropriate boxes. Please note that some questions allow you to mark several blocks (with an X).

**For office
use only**

Questionnaire

no.:

1

Date of the
interview:

...../...../.....

2

Section A: Biographic Information

1.1 Age: _____ years

3

1.2 Gender: Male ☐ (Mark with
Female ☐ an "X")

4

1.3 Marital status: Single ☐
Married ☐ (Mark with
Divorced ☐ an "X")
Widowed ☐
Separated ☐

5

1.4 Literacy level of the farmer, please rate.

Able to write ☐
Able to read ☐ (Mark with
Read and write ☐ an "X")
None ☐

6

1.5 Educational levels, please indicate.

No education ☐
Primary education ☐ (Mark with
Secondary education ☐ an "X")
College or University qualification ☐

7

1.6 If you have educational training, please indicate your faculty.

Humanities ☐
Business studies ☐ (Mark with
Education ☐ an "X")
Natural sciences ☐
Other, specify: Engineering

8

1.7 Agriculture Qualification:

None ☐
National Certificate ☐ (Mark with
Diploma / Degree ☐ an "X")
Post-graduate degree ☐
If other specify Short course

9

1.8 If you have an agricultural qualification, in which agricultural speciality is your qualification?

Extension ☐
 Management ☐
 Economics ☐
 Animal science ☐

(Mark with
an "X")

Other, specify: _____

10

1.9 How long have you been farming? _____ years

11

1.10 Is farming your major income source?

Yes ☐
 No ☐

(Mark with
an "X")

12

1.11 If farming is not your major income source, what is your major income source?

Social grant ☐
 Salary ☐
 Small business ☐

(Mark with
an "X")

13

14

15

Other, specify: _____

1.12 How much do you get from your major income source per year (if not farming)?
Rands

16

1.13 If farming is your major source of income, how much per year do you get
 from another major source of income? Rands

17

1.14 Village of the farmer

Bajodini ☐
 Ngxakolo ☐
 Mayalulweni ☐
 Malepe-lepe ☐
 Marhambeni ☐
 Siqhungqweni ☐
 Tiktiki ☐
 Sulenkama ☐
 Nontyankashe ☐
 Ntshiqo ☐

(Mark with
an "X")

18

1.15 How many people in your household are dependant on the sale of your
 animals?

19

1.16 Are you affiliated to any agricultural association?

20

Yes ☐
 No ☐

(Mark with
an "X")

1.17 If you are affiliated to an agricultural association(s), please state the name(s).

Tsolo Wool Growers Association

Qumbu Wool Growers Association

1.18 If you are not affiliated to an agriculture association, please provide reasons.

Section 2: Land Particulars and Water Supply

2.1 Land ownership, please indicate.

Communal land

Rented/ leased land

Comonage land

(Mark with
an "X")

2.2 What is the size of the grazing land in hectares? ha

2.3 Would you wish to expand your grazing land?

Yes

No

(Mark with
an "X")

2.4 If you would wish to expand the area, state reasons for wishing to expand your grazing land.

Increase production

Fattening animals

Adequate animal grazing

Migrate to commercial farming

2.5 Is there any water supply in the area where your animals are grazing?

Yes

No

(Mark with
an "X")

2.6 If there is no water supply, how far (kilometres) is the water source from the grazing land?

2.7 What is the main water source for animal consumption in the area?

Well

Borehole

River

Ground dam

Cement dam

Other, specify:

(Mark with
an "X")

Spring

2.8 Please describe the water quality in the area.

Salty	☐	(Mark with an "X")
Muddy	☐	
Good	☐	

2.9 How would you describe the general condition of pastures in the grazing land?

Season:	Very good	Good	Fair	Poor
Autumn	☐	☐	☐	☐
Winter	☐	☐	☐	☐
Spring	☐	☐	☐	☐
Summer	☐	☐	☐	☐

2.10 On average, 1 out of how many years do you experience drought in your area?

..... years out of every 10 years

2.11 If the municipality provides water, is water available the whole year?

Yes	☐	(Mark with an "X")
No	☐	

2.12 If water is not available the whole year, in times of water shortages, how do your animals get water?

Animals wait until it rains

Driven on foot to far rivers

Fetch water using an ox-wagon

Animals taken to relatives in other villages until water source regains water

2.13 How many times a day are your animals taken to the water point?

Once a day	☐	(Mark with an "X")
Twice a day	☐	
Unlimited access	☐	

Other, specify: _____

2.14 Please rate the reliability of the water supply on the following scale.

Season	Reliable	Fairly reliable	Unreliable
Autumn	☐	☐	☐
Winter	☐	☐	☐
Spring	☐	☐	☐
Summer	☐	☐	☐

(Mark with
an "X")

Section 3: Herd/Flock Information

3.1 How many animals do you have?

Cattle	☐
Goats	☐
Sheep	☐

3.2 What is the composition (state the number) of your sheep flock?

Ewes	
Lamb ewes	
Wethers	
Lambs	
Rams	

	52
	53
	54
	55
	56

3.3 What is the composition of your goat flock?

Kids	
Bucks	
Wethers	
Does	

	57
	58
	59
	60

3.4 What is the composition of your cattle herd?

Oxen	
Calves	
Heifers	
Cows	
Bulls	

	61
	62
	63
	64
	65

3.5 How many of each of the following are born per year?

Calves	
Kids	
Lambs	

	66
	67
	68

3.6 Have your livestock numbers increased in the last two years?

Yes ☐ (Mark with
No ☐ an "X")

	69
--	----

3.7 If your livestock numbers have increased, by how many?

Cattle	
Sheep	
Goats	

	70
	71
	72

3.8 Please mention the two most important breeds that you are farming with from the livestock types listed hereunder (if relevant).

Cattle: Brahman
Nguni

Sheep: Merrino
Pedi

Goats: Xhosa Indigenous Goat
Angora
Imbuzi Indigenous Goat

	73
	74
	75
	76
	77
	78
	79

Section D: Grazing Management

4.1 What is the source of grazing for your animals?

Open veld
Camps

☐
☐

(Mark with
an "X")

Other, specify: _____

80

4.2 Grazing hours for your animals (average of summer and winter).

Sheep: _____
Cattle: _____
Goats: _____

81

82

83

4.3 How far (km) is the grazing land from the kraal/area where your animals overnight? km

84

4.4 Who is responsible for managing the grazing land?

None
Village committee
Traditional authority
Other, specify: _____

☐
☐
☐

(Mark with
an "X")

85

4.5 Do you kraal your animals?

Yes

☐

No

☐

(Mark with
an "X")

86

4.6 If you kraal your animals, why do you kraal your animals?

Theft prevention

Health monitoring

Predation control

Manure

Prevent animals from straying into cropping fields

87

88

89

90

91

4.7 Does the grazing land show any signs of deterioration?

Yes

☐

No

☐

(Mark with
an "X")

92

4.8 If the grazing land shows signs of deterioration, how do you manage it?

Nothing is done to manage the grazing

Plant pastures in the cropping fields

Divide the grazing land into camps

93

94

95

4.9 What grazing system is followed in the area?

Rotational ☐ (Mark with
Continuous ☐ an "X")
No system ☐
Other, specify: Seasonal

96

4.10 How do you manage grass in the grazing land?

Divide the land into camps ☐ (Mark with
Keep limited number of animals ☐ an "X")
I do not manage grass ☐

97

98

99

Other, specify: _____

4.11 Do you feed your animals on planted pastures?

Yes ☐ (Mark with
No ☐ an "X")

100

4.12 If your animals feed on planted pastures, what is the origin of the pastures?

Farmer plants them himself ☐ (Mark with
Bought from other farmers ☐ an "X")

101

102

Other, specify: _____

Section E: Health Management (Diseases Control/Prevention)

5.1 Do you make use of a veterinarian from DOA?

Yes ☐ (Mark with
No ☐ an "X")

103

5.2 In case of sick animals, where do you seek advice?

None ☐ (Mark with
Fellow farmers ☐ an "X")
Veterinary services ☐
Extensionist ☐

104

105

106

107

Other, specify: _____

5.3 How far (km) is the nearest veterinary service? km

108

5.4 Do you vaccinate your animals?

Yes ☐ (Mark with
No ☐ an "X")

109

5.5 If you vaccinate your animals, against which diseases?

Pulpy kidney	☐		☐	110
Sheep scab	☐		☐	111
Brucellosis	☐		☐	112
Anthrax	☐		☐	113
Pasteurella	☐	(Mark with an "X")	☐	114
Blue tongue	☐		☐	115
Blue udder	☐		☐	116
Trichomonas	☐		☐	117
Three day stiffness	☐		☐	118
Botulism	☐		☐	119
Lumpy skin	☐		☐	120
Not sure	☐		☐	121

Other, specify: Alopecia Areata ☐ 122

5.6 If you vaccinate your animals, when do you vaccinate?

Follow health management program	☐	(Mark with an "X")	☐	123
When the need arises	☐		☐	124
Anytime	☐		☐	125

5.7 Who is responsible for vaccinating your animals?

Farmer self	☐	(Mark with an "X")	☐	126
Fellow farmer	☐		☐	127
Veterinary technician	☐		☐	128

Other, specify: Other departmental representatives ☐ 129

Family member ☐ 130

5.8 Do you control external parasites?

Yes	☐	(Mark with an "X")
No	☐	

☐ 131

5.9 If you control external parasites, please indicate how?

Hand picking	☐		☐	132
Tick grease	☐	(Mark with an "X")	☐	133
Dipping	☐		☐	134
Pour on remedy	☐		☐	135

Other, specify: _____

5.10 Do you control internal parasites?

Yes	☐	(Mark with an "X")
No	☐	

☐ 136

5.11 If you control internal parasites, how?

Dosing ☐

☐ 137

Other, specify: _____

5.12 What internal parasites are most common in your herd?

Lung worms	☐	☐	138
Stomach worms	☐	☐	139
Liver flukes	☐	☐	140
Coccidia	☐	☐	141
Round worms (Nematodes)	☐	☐	142
Tape worms (Cestodes)	☐	☐	143

(Mark with an "X")

Other, specify: _____

5.13 If you do not control internal parasites, please state reason(s).

Remedies are costly

Section F: Feed, Nutrition and Supplementation

6.1 How do you ensure that fodder is available throughout the years?

Plant pastures in the cropping fields ☐ 145

Keep crop remains in a storage (donations) ☐ 146

6.2 In case of drought, do you provide extra feed for your animals?

Yes	☐	☐	147
No	☐	☐	

(Mark with an "X")

6.3 If you provide extra feed, what kind of feed do you provide?

Lucerne	☐	☐	148
Maize	☐	☐	149
Rested veld	☐	☐	150
Licks	☐	☐	151
Crop residues	☐	☐	152

(Mark with an "X")

Other, specify: _____

6.4 For how long (weeks) do you provide feed? _____ weeks ☐ 153

6.5 Where do you get the feed?

Buy from other farmers	☐	☐	154
Buy from feed companies	☐	☐	155
Make my own feed	☐	☐	156

(Mark with an "X")

Other, specify: Provision from Department of Agriculture ☐ 157

Family donations ☐ 158

6.6 If you do not provide extra feed, how do animals survive?

Animals depend squarely on those limited pastures

159

6.7 What supplements do you give to your animals?

None

Salt

Phosphate licks

Home-made licks

(Mark with
an "X")

160

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Other, specify:

6.8 In which season(s) do you give licks?

I do not give licks

Summer

Winter

Autumn

Spring

Any season

All seasons

(Mark with
an "X")

164

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6.9 What is the main nutrient/element in the lick?

Summer

Winter

171

172

6.10 Please give reasons for this formulation.

Strengthen bones

173

Stimulate maximum use of available grazing

174

Section G: Credit Information

7.1 Do you have access to credit?

Yes

No

(Mark with
an "X")

175

7.2 If you have access to credit, which of the following credit institutions do you know?

Commercial banks

Private investors

(Mark with
an "X")

176

177

Other, specify:

7.3 Did you in the past apply for a loan from the financial institutions?

Yes

No

(Mark with
an "X")

178

7.4 If you applied for a loan, what do you use credit for?

Infrastructural development
Operation costs
Capital

(Mark with
an "X")

Other, specify: Loan not granted

	179
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7.5 If you did not apply for a loan, what is the reason?

High interest rate
Excessive collateral requirements
Lengthy application process
I do not need a loan
Did not know I could receive a loan

(Mark with
an "X")

Other, specify: No land rights

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Section H: Farming Information and Advisory Services

8.1 Do you have continuous access to advice from government institutions?

Yes
No

(Mark with
an "X")

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8.2 From the list below, choose where you get agricultural advice.

Research institutions
Department of Agriculture
Extensionist
Print media
Farmer association
Study groups
Commonage meetings
Internet
Television
Nampo
Local agricultural shows

(Mark with
an "X")

Other, specify: Other farmers

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8.3 If you make use of services from the extension officer, how frequently does the extensionist visit you?

More than once a month
Once a month
Once every two months
Once a quarter
Twice a year
Once a year

(Mark with
an "X")

	202
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8.4 How does the extensionist visit you?

Individually ☐ (Mark with
Group contact ☐ an "X")

Other, specify: _____

203

8.5 How far (km) is the distance to the nearest extension offices? km

204

8.6 What kind of information is offered to you?

Market advice ☐
Credit advice ☐
Production planning ☐ (Mark with
Pasture management ☐ an "X")
Assistance with weather services ☐
Animal health ☐

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Other, specify: _____

8.7 How has this information assisted you to improve your farming operation?

Farm for money ☐ 211
Increased production ☐ 212
Identify and treat sick animals ☐ 213
Improved on management ☐ 214
No much gained: communal system complex and reluctance to take advice from the officers ☐ 215
Improved on decision-making ☐ 216
Began to sell wool ☐ 217
Farming not a gender thing ☐ 218
Shearing, sorting and classing of wool ☐ 219
Importance of marketing as a group ☐ 220
Marketing knowledge ☐ 221
Technical skills to use unfamiliar equipment ☐ 222

Section I: Marketing Information

9.1 Where do you sell your animals?

Feedlots ☐
Butcheries ☐
Abattoirs ☐ (Mark with
Private buyers ☐ an "X")
Auctions ☐
Speculators ☐
I do not sell ☐

223

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Other, specify: Retail stores

230

9.2 What mode of transportation do you most frequently use to get your animals to the market place?

Drive animals on foot ☐
Own vehicle ☐ (Mark with
Hired vehicle ☐ an "X")
Buyer's transport ☐

231

232

233

234

Other, specify: Drive animals with horse

235

9.3 How many auctions are in your area per year?

I do not know	☐	(Mark with an "X")
1 per year	☐	
2 per year	☐	
more than 2	☐	
None	☐	

236

9.4 Who determines the price for your animals?

Myself	☐	(Mark with an "X")
Buyer	☐	
Speculators	☐	
Agribusiness	☐	

237

Other, specify: Family member

9.5 Which of the following are the most important factors that influence the price of your animals?

Breed	☐	(Mark with an "X")
Gender	☐	
Age	☐	
Weight	☐	
Cost of raising the animal	☐	
Traditional ceremony concerned	☐	

238

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If Other, specify: _____

9.6 What constraints do you encounter when marketing your animals?

Poor roads infrastructure	☐	244
High cost of transportation (distance)	☐	245
Poor network signal	☐	246
No bank account	☐	247
Lack of handling facilities	☐	248
Chief not always available to certify and clear ownership	☐	249
Buyers bring hard cash and later send people to steal it	☐	250
Spited and undermined due to feminity	☐	251
Speculators imposing poor price	☐	252
Poor quality animals	☐	253
Family feeling entitled to a discount	☐	254

9.7 How do you think these constraints could be addressed?

Building of good roads	☐	255
Opening of a bank account	☐	256
Selling as a group	☐	257
Use of internet banking	☐	258
Decentralization of ownership clearance authority to other people	☐	259
Purchasing of handling facilities as an association	☐	260
Government to assist with good quality bulls and rams	☐	261

9.8 Please explain your marketing system.

Announce during community gatherings	☐	262
Ask family and neighbours to spread the word	☐	263
Wait for interested buyers to approach me	☐	264
Social media	☐	265

9.9 Who communicates marketing information in the area?

None	☐		☐	266
Extension	☐	(Mark with	☐	267
DOA	☐	an "X")	☐	268
Farmer association	☐		☐	269

Other, specify: _____

9.10 How do you access market information?

Newspapers	☐		☐	270
Radio	☐	(Mark with	☐	271
Television	☐	an "X")	☐	272
Internet on my cell phone	☐		☐	273

Other, specify: Other farmers ☐ 274

9.11 In case you have sheep, do you sell wool?

Yes	☐	(Mark with	☐	275
No	☐	an "X")		

9.12 If you sell wool, who is shearing the sheep?

Shearing team from CMW	☐		☐	276
Shearing team from BKB	☐		☐	277
Shearing team from NWGA	☐	(Mark with	☐	278
The farmer himself	☐	an "X")	☐	279
Employee	☐		☐	280
Family member	☐		☐	281

Other, specify: Village Boys ☐ 282

9.13 Please indicate the quality of your wool.

Long and thin	☐		☐	283
Short and thick	☐	(Mark with	☐	284
Excessive oil	☐	an "X")	☐	285
Has dung	☐		☐	286
Weeds infested	☐		☐	287

Other, specify: _____

9.14 What price (Rands) do you get when wool is sold per kg? R..... / kg ☐ 288

9.15 How far (km) are the wool markets located?km ☐ 289

9.16 Please indicate the age (months) at which you sell your animals.

Cattle: _____ (months)	☐	290
Sheep: _____ (months)	☐	291
Goats: _____ (months)	☐	292

9.17 How many animals have you sold in the previous 12 months?

Type of animal sold	Number of animals	Price per animal (Rands)	Month(s) when sold
Sheep wethers			
Goat wethers			
Ewes			
Nannies			
Rams			
Bucks			
Kids			
Lambs			
Bulls			
Cows			
Calves			
Oxen			
Heifers			

293-295
296-298
299-301
302-304
305-307
308-310
311-313
314-316
317-319
320-322
323-325
326-328
329-331

9.18 Please explain why do you sell your animals that time?

No specific reason

Traditional ceremonies performed that time

Animals in good condition to be sold

Schools reopen

Other, specify: _____

☐
☐
☐
☐

(Mark with
an "X")

☐ 332
☐ 333
☐ 334
☐ 335

9.19 If you are keeping sheep, how much wool (kg) and at what price (Rands) did you sell in the previous year?

Quantity: _____ kg

Price: _____ Rands

336
 337

Section J: Record keeping

10.1 Do you keep farming records?

Yes

No

☐
☐

mark with
an "X")

☐ 338

10.2 If you keep records, which records?

Financial records

Birth records

Mortality records

Weight at weaning

Sales records

Number of animals owned

☐
☐
☐
☐
☐
☐

(Mark with
an "X")

☐ 339
☐ 340
☐ 341
☐ 342
☐ 343
☐ 344

Other, specify: _____

10.3 If you keep records, how do you keep records?

Write them on a paper

☐
☐
☐

(Mark with
an "X")

Computerise them

Memorise them

345

346

347

Other, specify: _____

10.4 If you do not keep records, what are the challenges?

Not beneficial for me

Poor numerical abilities

I can not read and write

348

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Section K: Equipment

11.1 From the equipment below, choose those that you have.

Dosing gun

Castrating ring applicator

Burdisso

Branding equipment

Bud boxes

Cattle trailer

☐
☐
☐
☐
☐
☐

(Mark with
an "X")

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If other, specify: Needles and syringes

Shearing scissors

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Section L: Production Management and Breeding Practices

12.1 Please choose the two most important reasons for keeping animals.

Provision of draught power

Consumption by household

Source of income

Social functions

Investment for education of children

☐
☐
☐
☐
☐

(Mark with
an "X")

359

360

Other, specify: Social dignity

12.2 Which of the following factors affect your farming operation?

Theft	☐	(Mark with an "X")
Drought	☐	
Diseases	☐	
Predation	☐	
Poor grazing land	☐	
Finances	☐	

Other, specify: _____

12.3 Do you control mating of your animals?

Yes	☐	(Mark with an "X")
No	☐	

12.4 If you control mating of animals, please indicate how?

12.5 If you do not control mating of animals, what is the reason?

No knowledge on how it is done

Impractical under communal system

12.6 Do you have set breeding seasons?

Yes	☐	(Mark with an "X")
No	☐	

12.7 If you do not have set breeding seasons, please provide reasons.

Lack of key knowledge to do it

Impractical under communal grazing system

12.8 If you have set breeding seasons, in which months?

January	☐
February	☐
March	☐
April	☐
May	☐
June	☐
July	☐
August	☐
September	☐
October	☐
November	☐
December	☐

12.9 Please indicate the age(in months) at which the following are mated.

Heifer:	_____	(age in months)
First time sheep ewe:	_____	(age in months)
First time doe:	_____	(age in months)

12.10 Do you have access to a scale to measure weight?

Yes ☐ (Mark with
No ☐ an "X")

389

12.11 If you have access to a scale, please indicate the weight (kg) at which the following are mated. (If you do not weigh the animals, please leave blank)

Heifers: _____ (kg)
First time sheep ewes: _____ (kg)
First time goat ewes: _____ (kg)

390

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12.12 Please indicate the weight (kg) at which your animals are weaned.
(If you do not weigh the animals, please leave blank)

Calves: _____ (kg)
Kids: _____ (kg)
Lambs: _____ (kg)

393

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12.13 Please indicate the number of animals that were mated, conceived, gave birth, weaned and new borns that died.

Sheep: Mated _____
Conceived _____
Gave birth _____
Lamb deaths _____

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Cattle: Mated _____
Conceived _____
Gave birth _____
Calf deaths _____

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Goats: Mated _____
Conceived _____
Gave birth _____
Kid deaths _____

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12.14 How do you manage animals that fail to conceive in a production year?

Sell them ☐ (Mark with
Slaughter them ☐ an "X")
Give them second chance ☐

408

409

410

Other, specify: _____

12.15 Are rams and bulls tested for fertility?

Yes ☐ (Mark with
No ☐ an "X")

411

12.16 If you test bulls, who is doing it?

Farmer	☐	(Mark with an "X")
Veterinarian	☐	
Fellow farmer	☐	

Other, specify: _____

412
413
414

12.17 If you do not test bulls, please state the reasons.

I did not know it was possible

It is costly

415
416

Section M: Livestock General management

13.1 From the activities below, please indicate those that you perform on your farm

Dehorning	☐	(Mark with an "X")
Branding	☐	
Ear-tagging	☐	
Castration	☐	
Vaccination	☐	
Weighing new-borns	☐	
Provision of supplements	☐	
Kraaling	☐	

Other, specify: Ear-notching

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13.2 Regarding animal identification, please choose the method(s) employed.

Ear-notching	☐	(Mark with an "X")
Ear-tagging	☐	
Branding (hot iron)	☐	

Other, specify: _____

426
427
428

Thank you very much for your time and participation.