

**LEVEL OF ACCESS TO AGRICULTURAL EXTENSION AND ADVISORY
SERVICES BY EMERGING LIVESTOCK FARMERS IN UTHUNGULU
DISTRICT MUNICIPALITY, KWA ZULU NATAL PROVINCE**

BY

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DECLARATION OF ORIGINALITY

I confirm that the work presented in this dissertation is original, to the best of my knowledge and belief, except as acknowledged in the text; and that the material has not been submitted, either in whole or in part for a degree at this or other university. I also confirm that I have complied with the rules, requirements, procedures and policy of the university.

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ABBREVIATIONS

ARC	Agricultural Research Council
ANOVA	Analysis of Variance
AES	Agricultural Extension Services
KZNDARD	KwaZulu-Natal Department of Agriculture and Rural Development
ACIAR	Australian Centre for International Agriculture Research
EO	Extension officers
DAFF	Department of Agriculture Fisheries and Forestry
DSPED	Department of Strategic Planning and Economic Development
FAO	Food and Agriculture Organisation
FFS	Farmer Field School
FSRS	Farming Systems Research Section
FSR	Farming Systems Research
FSA	Farming Systems Approach
IFSNP	Integrated Food Security and Programme
KZNDA	KwaZulu-Natal Department of Agriculture
KZN	KwaZulu-Natal
NDA	National Department of Agriculture
SASAE	South African Society for Agricultural Extension
SPSS	Statistics Package for the Social Science
IDP	Integrated Development Plan
RSA	Republic of South Africa
SA	South Africa

DEFINITION OF TERMINOLOGIES

Advisory approach – is a model that is used to facilitate the provision of specialized advisory services based on needs, especially in financial planning, marketing and research.

Agricultural extension – is the dissemination of information and advice to farmers on how to solve their problems to improve farm production. In general, agricultural extension is a systematic process of working with farmers or communities to help them to acquire relevant and useful agricultural or related knowledge and skills to increase farm productivity, competitiveness and sustainability.

Agricultural advisory services – are services provided by subject matter specialists, private organisations or firms, to support commercial interests or to facilitate agricultural development. Advisory services are commonly available where agriculture is highly commercialised or where farmers have attained a high degree of competence and are able to articulate their demands for services and consult extension officers or advisors for advice more regularly.

Agricultural extension approach - is the application of scientific research, knowledge, and technologies to improve agricultural practice through farmer education.

Commercial farmers – are the farmers those that produce crops and/or livestock at a large scale for the sole purpose of selling for profit.

Emerging farmers – are farmers from previously disadvantaged communities who lack technical knowhow, farm and risk management skills and access to formal markets with defined off take agreements. This type of farmer needs constant mentorship and training.

Extension approach – is a model that is used to disseminate agricultural information and services to farmers to enable them to solve their problems to increase farm productivity. There is no single extension model, which is suited to all situations in South Africa. Models and methods must be adapted to the local situations.

Extension services – are all the activities that provide the information and services needed by farmers and other actors in rural areas to assist in developing their own technical, organizational, and management skills and practices to improve their livelihoods and well-being.

Farmers associations – are the elected committees from different wards within a local municipality, which represent farmers.

Food insecurity – is a situation where people lack sustainable physical or economic access to enough safe food, nutritious food, and socially acceptable food for a healthy and productive life.

Food security – is a situation when all people, at all times, have physical and economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.

Household – is where an individual family lives.

Livestock farmers – are those farmers who keep different types of livestock for household consumption and for sale.

Participatory approach – is a model of extension that provides farmers or communities with an opportunity to define their own problems, decide their development goals and solve their problems.

Project approach – is a model of extension, which deals with planned and targeted extension programmes.

Smallholder – is a rural small-scale farmer who uses modern agricultural practices to produce enough crops and livestock for household consumption and for income generation.

Subsistence farmer – is a rural farmer who does not use modern agricultural practices, and produces just enough crops and livestock for household consumption.

Technology transfer approach – is the movement of scientific methods of production or distribution of knowledge from research institutions, academic institutions, development institutions and private sector to the farmers through extension agents.

ABSTRACT

Lack of access to agricultural extension and advisory services is one of the major challenges facing emerging farmers in South Africa. The purpose of the study was to determine the level of access to extension and advisory services by emerging livestock farmers in uThungulu district municipality of KwaZulu Natal province. A survey design of face-to-face interviews was used to collect data using a structured questionnaire. A sample of 1 437 was randomly selected from 4 792 emerging livestock farmers in the district. A sampling fraction of 30% was used. Stratified sampling was used to determine the number of participants from each local municipality. The survey was conducted with different groups of emerging livestock farmers representing different age groups ranging from 18 years of age and older. Descriptive statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) version 23 software. The results showed that more than 90% of emerging livestock farmers in the district had better access to public extension compared with 14% who had access to private extension. On average, 30% of the respondents indicated that they also had access to extension and advisory services from agricultural cooperatives. With regard to extension delivery approaches, advisory was the main (43.5%) extension approach practised in uThungulu district municipality followed by project approach (37.8%), participatory approach (36.4%) and technology transfer at 11.1%. In conclusion, the involvement of private sector and cooperatives in rendering agricultural extension and advisory services in the emerging livestock sector was an indication that various stakeholders collaborate in the improvement of agriculture in the province. The emergence of project approach showed that extension agents or officers have become more target oriented rather than technology transfer driven. The use of participatory extension approach indicated that in the 21st century, farmer's opinions were also taken into consideration in the delivery of agricultural extension and advisory services in the emerging livestock sector. It was

recommended that there should be a wider partnership of extension and advisory services involving various stakeholders such as farmers, municipalities, non-governmental organizations and the private sector, to address and boost the efficiency of services to farmers in South Africa. Therefore, more work is required to increase access to extension and advisory services through cooperative associations by organizing emerging farmers in cooperative associations for the participatory approach to succeed.

CHAPTER 1: INTRODUCTION

1.1 Background

The contribution of the agricultural sector to the Gross Domestic Product in South Africa has decreased over the past four decades (van Wyk *et al.*, 2009). The economy has gradually become more advanced and less dependent on Agricultural commodities. The mining sector, tourism and heavy industries contribute more to the economy than agriculture. In the 1960s, agriculture contributed 9.1% of the economy, which decreased to 2.6% in 2012 (Alexander *et al.*, 2013). The decrease in the importance of agriculture shows that the South African economy has reached maturity when secondary and tertiary sectors become more important.

However, although South Africa has a highly developed commercial and emerging livestock sector that produces live animals and products for local and international markets, KwaZulu Natal province has the potential for development, most of the areas are under communal land systems and the local chiefs are the managers. More than 50% of cattle, 19% of sheep and 74% of goats are on communal lands in the province (Stats SA, 2014). Livestock species kept by farmers include cattle, sheep, goats, pigs and poultry (Mapiye *et al.*, 2009; van Wyk *et al.*, 2009). Men dominate the management and ownership of livestock in the smallholder areas. In general, men are the owners of large stock (cattle, goats and sheep), while women manage pigs and poultry (chickens and ducks) (Mapiye *et al.*, 2009). The communal livestock off-take in the province is as low as 6% instead of 35% per annum (Stats SA, 2014). The consequences are overstocking and overgrazing in summer when the velds have recovered after the long rains, but in general, there is low productivity and high mortality rate, especially during the winter drought (May-September). Farmers on communal lands lack adequate

knowledge and skills on stock management to be able to make proper use of scarce resources such as drinking water and grazing. There are also high incidences of stock theft and predation on communal lands because communal lands are not fenced and animals graze in open bushvelds during the day (Stats SA, 2014).

Lack of knowledge and skills is one of the major challenges facing emerging livestock farmers in uThungulu district municipality of KwaZulu Natal province, beside lack of finance for development, organized marketing and secure land ownership, among others. In most cases, emerging livestock farmers do not have access to information due to lack of support from government extension agents, which leads to food insecurity in the communities and heavy reliance on government support through welfare grants (DAFF, 2012). Adequate access to agricultural extension and advisory services will enable farmers to acquire information and skills that are required for crop and livestock production to make farmers more food secure and generate income for other needs. The acquisition of skills and adoption of new technologies will also enable farmers to increase agricultural production and improve livelihoods of resource-poor farmers (Kimaro *et al.*, 2010; Christoplos, 2010; Nnadi *et al.*, 2012). However, the previously disadvantaged communities have not equally benefited from the growth of the agricultural industry, although in the new democratic dispensation, most of the communities who are beneficiaries of government land redistribution programmes have entered into contract farming with established multinational companies who buy their products. Emerging farmers who are involved in contract farming have better access to improved seedlings, fertilizers, tractors, pesticides and medication (Bijman, 2008; Miyata *et al.*, 2009; Ram and Kumawat, 2013). In addition, farmers also benefit from improved product quality as well as better profit margins compared to their counterparts who are not involved with contract farming (Miyata *et al.*, 2009).

Although the South African government is promotes access to agricultural extension and advisory services by previously disadvantaged farmers, lack of access is still a reality at the grassroots level. When the Department of Agriculture revised agricultural extension and advisory policies after 1994, a feasibility study was conducted to determine the appropriate model (s) suitable for amalgamated extension. The new extension models (approaches) were expected to include previously disadvantaged farmers who were segregated by the apartheid government (DOA, 2005). The study recommended that Participatory Programme Extension Approach (PPEA) would be the main model suitable for the South African context (DOA, 2005). In the end, it was concluded that there was no single model or approach suitable for all the regions of South Africa, as a result other models or approaches such as technology transfer, advisory approach and project approach were adopted. However, the question was which extension approaches are practiced in the areas where farmers have access to agricultural extension and advisory services? Therefore, the purpose of this study was to determine the level of access to agricultural extension and advisory services and the approaches practiced thereof.

1.2 Problem statement

Lack of skills and knowledge about modern farming techniques has been identified as one of the major challenges facing emerging livestock farmers in South Africa, mainly due to lack of access to information and skills regarding modern farming techniques. This is attributed to the fact that majority of emerging farmers in South Africa do not have adequate support from the government through the provision of agricultural extension and advisory services. Thus, it leads to food insecurity in the rural communities where agriculture is the key economic driver, which predisposes rural people to reliance on government financial support services such as social grants.

Therefore, the purpose of this study was to assess the level of access and the approaches of delivery of agricultural extension and advisory services in uThungulu district municipality of KwaZulu Natal Province.

1.3 Research aim and objectives

1.3.1 Research aim

The aim of the study was to assess the delivery of agricultural extension and advisory services in uThungulu district municipality, KwaZulu Natal province.

1.3.2 Research objectives

The objectives of this study were as follows:

- To determine the level of access to agricultural extension and advisory services by emerging livestock farmers in uThungulu district municipality of KwaZulu Natal province; and
- To assess the approaches of delivery of agricultural extension and advisory services practiced in uThungulu district municipality.

1.4 Research questions

The research questions of this study are:

- What is the level of access to agricultural extension and advisory services by emerging livestock farmers in uThungulu district municipality of KwaZulu Natal province?
- What are the approaches of delivery of agricultural extension and advisory services practised in uThungulu district municipality?

1.5 Study delimitation

The focus of this study was on emerging livestock farmers in uThungulu district municipality of KwaZulu Natal province, who are the recipients of public agricultural extension and advisory services offered by KwaZulu Natal Department of Agriculture and Rural Development and other service providers. With regard to the categories (approaches) of delivery of agricultural extension and advisory services, the study adopted the four main extension approaches outlined in the Norms and Standards for Extension and Advisory Services in Agriculture in South Africa. These included project approach, advisory approach, technology transfer approach and participatory approach.

1.6 The outline of the dissertation

This dissertation consists of five chapters:

- Chapter 1: Provides the background of the study, problem statement, research aim and objectives and study delimitation.
- Chapter 2: Presents the literature reviewed
- Chapter 3: Outlines research methods used in the study
- Chapter 4: Presents a summary of the results of the study and discussion
- Chapter 5: Draws conclusions, reflects on the objectives; and provides recommendations.

The list of references from the literature consulted is appearing after chapter 5, followed by the appendix.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Chapter 2 is an overview of livestock production in South Africa as a whole, and in particular the participation of emerging farmers in the national economy. This includes the type of livestock kept by farmers and their products; economic and social benefits; as well as the challenges in livestock farming. It gives a broad description of agricultural extension and advisory services in South Africa and the delivery to farmers. It also discusses the type of extension approaches, benefits, impacts and limitations of extension approaches.

2.2 Overview of livestock production in South Africa

South Africa has a highly developed commercial sector and an emerging sector that produces live animals and products for local and international markets. The commercial sector is well organized and produces most of beef and dairy cattle; wool and mutton sheep; mohair and meat goats, pigs, broiler and egg laying chickens; and ostriches (Leeuw *et al.*, 1995). The emerging sector is made of smallholder and emerging farmers on communal lands. The indigenous livestock and mixed breeds of cattle, sheep, goats, pigs and poultry (Mapiye *et al.*, 2009). **Table 2.1** below presents the population of livestock in different provinces of South Africa.

Table 2.1: Livestock population in different provinces of South Africa (Mabe, 2016)

Province	Cattle		Sheep		Pigs		Goats	
	2015	2016	2015	2016	2015	2016	2015	2016
In thousands (000)								
Western Cape	558	553	2 800	2 778	169	171	214	216
Northern Cape	502	510	5 956	5 893	27	27	508	514
Free State	2 279	2 271	4 727	4 692	122	124	234	235
Eastern Cape	3 321	3 284	6 967	6 924	93	94	2 221	2 249
KwaZulu-Natal	2 684	2 657	747	729	150	152	806	811
Mpumalanga	1 399	1 379	1 739	1 717	124	126	88	90
Limpopo	1 016	1 009	254	245	358	362	1 081	1 094
Gauteng	248	244	99	97	164	166	40	40
North West	1 688	1 663	649	635	316	318	680	683
Total	13 695	13 570	23 938	23 710	1 523	1 540	5 872	5 932

According to DAFF (2012), beef and dairy cattle industries contribute massively to the world food supply and food security. South Africa produces 21.4% of the total meat produced on the African continent and 1% of global meat production. With a livestock industry contributing 34.1% to the total domestic agricultural production and providing 36% of the protein needs. Over the past ten years, the number of milk production and dairy cows has been fluctuating but there is a slight increase of 7% and 14%, respectively. This may be due to the uncertainty of the milk industry. South Africa produces some 2.37 billion litres of milk per annum, as was the case in 2007. More than 64% of all the milk produced in South Africa is on pasture-based systems in the Western Cape, Eastern Cape and KwaZulu-Natal. KwaZulu-Natal producing 21.1% of

South Africa's milk (500 million litres). Above South Africa's own production, the country imported 4 529 679 litres of milk and 9 852 949 kg of concentrated milk and powdered milk in 2007. The statistics from the Department of Agriculture, Forestry and Fisheries also showed that there was a reduction of 2% on the total milk to market from 2006 to 2007. The reasons for this reduction in production were the drought in the summer rainfall areas, which resulted in less silage produced, and the high prices of maize and other grains.

In the statistical report for 2012, DAFF reported that sheep farming is concentrated in the more arid parts of the country, *i.e.* Northern Cape, Eastern Cape, Western Cape, Free State and Mpumalanga. There are approximately 8 000 commercial sheep farms throughout the country (employing about 3 500 workers) and about 5 800 communal farmers. In 2010, sheep numbers were 24.5 million distributed in all nine provinces. Approximately 86% of the sheep are in Eastern Cape, Northern Cape, Free State and the Western Cape. The other five Provinces share the 14% of the country's sheep numbers. The sheep flock sizes vary between less than 50 and 1 800 heads. Dorper Sheep Breeders' Society of South Africa and Merino are the most prominent organizations representing sheep farmers. Dorper is a highly successful South African-bred mutton breed developed specially for the more arid areas of South Africa. Today they are widely spread throughout the country (DAFF, 2012).

South Africa is a relative small goat producing country and possesses only approximately 3% of Africa's goats and less than 1% of the world's number of goats. The Boer goat, Savannah and Kalahari Red are commercial goat breeds for the production of meat and skins and small quantities of cashmere. Angora goats produce

mohair (Roets, 2004). Saanen, Toggenburg and Alpine goats are milk production. There are only 250 stud goat breeders in the country. The Boer goat that is indigenous to South Africa has better meat in terms of quality and quantity than any other type of goat and small stock. White commercial farmers mainly own Boer goats and Angora goats while black farmers mainly own indigenous goats in a communal farming system. Indigenous goats represent approximately 63% of the goats found in South Africa and in the past they were not subjected to any selection process, un-improved and are a cross breeding of the improved goats like the Boer goat, the Kalahari Red and the Savannah goat. The indigenous goat is mainly found in the Eastern Cape Province (in the former Transkei and Ciskei), but also in the Limpopo, North West and Kwa Zulu–Natal Provinces with small numbers in the other provinces (Roets, 2004; DAFF, 2012)

Mapiye *et al.* (2009) reported that local communities rank cattle as the most important species followed by goats, sheep, pigs and chickens in that order, and Women may only own cattle after the death of the head of the family, but they have no power to sell or slaughter any animal without consulting the elders within the larger family. In a case study conducted in uThukela District Municipality in KwaZulu Natal, Gcumisa *et al.* (2016) reported that men generally owned cattle, goats and sheep, while women mostly owned pigs and chickens. Beef cattle production is an important and multifunctional survival strategy in rural areas, especially in marginal and remote areas with degraded lands and few economic opportunities (Ndoro *et al.*, 2014; Mudzilwana, 2015).

Cattle are used for bride price (*Lobola*), cultural rituals, hides, traditional clothes, meat and sales of live animals, and for that reason goats and cattle are not slaughtered primarily for meat provision, but for cultural rituals and ceremonies in KwaZulu-Natal Province (Collins-Luswet, 2000; Muchenje and Dzama, 2008; Mudzielwana, 2015). For

example, the people of Eastern Cape Province use goats exclusively for ceremonies such as bestowing good fortunes and to chase away evil spirits, but they are rarely used for other reasons (Gwaze *et al.*, 2009). Similar cultural views were expressed by Chimonyo *et al.* 1999, who reported that in Zimbabwe cattle are used for socio-cultural functions such as bride price and settling of disputes in lieu of fines in the rural areas. Cattle are also reserved for special ceremonies such as marriage feasts funeral and circumcision (Bayer *et al.*, 2004). Ainslie (2005) also added that among the Zulu people, cattle are used as a symbol and pride of a man who owns a homestead. And for all men who work away from home, they are expected to buy cattle and build their homes in their ancestral lands, and they are expected to slaughter cattle from their own hers to secure ancestral blessings for the well-being of thier families.

2.2.1 Livestock production in the commercial sector in South Africa

The South African commercial sector is advanced and well organized compared to the emerging livestock sector. Commercial farms produce most of the livestock products consumed in the country (Leeuw *et al.*, 1995). **Table 2.2** below presents the population of livestock in commercial farms.

Table 2.2: Livestock population in commercial farms in South Africa (Meissner *et al.*, 2013)

Province	Beef cattle		Dairy cattle		Sheep		Goats	
	Beef	Other	Dairy	Dual	Wool	Hair	Meat	Other
In thousands (000)								
Eastern Cape	219	232	323	2 380	336	62	152	34
Free State	603	208	13	5 361	758	144	355	671
Gauteng	531	1 272	348	6 410	906	643	1 588	341
KwaZulu-Natal	1 409	1 116	268	676	95	227	561	117
Limpopo	1 232	911	198	4 271	604	67	165	158
Mpumalanga	868	603	60	1 534	217	25	61	273
Northern Cape	650	433	12	226	31	349	861	1 109
North West	321	245	44	91	13	11	27	90
Western Cape	1 035	713	102	612	86	202	498	198
TOTAL	7 868	5 733	1 368	21 561	3 046	1 730	4 268	2 991

Commercial farmers use cultivated rotational grazing for dairy production, while beef production uses natural pastures (*velds*) and feedlots. Grazing is limited by the low productivity of pastures and low carrying capacity (due to low annual rainfall and shallow soils), which require extensive use of supplementary feeds during winter drought from June to September (Hoon, 2010).

2.2.2 Livestock production by emerging farmers in South Africa

Sikwela and Mushunje (2013) reported that from 1994 the National Department of Agriculture emphasized the importance of supporting and developing smallholder and emerging farmers in South Africa to alleviate poverty and unemployment in rural areas. After 1994, the government introduced new local government structures, reviewed the Agricultural and Marketing Acts; and introduced the land reform and redistribution, to develop the smallholder and emerging farmers. This initiative assumed that smallholder

farmers respond rationally to economic incentives given appropriate opportunities. Hence, when access to inputs, extension services, and mechanisation services, was improved smallholder farmers benefited more (Vink *et al.*, 2008).

Muller (2003) observed that South Africa has a great potential for livestock production, and it is one of the leading producers of cattle, but not many cattle make it to auction markets due to low quality body mass and finish. This may be attributed to the fact that, most of the emerging farmers in South Africa lack farming knowledge and skills, which makes it more difficult for them to understand some technical information provided to them by government agents; they need more access to extension and advisory services to achieve their goals (Meissner *et al.*, 2013). The other challenge is the lack of access to government extension and advisory services that are necessary for knowledgeable farming for economic participation and gain. Muller (2003) reported that majority of communal farmers in South Africa are elderly people who own cattle for reasons other than for economic gains, while their main source of regular income is from non agricultural activities such as government grants. Swanson (2008) also noted that some cultural restrictions that hinder emerging women livestock farmers from being fully involved in livestock management. For example, after the death of the head of the family, it takes a year for a widow to enter a kraal or pass through a herd of animals in the veld, and that leads to poor performance in livestock production. The widow cannot participate in livestock management activities during the mourning period.

Mkhabela (2009) reported that emerging farmers in South Africa face many challenges such as stock theft, poor infrastructure, poor veld management, poor dipping intervals; and high mortality rate (Menbere, 2014; Bayer *et al.*, 2003). In addition to that, they also lack access to finance and support from government extension agents to be able

to afford farming inputs, market information and farming knowledge and skills (Coetzee *et al.*, 2005). Smallholder farmers and emerging farmers cannot estimate the carrying capacity of their communal grazing lands because they do not know how without the support of extension agents. The common outcome is overstocking and degradation of communal grazing lands (Mapiye *et al.*, 2009). This is contrary to the argument advanced by Allsopp *et al.* (2007), who said that livestock farmers know the right time to increase livestock numbers on pastures when resources such as water points, abundant pasture and cropping lands. Then if this assumption were true, we would not be having so many degraded pastures all over South Africa. The problem of pasture and land degradation persists mainly due to lack of knowledge and lack of adequate government extension support.

Land ownership and distribution is yet another challenge to emerging farmers. The local Chiefs (*Amakhosi*) control communal land in rural areas, and access to land is by the Chief's discretion. As a result there are no title deeds and that means there is no access to credit due to lack of collateral. There are many bulls grazing on communal lands, and farmers cannot improve their livestock. No farmer can agree to sell his bulls in favour of a few improved bulls for the community. It is a self-defeating arrangement that has to be resolved through changes in land reform and restitution policy (Degu, 2012).

Most of the rural people in South Africa depend on government grants due to wide spread poverty. Many smallholders do not see the need to contribute to the welfare of local cattle dips in their areas. They always wait for the local government to run and maintain their cattle dips. There is no dipping for a long time when they damage the dips, which causes higher mortality of livestock due to tick borne diseases. In other

cases when governments establish camps for controlled grazing, local farmers destroy the camps to let their stock to graze communally as usual. They do not see the benefits of controlled grazing, and yet when drought comes, they are the first ones to complain to the local governments (Düvel, 2005).

2.3 Overview of agricultural extension and advisory services in South Africa

The Ministry of Agriculture, private organizations and cooperatives Agricultural render extension and advisory services in South Africa (DOA, 2005). The Norms and standards guide the provision of extension services for Extension and Advisory Services in Agriculture (DAFF, 2014). However, the country does not have a regulatory framework within which the delivery of extension and advisory service take place (DAFF, 2014). As a result, extension and advisory services face major challenges in the areas of relevance, efficiency, accountability and sustainability in South Africa (DAFF, 2014). It is probably a fair assessment that the extension services in South Africa are in a dire state, despite government (national and provincial) efforts to reverse the state of affairs (ARC, 2011).

In South African context, agricultural extension entails systematic process of working with farmers or communities to help them to acquire relevant and useful agricultural or related knowledge and skills to increase farm productivity and sustainability (DOA, 2005). According to the norms and standard for extension and advisory services, the role of agricultural extension is to improve access to agricultural support services (information, finance, inputs, regulatory services, technical expertise, markets etc.) which will create an enabling environment for improved agricultural production (DOA, 2005). In order to achieve the above-mentioned roles of extension and advisory services, it is necessary for farmers to have access to adequate extension and advisory

services. Farmers can acquire new knowledge through effective extension education programmes (Bembridge, 1991). Effective extension and advisory services can facilitate information sharing, accelerated technological, social and economic development and skills development in support of emerging livestock farmers and farming at large. In particular, effective extension and advisory services: Assist producers and processors to access relevant advisory services and facilities that are essential for the enhancement of farm productivity, securing finance and markets (DAFF, 2014).

2.3.1 Access to agricultural extension and advisory services in South Africa

In South Africa, extension has not had the intended impact on the farmers. This is due to the vast numbers of people requiring assistance, the relatively few and inadequately trained and resourced extension workers (DAFF, 2012). Agricultural education and training report indicated that most public sector extension officials in South Africa do not have the required education and training to respond to the needs of farmers they are servicing (ARC, 2011). As a result, the level of access to agricultural extension and advisory services is not adequate.

The major part of access to quality extension and advisory services depends on the ratio of extension officers to farmers. In their assessment Williams *et al.* (2008) estimated that there are about 2 800 extension agents who serve farmers at the ratio of 1: 878 smallholder farmers, 1: 857 subsistence farmers and 1: 21 commercial farmers. These ratios are clearly in favour of commercial famers. In 2011, the average ratio was 1:873, which is above the required ratio as stipulated in the norms and standard to agricultural extension and advisory services (ARC, 2011). The ratio of extension officers to farmers is a major concern in South Africa because access to agricultural extension services because of the separation between commercial and small-scale

farmers (DOA, 2005). The dualistic system benefited white farmers mostly because majority of them were commercial farmers compared to black farmers who were farming on small-scale settings. Williams *et al.* (2008) also reported that access to extension and advisory services in South Africa is less efficient because of large distances between farms and the low level of literacy, which makes it harder for them to form farmers associations and cooperatives.

Nel and Davies (1999) reported that in South Africa there is a disparity in the delivery of extension and advisory services to commercial and emerging farmers. They observed that the level of access to extension and advisory services is much higher on commercial farms than on emerging farms. This is mainly because most emerging farmers depend on public extension and advisory services compared to commercial farmers who rely on private extension services (Ngomane, 2002). Therefore, there is urgent need to address this disparity by availing more extension and advisory services to emerging farmers to help them to learn more to be able to contribute to the national economy. Düvel (2005) suggested that there should be a wider partnership of extension and advisory services involving various stakeholders such as farmers, municipalities, non-governmental organizations and the private sector, to address and boost the efficiency of services to farmers.

Degu (2012) and Menbere (2014) were of the opinion that if emerging farmers could get access to improved livestock technologies in conjunction to participatory of agricultural extension and advisory services they could contribute more to the national economy by producing higher quality livestock and products for local and export markets. Emerging farmers could also be encouraged to add value to their by processing low priced raw materials into higher priced intermediate or finished products.

Access to extension and advisory services could also enable emerging farmers to know the importance of marketing animals at a younger age; and to transform their mindsets to become more self-reliant (Hedden-Dunkhorst, 1999).

Agricultural extension and advisory services have currently taken a new direction in Africa, from previously government-driven services to more private sector involvement. However, there are common features in the new focus for extension services irrespective of the circumstances and environment (William *et al.*, 2008). There is an urgent need for yet another focus for extension services to make them more demand-driven and the discovery of alternative extension approaches, which will focus more on specific needs of farmers. Ndoro *et al.* (2013) suggested that it is about time the government handed over extension services to local governments in a federal arrangement, where the budget authority should be transferred to municipalities and wards to assist their local farmers. There is a need to review low under-performing state-led livestock extension services to tap into market-based extension models such as contract farming.

In many countries, agricultural extension is a department within the ministry of agriculture and fisheries or other, with the mandate to develop the agricultural sector to be able to meet food self-sufficiency and food security. As a result, most extension programmes focus on technology transfer to improve crop production, with much less attention to other activities on natural resource management or livestock, fisheries and horticultural production (Swanson and Rajalahti, 2010). Soil conservation and pasture improvement programmes are some of the activities that may be undertaken by extension officers in collaboration with farming communities to help them to become self-reliant (Christoplos, 2010; Nnadi *et al.*, 2012).

2.4 Overview of extension delivery approaches in Southern Africa

When agricultural extension started in the 19th century, technology transfer was the main approach used to render extension services. However, a number of relatively new agricultural extension approaches have emerged in the 20th and 21st centuries; this include approaches such as participatory extension approach, participatory learning approach, participatory rural appraisals, rapid rural appraisals, participatory technology development, farmer field schools, innovative farmer workshops, and look-and-learn tours (Swanson and Rajalahti, 2010). Apart from the above mentioned extension approaches; there are many more approaches worldwide.

To empower emerging farmers, use participatory extension approach so that famers can become self-reliant. However, there is need for more effective management to coordinate agricultural extension and advisory services, and to differentiate operational functions from coordination functions. There should be more coordination at the grassroots, and the higher the number of extension agents the smaller and closer to the target groups should the structure be implemented (Düvel, 2005). The coordinating linkage structure should be responsible for the coordination of all agricultural development issues. There should be linkages with other types of rural development at higher levels i.e. beyond the ward level. The linkage body should link with local and district municipalities in a hierarchy or ladder of linkage structures to allow for overall coordinated and integrated rural development. There must be an amalgamation between service providers and emerging farmers at all levels, since it is likely to undermine the partnership principle and the predicted self-determination and self-sufficiency of the emerging farmers. Even though there appear to be certain basic principles governing linkage systems, they have to be adapted to specific situations in order to be appropriate and effective (Düvel, 2005).

Each country in Africa applies various approaches in the delivery of extension and advisory services. For example, in **Botswana** the main purpose of agricultural extension and advisory services is to assist all farmers to improve their agricultural production regardless of their political status. The country has tried eight different approaches between 1947 and 2005, which resulted in many challenges. The current extension approaches in use are farming system research, and training and visits (Christoplos, 2010; Kimaro *et al.*, 2010).

In **Lesotho**, the government empowers farmers by informing them about access to resources for agricultural production and food availability. The aim is to bridge a gap between research and extension through conservation agriculture through demonstrations, field days and farmer training. The approaches that are currently used include participatory approach, project approach, technology transfer approach and farm visits and (Kimaro *et al.*, 2010). In **Malawi**, agriculture remains the backbone of their economy because it contributes to employment, economic growth, export earnings, food security and nutrition. The government still recognizes Tribal Authorities in community development. The approaches currently used include participatory approach, technology transfer approach and group approach (Kimaro *et al.*, 2010).

Mozambique had agricultural extension, which was previously divided into phases i.e. establishment phase, expansion phase, master plan phase. The master plan phase adopted unified extension services for crop production, livestock production and natural resource management. They also explored the development of integrated national agricultural system to include training and visits, educational philosophy and more participatory extension approach (Christoplos, 2010; Kimaro *et al.*, 2010).

The Ministry of Agriculture in **South Africa** established farmer support programmes that operate throughout the country undertaking the activities such as need assessment, farm visit, demonstration trials, training courses and producing, distributing, and formative articles as strategies to render agricultural extension services etc. The approaches that are predominately used in South Africa are participatory approach, project approach, advisory approach and technology transfer approach (DOA, 2005).

In **Tanzania**, two major types of farming systems are used, namely, fallow farming and agro-pastoralist farming. Fallow farming system is associated with annual crops like legumes, maize and millets with livestock. Agro-pastoralist system involves cropping and livestock keeping. Different agricultural extension approaches are used to cater for both types of farming systems. The common agricultural extension approaches used are farmer field schools, farmer-to-farmer approach and participatory approach (Kimaro *et al.*, 2010). Various organizations in **Zimbabwe** provide agricultural extension to farmers due to the challenges facing the agricultural sector because of land reform policies. Technology transfer approach was used to promote ploughs and other modern agricultural practices. Agricultural extension organizations use different approaches such as transfer of technology, forced extension approach, participatory approach, master farmer training scheme, training and visits, farming systems research approach and commodity-based approach (Swanson and Rajalahti, 2010). **Uganda** uses agricultural extension and advisory services to bridge the gap between farmers and the main sources of knowledge and information such as extension institutions, research centers, administration, colleges and universities. They use participatory approach, project approach and technology transfer approach (Swanson and Rajalahti, 2010; Saliu *et al.*, 2009).

Technology transfer approach: this type of extension approach is a generic top down approach focused primarily on the tools and methods of production of basic food crops. Much less attention was given to resources and support to other extension and advisory programmes such as livestock, horticulture, fisheries and natural resources management. However, this approach has undergone changes to ensure that extension agents pass on scientific information to farmers directly. The major shortcoming of this approach is that the information transferred to farmers may not be relevant to their conditions; or it may only solve part of their problems but not fully. A more holistic approach, which includes researchers, extension agents and farmers, is required to find solutions to the problems identified by farmers (Swanson and Rajalahti, 2010).

Participatory approach: this type of extension approach is a farmer-led approach in which farmers identify their problems and discuss them with extension and advisory agents to find appropriate solutions. To address the high ratios of farmers to extension agents, lack of adequate knowledge, limited funding, lack of resources, and large areas that have to be covered, farmers' associations use this approach to address the weaknesses of the conventional extension approaches (Williams, 2008).

Advisory approach: is the approach for managing agricultural extension systems for more effective performance, as recommended by the World Bank. It advocates training and visits extension system, which involves a single chain of command, well-identified boundaries of operation with a ratio of one supervisor to eight extension workers. Other requirements of this approach is compulsory systematic training programme of short courses for extension agents, elimination of non-extension functions from the responsibility of extension agents, adequate transport and other resources; and effective monitoring. This approach eliminates waste of time in decision-making and red

tape in government activities. Consequently, the name of extension service system changed to Unified Agricultural Extension Services (Saliu *et al.*, 2009).

Project approach: the livestock markets in the districts use this extension approach. It helps farmers to access livestock markets regularly with more information of livestock sales at low cost and low risks. Previously, farmers had to travel long distances to sell their animals, which made them very reluctant to sell. They had no access to market information and they lost money through transport and low sale prices. This approach enables farmers to participate and process the sales of their livestock in their local market with lower risks (Saliu *et al.*, 2009).

Other approaches: there are new bottom-up approaches, such as ...*“farmer-first, farmer-back-to-farmer, and farmer-to-farmer extension and facilitation”*, which require extension agents to provide services to farmers only on request. Farmers take the initiative and choose preferred services from different various providers (Nxumalo and Oladele, 2013). These approaches assume that many services provider can be trusted to deliver their services. However, there are major challenges facing the current extension delivery models coupled with inadequate research to evaluate the level of access and effectiveness of existing extension models (Ndoro *et al.*, 2014). In conclusion, this study proposes to determine the level of access of agricultural extension and advisory services rendered to livestock emerging farmers in the uThungulu District Municipality in Kwa Zulu Natal; and to assess the category of delivery of these services.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methodology applied in this study. It includes research design, description of the study area, sample selection, data gathering methods, data analytical procedures and ethical consideration.

3.2 Research design

The study used a survey design and quantitative research methods to achieve its objectives. The survey included different groups of emerging livestock farmers representing different age groups ranging from 18 years of age and older.

3.3 Study area

The study was in uThungulu district municipality in KwaZulu Natal province of South Africa. The municipality is in the northern part of the province within latitude S 27° 26' - 28° 44' and longitude E 31° 23' - 32° 05'. It has six local municipalities, namely: Nkandla, uMlalazi, Mthonjaneni, Ntambanana, uMhlathuze and Mbonambi. The district preserves many aspects of traditional culture and most of the inhabitants are mainly dependent on natural resources, grants and pensions for subsistence. A few of them engage in small trade selling in informal markets and some practice subsistence farming (Lewu and Assefa, 2009). **Figure 3.1** below show the map of uThungulu district municipality.

uThungulu District Municipality









	Nkandla Local Municipality		Mbonambi Local Municipality
	Mthonjaneni Local Municipality		uMhlathuze Local Municipality
	Ntambanana Local Municipality		uMlalazi Local Municipality

Figure 3.1: Map of uThungulu district municipality showing the 6 local municipalities (adopted from: uThungulu district integrated plan 2011/2012.

http://gis.KZN.gov.za/map_requests.html accessed on 15/01/2014

3.4 Sample selection and sampling

A representative sample of 1 437 was randomly selected from the study population of 4 792 emerging livestock farmers in uThungulu district municipality. This implies that a sampling fraction of 30% was used. Stratified sampling was used to determine the number of participants from each local municipality.

The following formula was used: $n_j = N_j/N \times n$

Where by: n_j = sample size of the local municipality; N_j = population of the local municipality; N = total study population of the district municipality; n = targeted sample size of the district municipality.

Table 3.1: A sample of livestock farmers from the different strata (local municipalities)
(n = 1 437)

Name of local Municipality	Number of emerging livestock farmers	Number of farmers sampled	Sampling fraction (%)
Ntambanana	292	87	6.0
KwaMbonambi	550	165	11.5
Mthonjaneni	890	267	18.6
uMhlathuze	880	264	18.4
uMlalazi	1 020	306	21.3
Nkandla	1 160	348	24.2
Total	4 792	1 437	100

3.5 Data collection

Data was collected by interviewing farmers face-to-face using a structured survey questionnaire (Appendix 1) with multiple choice or closed questions. Farmers for interviews at their homesteads.

3.6 Measurement of variables

Primary data obtained included: demographic information (gender, age, education level, number of years in farming, source of advisory services), socio-economic characteristics, level of access to agricultural extension and advisory services and extension delivery approaches. The questions to determine the level of access to

extension and advisory services, and approaches of extension delivery were in the form of five point Likert scale questions.

3.7 Data analysis

Data was analysed using Statistical Package for the Social Sciences (SPSS) version 23. Descriptive statistics such as percentages, simple means, frequencies and analysis of variance (ANOVA) were determined. Lavene Statistics was used to test homogeneity of variances, and to determine the different levels of access to advisory services and categories (approaches) of extension delivery.

3.8 Ethical considerations

The College of Agriculture and Environmental Sciences Ethics Review Committee approved the study on 25 February 2014. The ethics reference number is 2014/CAES/014. Interviewers asked participants to give their consent before the interviews. Those who agreed to participate in the study signed the consent form (Appendix 2) before participating in the study.

CHAPTER 4: RESULTS AND DISCUSSION

4.1 Introduction

The chapter presents the results and discussion of the analysis of the study. The chapter has three sections. The first section presents the demographic characteristics of the farmers involved in the study, the second section focuses on the farmers' background and their farming activities in the study area, and the third section presents the results and discussion on access to agricultural extension services.

4.2 Results

4.2.1 Distribution and demographic characteristics of the respondents

4.2.1.1 Demographic characteristics of the respondents

Table 4.1 presents the demographic characteristics of the respondents.

Table 4.1: Demography of respondents in uThungulu District Municipality (n=1 437)

Variable	Frequency	Percent
<u>Gender</u>		
Female	123	8.6
Male	1314	91.4
Total	1437	100.0
<u>Age group</u>		
Less than 35 years	8	0.6
35 - 40 years	44	3.1
41 - 50 years	105	7.3
51 - 60 years	231	16.1
Above 60 years	1049	73.0
Total	1437	100.0

<u>Level of Education</u>		
No formal education	1336	93.0
Primary education	66	4.6
Secondary education	23	1.6
College education	10	0.7
University education	2	0.1
Total	1437	100.0
<u>Marital status</u>		
Married	1199	83.4
Single	100	7.0
Widowed	133	9.3
Divorced	1	0.1
Other	1	0.1
Subtotal	1434	99.8
System	3	0.2
Total	1437	100.0
<u>Home language</u>		
IsiZulu	1435	99.9
IsiXhosa	2	0.1
Total	1437	100.0
<u>Type of grazing land</u>		
Private land	306	21.3
Communal land	1131	78.7
Total	1437	100.0

The results on **Table 4.1** indicate that the majority (91.4%) of the respondents were males, which showed that there were more men in livestock farming. The age group of most respondents (73.0%) was above 60 years. This showed that most of the farmers were old people and only 0.6% of the farmers were young, because their age was less than 35 years. With regard to the education level, the results indicated that majority of the farmers (93%) did not have formal education; and very few of them had primary

education, college education and University education. The type of grazing land used by most respondents (78%) was communal land. Few respondents grazed their animals in the private land rather than communal land.

4.2.1.2 The involvement of respondents in farming

Table 4.2 presents the length of experience of respondents in farming activities in uThungulu District Municipality.

Table 4.2: The length of experience of respondents in farming activities (n=1 437).

Item	Value
Mean	12.46
Std. error of mean	0.223
Mode	5
Std. deviation	8.448
Minimum	1
Maximum	38

The results on **Table 4.2** show that the longest experience in farming was 38 years, and the shortest experience was 1 year. The average number of years of experience in farming was 12.46 years, and the standard error of mean was 0.223, which was quite low. The standard deviation of the mean of the respective number of years of experience in farming was high (8.448), which showed the dispersed years of farming experience amongst the respondents. The mode of the number of years of experience was 5 years.

4.2.1.3 Main sources of income among the respondents

Table 4.3 shows the results of the main sources of income among the respondents.

Table 4.3: The main sources of income among the respondents (n=1 437)

Item	Frequency	Percent
Non-farming activities	1 310	91.2
Farming	127	8.8
Total	1 437	100.0

The results on **Table 4.3** show that the majority of the respondents (91.2%) did not rely on farming as their main source of income. Less than 10% of the respondents depended on farming to earn income. Most respondents received extra income from non-farming activities such as social grants from the government, different home industries, salaries, and contributions from family members.

4.2.1.4 The types of livestock owned by the respondents

Table 4.4 presents results of livestock types owned by the respondents at the time of the study.

Table 4.4: Livestock types owned by the respondents at the time of the study (n=1 437).

Animal type	Frequency	Percent
Cattle	1 358	94.5
Goats	822	57.4
Poultry	772	53.7
Sheep	161	11.2
Pigs	124	8.6
Horses/Mules/donkeys	69	4.8

The results on **Table 4.4** show that 94.5% of the respondents owned cattle, followed by goats (57.4%) and poultry (53.7%). Horses, mules and donkeys were the least popular livestock types. The results showed that most of the respondents who owned cattle had goats and poultry as well.

4.2.1.5 Statistical analysis of livestock types

Table 4.5 presents statistical results of livestock types owned by the respondents at the time of the study.

Table 4.5: Analysis of livestock types at the time of the study

Item	Cattle	Goats	Sheep	Poultry	Pigs	Horses, Mules & donkeys
Mean	23.40	16.53	37.98	21.70	8.03	8.33
Std. Error of Mean	0.538	0.370	2.333	0.283	0.396	0.474
Mode	9	14	14	18	6	4
Std. Deviation	19.795	10.576	28.282	7.872	4.247	4.320
Minimum	2	0	4	6	2	2
Maximum	160	88	106	56	22	18

The results on **Table 4.5** indicate that on average respondents owned more cattle than other types of livestock. The standard error of mean of all types of animals (sheep, poultry, goats, pigs, cattle and horses, mules and donkeys) ranged between 0.283 and 2.333, which was low. However, the standard error of mean of sheep was slightly higher at 2.333. There was high disparity in the number of cattle, goats, sheep and poultry because the standard deviation was above 7.0 in all of them. The minimum number of cattle, pigs and horses, mules and donkeys owned by respondents was two. The common number of goats and sheep owned by the respondents was fourteen.

4.2.1.6 The annual net income

Table 4.6 presents the analysis of annual net income earned by the respondents in the previous year presented on.

Table 4.6: Analysis of annual net income earned by respondents in the previous year (n=1 437)

Item	Annual net income
Mean	1218.36
Std. Error of Mean	9.181
Mode	1300
Std. Deviation	348.045
Minimum	130
Maximum	6000

The results on **Table 4.6** indicate that the average net income earned by the respondents in the previous year was R1218.36 with a standard error of mean of 9.181, which was acceptable. The standard deviation from the mean of net income from the previous year was very high (348.045), which showed that there was high disparity in the annual net income earned by the respondents. This was also evident on the minimum and maximum annual net income which were R130.00 and R6 000.00, respectively. R1300.00 figure was the most common annual net income earned by the respondents in the previous year.

4.2.2 Level of access to agricultural extension and advisory services

The agricultural extension and advisory services offered to emerging livestock farmers in uThungulu District Municipality included public extension services, private extension services and extension services offered by agricultural cooperatives.

Table 4.7 shows the level of access to public agricultural extension and advisory services by emerging livestock farmers in uThungulu District Municipality.

Table 4.7: Level of access to public agricultural extension and advisory services (n=1 437).

Name of Local Municipality	Level of access (%)					Mean	Mode	Std. error of mean	Std. deviation
	To a very large extent	To a large extent	To some extent	To a little extent	Not to an extent at all				
Mbonambi	78.8	13.9	7.7	0	0	1.285	1	0.046	0.593
Mhlathuze	78.8	13.6	7.2	0.4	0	1.295	1	0.039	0.632
Mlalazi	77.1	12.7	9.8	0	0.3	1.337	1	0.039	0.678
Mthonjaneni	86.1	8.6	4.9	0	0.4	1.199	1	0.034	0.550
Nkandla	85.6	8.6	5.7	0	0	1.201	1	0.028	0.526
Ntambanana	89.7	5.7	4.6	0	0	1.149	1	0.051	0.471
Average	82.68	10.52	6.65	0.06	0.12	1.244	1	0.040	0.575

The results on **Table 4.7** indicate that 82.7% of farmers had very adequate access to public agricultural extension and advisory services, while 10.5% had adequate access to public agricultural extension and advisory services. However, on average 6.7% of the respondents indicated that they did not have adequate access to public agricultural extension and advisory services. The mean score was 1.244 with the range between 1.149 and 1.337. The mode was one, which supported the notion that majority of the respondents had adequate access to public agricultural extension and advisory services. On average, the standard error of the mean was 0.040, which was quite low. The standard deviation was 0.575, which showed that there was low disparity among the respondents concerning the level of access to public agricultural extension and advisory services.

Table 4.8: Level of access to private agricultural extension and advisory services (n=1 437).

Name of Local Municipality	Level of access (%)					Mean	Mode	Std. error of mean	Std. deviation
	To a very large extent	To a large extent	To some extent	To a little extent	Not to an extent at all				
Mbonambi	1.2	9.1	10.9	56.4	22.4	3.897	4	0.070	0.895
Mhlathuze	1.5	10.6	11.0	54.5	22.3	3.856	4	0.058	0.936
Mlalazi	0	19.3	47.1	31.0	0.3	3.170	3	0.044	0.762
Mthonjaneni	0	16.9	30.3	44.9	7.9	3.438	4	0.053	0.862
Nkandla	0	17.0	30.7	44.8	7.5	3.428	4	0.046	0.858
Ntambanana	0	9.2	26.4	60.9	3.4	3.586	4	0.076	0.708
Average	0.45	13.7	26.1	48.8	10.6	3.562	3.83	0.058	0.837

The results on **Table 4.8** show that a small fraction of the respondents (14.2%) had adequate access to private agricultural extension and advisory services, compared with 48.8% of the respondents had less than adequate access to private extension and advisory services. The mean score was 3.562, which also supported the notion that majority of the respondents had did not have adequate access to private agricultural extension and advisory services. On average, the standard error of the mean was 0.058, which was quite low. The standard deviation was 0.837, which showed that there was low disparity among the respondents concerning the level of access to private agricultural extension and advisory services.

Table 4.9: Level of access to agricultural extension and advisory services from agricultural cooperatives (n=1 437).

Name of Local Municipality	Level of access (%)					Mean	Mode	Std. error of mean	Std. deviation
	To a very large extent	To a large extent	To some extent	To a little extent	Not to an extent at all				
Mbonambi	0	15.8	9.1	0	75.2	4.345	5	0.091	1.167
Mhlathuze	1.5	10.6	11.0	54.5	22.3	3.856	4	0.058	0.936
Mlalazi	0	22.1	1.0	0	76.8	4.314	5	0.071	1.254
Mthonjaneni	0	22.8	0	0	77.2	4.315	5	0.077	1.262
Nkandla	0	23.0	0.9	0	76.1	4.293	5	0.068	1.268
Ntambanana	52.9	29.9	0	11.5	5.7	1.701	1	0.096	0.891
Average	9.1	20.7	3.7	11	55.6	3.804	4.1	0.077	1.130

Table 4.9 shows that on average majority of the respondents (55.6%) had no access to agricultural extension and advisory services from agricultural cooperatives. The average mean score was 3.804 with the range between 1.701 and 4.345, this showed that majority of the respondents had little or no access to agricultural extension and advisory services from agricultural cooperatives. On average, the standard error of the mean was 0.077, which was quite low. The standard deviation was 1.130, which showed that there was low disparity among the respondents concerning the level of access to agricultural extension and advisory services from agricultural cooperatives.

4.2.3 Category of delivery of agricultural extension and advisory services rendered to emerging livestock farmers

The category of delivery of agricultural extension includes advisory services and extension approaches used by agricultural extension officers in uThungulu District Municipality included technology transfer, participatory approach and project approach.

4.2.3.1 Advisory services approach

Advisory services included sustainable livestock production, financial planning for livestock production, livestock marketing, livestock production problems, and climate adaptation strategies. The results on **Table 4.10** show level of access to advisory services by emerging livestock farmers in uThungulu District Municipality.

Table 4.10: Access to advisory services by emerging livestock farmers (n=1 437).

Name of Local Municipality	Level of agreement (%)					Mean	Std. error of mean	Std. deviation
	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree			
Mbonambi	17.0	54.8	6.4	3.8	18.1	2.510	0.046	1.323
Mhlathuze	5.7	24.0	39.7	28.8	1.8	2.970	0.025	0.910
Mlalazi	9.4	14.4	26.7	22.6	26.9	3.430	0.033	1.279
Mthonjaneni	5.8	23.7	39.6	29.0	1.8	2.970	0.025	0.913
Nkandla	51.4	12.0	15.7	17.9	3.0	2.090	0.031	1.285
Ntambanana	3.2	39.5	13.3	8.5	35.4	3.333	0.066	1.385
Average	15.4	28.1	23.6	18.4	14.5	2.883	0.038	1.183

The results on **Table 4.10** indicate that only 43.5% of the respondents in uThungulu District Municipality had better access to agricultural advisory services from the government, as shown by those who said they strongly agreed or agreed. Nkandla Local Municipality had better access to agricultural advisory services because 71.8% of the respondents strongly agreed or agreed that they received agricultural advisory services. The local municipality with less access to agricultural advisory services was Mlalazi, where only 23.8% of the respondents said that they strongly agreed or agreed. The mean score was 2.883, which ranged between 2.090 and 3.430. The level of agreement was towards uncertain. The mean standard deviation was 1.183, which showed that there was low disparity amongst the respondents regarding access to agricultural advisory services rendered by government in uThungulu District Municipality. The results of Lavene Statistics which tested homogeneity of variances showed that access to advisory services amongst local municipalities was highly significant ($p < 0.000$).

4.2.3.2 Technology transfer extension approach

Technology transfer includes new livestock production technologies, technologies that improve livestock production, technologies that are suitable for farmer's conditions, field demonstrations for livestock production technologies and access to institutions that develop livestock production technologies. **Table 4.11** shows the level of access to technology transfer by emerging livestock farmers in uThungulu District Municipality

Table 4.11: Access to technology transfer extension approach by emerging livestock farmers (n=1 437).

Name of Local Municipality	Level of agreement (%)					Mean	Std. error of mean	Std. deviation
	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree			
Mbonambi	0	4.4	26.8	53.6	15.3	3.800	0.026	0.745
Mhlathuze	0	13.0	26.8	31.8	28.3	3.750	0.028	1.007
Mlalazi	0	10.0	27.3	34.4	28.2	3.810	0.025	0.959
Mthonjaneni	0	12.9	26.7	32.3	28.1	3.760	0.027	1.002
Nkandla	0	16.6	21.7	44.3	17.5	3.630	0.023	0.957
Ntambanana	0	9.7	10.8	22.8	56.8	4.270	0.048	0.997
Average	0	11.1	23.4	36.5	29.0	3.837	0.030	0.945

The results on **Table 4.11** indicate that majority (65.5%) of the respondents in uThungulu District Municipality had no access to technology transfer from the government. The high proportion of those who strongly disagreed or disagreed was evident. Mbonambi local municipality had the least access (4.4%) to technology transfer. The average mean score for the district was 3.837, which ranged between 3.630 and 4.270. This indicated that the level of agreement was leaned towards agree. The mean standard deviation was 0.945, which showed that there was no difference amongst the respondents regarding access to agricultural technology transfer from the government in uThungulu District Municipality. The results of Lavene Statistics which tested homogeneity of variances showed that access to technology transfer extension approach amongst local municipalities was highly significant ($p < 0.000$).

4.2.3.3 Participatory extension approach

Participatory extension approach included farmers' participation in decision making, needs identification, assessment of their production, prioritisation, problem identification, identifying opportunities, resolving their problems, participating in stakeholder meetings, involved in monitoring and evaluation of their production activities. The results on **Table 4.12** show access to participatory extension approach by emerging livestock farmers in uThungulu District Municipality

Table 4.12: Access to participatory extension approach by emerging livestock farmers (n=1 437).

Name of Local Municipality	Level of agreement (%)					Mean	Std. error of mean	Std. deviation
	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree			
Mbonambi	21.2	27.0	14.8	27.6	9.4	2.770	0.042	1.311
Mhlathuze	7.9	28.8	37.5	28.0	1.8	2.910	0.024	0.954
Mlalazi	25.8	15.9	31.9	22.3	4.1	2.630	0.028	1.200
Mthonjaneni	8.2	24.5	37.5	28.0	1.8	2.910	0.024	0.958
Nkandla	14.3	7.4	21.6	43.6	13.2	3.340	0.027	1.222
Ntambanana	9.4	27.6	20.3	27.0	15.7	3.120	0.054	1.240
Average	14.5	21.9	27.3	29.4	7.7	2.947	0.033	1.148

The results on **Table 4.12** indicate that only 37.1% of the respondents in uThungulu District Municipality did not have access to participatory extension approach from the government. Mbonambi Local Municipality had more access (48.2%) to participatory extension approach. The respondents held more positive notion about participatory extension approach compared with the other Local Municipalities. Nkandla local municipality had the least access to participatory extension approach. The mean score was 2.947, which ranged between 2.630 and 3.340. The level of agreement leaned towards uncertain. The mean standard deviation was 1.148, which showed that there was low disparity amongst the respondents concerning access to participatory extension approach rendered by government in uThungulu District Municipality. The level of access to participatory extension approach in the district was highly significant as shown by the results of Lavene Statistics ($p < 0.000$).

4.2.3.4 Project extension approach

Project extension approach included allocation of agricultural extension and advisory officers for a specific period, defining farming objectives, setting production deliverables and developing production action plans and timeliness. **Table 4.13** shows the level of access to project extension approach by emerging livestock farmers in uThungulu district municipality.

Table 4.13: Access to project extension approach by emerging livestock farmers (n=1 437).

Name of Local Municipality	Level of agreement (%)					Mean	Std. error of mean	Std. deviation
	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree			
Mbonambi	32.5	8.6	20.6	30.4	7.9	2.730	0.048	1.390
Mhlathuze	4.0	22.3	29.8	36.7	7.2	3.210	0.027	0.998
Mlalazi	34.5	11.8	16.7	32.2	4.8	2.610	0.035	1.364
Mthonjaneni	34.0	10.6	17.5	32.8	5.1	2.640	0.037	1.368
Nkandla	34.3	11.6	16.7	32.0	5.5	2.630	0.033	1.374
Ntambanana	4.6	17.9	29.7	39.5	8.3	3.290	0.048	1.240
Average	24.0	13.8	21.8	33.9	6.5	2.852	0.038	1.289

The results on **Table 4.13** show that 40.4% of the respondents in uThungulu District Municipality had no access to project extension approach from the government. Mlalazi Local Municipality had access to more project extension approach since 46.3% of the respondents held positive notion about access to project extension approach. Ntambanana local municipality had less access (22.5%) to project extension approach. The mean score was 2.852, with the range between 2.610 and 3.290. This indicated that the level of agreement leaned towards uncertain. The mean standard deviation was 1.289, which showed that there was no difference amongst the respondents regarding access to project extension approach from the government in uThungulu District Municipality. However, the results of Lavene Statistics showed that access to project extension approach amongst local municipalities was highly significant ($p > 0.000$).

4.3 Discussion

Demographic and socio-economic characteristics:

The demographic information of the respondents indicated that the majority (93%) of emerging livestock farmers in uThungulu district municipality did not have formal education. This is not surprising because most of them were above 60 years old and from the previously disadvantaged groups of people in South Africa. Muller (2003) also noted that the majority of communal farmers in South Africa were elderly people. The education level of farmers in uThungulu District Municipality was lower than the level of education in uThukela District Municipality within the same province, as reported by Gcumisa *et al.* (2016). They found that about one third (27.5%) of the respondents had no education, while farmers who had Primary and Secondary school qualifications were evenly distributed at 34.5% and 35.3%, respectively; and only 2.7% had higher level of education above Grade 12. The home language of the majority of the respondents (99.9%) was isiZulu and very few spoke other languages. Gcumisa *et al.* (2016) also

reported that most of the respondents (99%) in KwaZulu Natal used isiZulu as their home language, while other African languages such as isiXhosa, Sesotho and siSwati were 1% of the households in uThukela District. Majority (78%) of the respondents indicated that they grazed their animals on communal land. This could be the main reason why the majority of the respondents reported that their main source to income was non-farming activities because they did not have secure land to graze their animals. Muller (2003) found that the majority of livestock farmers on communal lands owned cattle for reasons other than for economic gains, while their main source of regular income was from non agricultural activities such as government social grants.

The results indicated that the types of livestock owned by emerging farmers in uThungulu district municipality were cattle, goats, sheep, poultry, pigs and horses, mules and donkeys. This was in agreement with (Leeuw *et al.*, 1995; Mapiye *et al.*, 2009) Who reported that livestock farmers in South Africa kept beef and dairy cattle; mutton and wool sheep; meat, milk and mohair goats; pigs; ostriches; ducks; turkeys; chickens (broilers and egg layers); horses and donkeys among others. Majority (94.6%) of the farmers owned cattle compared to other types of livestock. This is not astornishing because in Zulu culture, cattle are used as a symbols of pride for men who own homesteads. And for all men who work away from their home areas, they are expected to buy cattle and build their homes in their ancestral lands, and they are also expected to slaughter cattle from their own herds to secure ancestral blessings for the well-being of thier families (Ainslie, 2005). Cattle are also reserved for special ceremonies such as marriage feasts, funerals and circumcision (Bayer *et al.*, 2004). Similar cultural views were expressed by (Chimonyo *et al.*, 1999), who reported that in Zimbabwe cattle were used for socio-cultural functions such as bride price and for settling of disputes in lieu of fines in the rural areas.

Level of access to agricultural extension and advisory services:

The findings of the present study showed that more than 90% of emerging livestock farmers in uThungulu district municipality had better access to public agricultural extension and advisory services compared with 14% who had access to private extension. This is good because most small-scale farmers rely on public extension to receive information about improved technologies (Oladele and Mabe, 2010). The results also indicated that there was an improvement on the level of access to agricultural extension and advisory services by emerging farmers compared with the level of access more than 15 years ago. Nel and Davis (1999) in their findings indicated that in South Africa the level of access to extension and advisory services was low.

The findings of the present study were contrary to the general perception that farmers on communal lands do not have access to extension and advisory services. For example, Van Niekerk (2011) and Ndoro *et al.* (2014) reported that there was low access to public extension and advisory services in South Africa because of high ratio of extension agents to farmers, large coverage area of several wards to one extension agent without adequate transport; and lack of tools and equipment to carry out farm demonstrations.

The low access to private extension and advisory service was attributed to the fact that farmers were expected to pay for the services they received. Ngomane (2002) reported that most of the smallholder farmers who depended on public extension services could not afford to pay the fees charged by private extension services. This is not surprising because the majority of farmers in uThungulu district municipality were black. It is a well-known fact that previously the apartheid government segregated black farmers from white farmers (Düvel, 2005). The other reason was that, private agricultural extension and advisory services target commercial farmers who made profit compared with public

extension services, which focused more on smallholder farmers (Koch and Terblanché, 2013). In addition, the average annual income of the respondents was R1 218.36; this was an indication that emerging livestock farmers were unlikely to afford private extension and advisory services.

On average about 30% of the respondents had better access (those who answered “to a very large extent” and “to a large extent”) to extension and advisory services from agricultural cooperatives. Few farming communities in South Africa are not members of cooperatives, and in most cases, the services do not exist. The low access to agricultural extension and advisory services from agricultural cooperatives showed that. Therefore, emerging farmers could form cooperatives to receive better extension services, if local governments were fully involved with extension services. This was positive because it showed that different stakeholders rendered extension and advisory services. It also showed that extension and advisory services in South Africa implemented the recommendations from Prof. Düvel. Düvel (2005) suggested that there should be a wider partnership in extension and advisory services involving various stakeholders such as farmers, municipalities, non-governmental organizations and the private sector, to address and boost the efficiency of services to farmers in South Africa. The involvement of private sector and cooperatives in rendering agricultural extension and advisory services in the emerging livestock sector is an indication that various stakeholders are coming together to improve agricultural sector in South Africa.

Approaches of delivery of agricultural extension and advisory services:

The results showed that advisory extension approach was the main approach of agricultural extension and advisory services used in uThungulu district municipality. On average, 43.5% of the respondents indicated that they used advisory extension approach

followed by project approach (40.4%), participatory approach (36.4%), and technology transfer approach (11.1%), respectively. This indicated that extension agents used all the four main extension approaches outlined in the Norms and Standard for Extension and Advisory Services in South Africa. The findings were in support of Swanson and Rajalahti, (2010) who reported that extension agents delivered extension services through participatory approach, project approach, advisory approach, need assessment, farm visit, training courses and demonstration trials, and general technical production advice.

The low usage of technology transfer approach showed that extension approaches have evolved over years. Swanson and Rajalahti (2010) noted that technology transfer was an old approach of extension services transfer, which applied the generic top down approach. That has undergone changes to ensure that extension agents pass on scientific information to farmers directly. The major shortcomings of technology transfer approach were that the information transferred to farmers was not relevant to their conditions; or that the technology could only solve part of their problems. The emergence of project approach showed that extension agents have become more target oriented. Saliu *et al.* (2009) reported that project extension approach was more welcome to the emerging livestock farmers because it was more user-friendly and more applicable to livestock markets in the districts. It helped farmers to access livestock markets regularly with more information of livestock sales at low cost and low risks. This approach enabled farmers to participate and process the sales of their livestock in their local markets with lower risks.

Farmers' opinions were important in participatory extension approach when rendering agricultural extension and advisory services in the emerging livestock sector.

Participatory approach was more modern for the delivery of agricultural services. Farmers identified their problems and discussed them with extension and advisory agents to find appropriate solutions (Williams, 2008). Farmers' associations use participatory approach to address the weaknesses of the conventional extension approaches, which have failed because of high ratios of farmers to extension agents, lack of adequate knowledge, limited funding, lack of resources, and large areas covered by each extension agent. However, this study has shown on **Table 4.11**, that there was very little access to extension and advisory services through cooperative associations because emerging farmers did not have cooperative associations, through which they could benefit from participatory extension approach. Therefore, more work is required in this area for participatory approach to succeed.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The present study found that majority (93%) of emerging livestock farmers in uThungulu district municipality did not have formal education. The majority (99.9%) of the respondents spoke isiZulu and very few spoke other languages. The majority (78%) of the farmers indicated that they grazed their animals on communal land. In addition, majority of livestock farmers in communal land owned cattle for reasons other than for economic gains, while their main source of regular income is from non agricultural activities such as government grants.

The study also found that the types of livestock owned by emerging farmers in uThungulu district municipality were cattle, goats, sheep, poultry, pigs and horses/mules/donkeys. The majority (94.6%) of the farmers owned cattle compared to other types of livestock. Cattle were reserved for special ceremonies such as marriage feasts, funerals and circumcision.

The findings of the study showed that more than 90% of emerging livestock farmers in uThungulu district municipality had better access to public agricultural extension and advisory services compared with 14% who had access to private extension. There was an improvement on the level of access to agricultural extension and advisory services by emerging farmers compared with the level of access to agricultural extension and advisory services more than 15 years ago. On average, about 30% of the respondents had better access to extension and advisory services from agricultural cooperatives. Advisory extension approach was the main delivery of agricultural extension and advisory services used in uThungulu district municipality.

About 43.5% of the respondents indicated that they used advisory extension approach followed by project approach (36.4%), with participatory approach being third (36.4%) and technology transfer at 11.1%. The emergence of project approach showed that extension agents or officers have become target oriented. The low practice of technology transfers approach show that extension approaches have evolved over years. Farmers' opinions counted in participatory extension approach when rendering agricultural extension and advisory services in the emerging livestock sector. There was very little access to extension and advisory services through cooperative associations because emerging farmers did not have cooperative associations through which they could benefit from participatory extension approach. The involvement of private sector and cooperatives in rendering agricultural extension and advisory services in the emerging livestock sector was an indication that various stakeholders were coming together to improve agriculture in the country.

5.2 Recommendations

This study recommends that there should be a wider partnership of extension and advisory services involving various stakeholders such as farmers, municipalities, non-governmental organizations and the private sector, to address and boost the efficiency of services to farmers in South Africa. Therefore, more work is required to increase access to extension and advisory services through cooperative associations by organizing emerging farmers in cooperative associations for the participatory approach to succeed.

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APPENDIX 1: SURVEY QUESTIONNAIRE

A. GENERAL INFORMATION

Questionnaire number	
Date	
Interviewer's name	
Local Municipality	1=Mbonambi 2=Mhlathuze 3=Mlalazi 4=Mthonjaneni 5=Nkandla 6=Ntambanana
Ward	

B DEMOGRAPHIC INFORMATION

No	Participant demography	Code	Answer
1	Gender	1 = Male 0 = Female	
2	Age group	1 = Less than 35 years; 2 = 35 – 40 years; 3 = 41 – 50 years 4 = 51 – 60 years; 5 = Above 60 years	
3	Level of education	1 = No formal education; 2 = Primary education; 3 = Secondary education; 4 = College Education; 5 = University Education; 6 = Other (Specify)	
4	Marital status	1 = Married; 2 = Single; 3 = Widowed; 4 = Divorced; 5 = Other (Specify)	
5	Home Language	1 = IsiZulu; 2 = isiNdebele; 3 = IsiXhosa; 4 = English 5=Other	

B. SOCIO-ECONOMIC CHARACTERISTICS

No	Socio-economic characteristics	Code	Answer
6	Type of grazing land	1 = Own land/farm; 2 = Communal land; 3 = Rented land; 4 = Other (Specify)	
7	Number of years involved in farming	Years	
8	Main source of income	1 = Farming; 0 = Non-farming activities	
9	Types of livestock owned	1 = Cattle; 2 = Goats; 3 = Sheep; 4 = Poultry; 5 = Pigs; 6 = Horses/mules/donkeys 7 = Other (Specify)	
10	Number of each type of livestock		
10a	Cattle	Number	
10b	Goats	Number	
10c	Sheep	Number	
10d	Poultry	Number	
10e	Pigs	Number	
10f	Horses/mules/donkeys	Number	
10g	Other (Specify	Number	
11	Net income for the previous year	Number	

B. LEVEL OF ACCESS TO AGRICULTURAL EXTENSION AND ADVISORY SERVICES

10	Question	To a very large extent	To a large extent	To some extent	To a little extent	Not to an extent at all	
		1	2	3	4	5	
	Indicate your level of access to agricultural extension and advisory services						Answer
a	To what extent do you have access to public agricultural extension and advisory services?						
b	To what extent do you have access to private agricultural extension and advisory services?						
c	To what extent do you have access to agricultural extension and advisory services from agricultural cooperatives (Commodity groups)?						
d	To what extent do you hear about agricultural extension and advisory services from government officials?						
e	To what extent do you hear about agricultural extension and advisory services from your family?						
f	To what extent do you hear about agricultural extension and advisory services from schoolteachers?						
g	To what extent do you hear about agricultural extension and advisory services from Television (TV)?						
h	To what extent do you hear about agricultural extension and advisory services from Radio?						
i	To what extent do you hear about agricultural extension and advisory services from Newspapers?						
j	To what extent do you receive agricultural extension and advisory services from National Government?						
k	To what extent do you receive agricultural extension and advisory services from Provincial Government?						
l	To what extent do you receive agricultural extension and advisory services from District Government?						
m	To what extent do you receive agricultural extension and advisory services from Local Government?						

C. EXTENSION APPROACHES/DELIVERY

11	Question	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	
		1	2	3	4	5	
	Indicate your level of agreement with the following statements about Advisory Services						Answer
a	I receive advice about sustainable livestock production from public extension and advisory officer.						
b	I receive advice about financial planning for livestock production from public extension and advisory officer.						
c	I receive advice about marketing of livestock from public extension and advisory officer.						
d	I receive advice to solve all the livestock production problems that I encounter from public extension and advisory officer						
e	I receive advice about climate adaptation strategies from public extension and advisory officer						
12	Indicate your level of agreement with the following statements about Technology Transfer						
a	Public agricultural extension and advisory officer informs me about new livestock production technologies						
b	Public agricultural extension and advisory officer facilitates access to technologies that improve the production of my livestock.						
c	Public agricultural extension and advisory officer helps me to access technologies that are suitable for my conditions.						
d	Public agricultural extension and advisory officer helps me to access field demonstrations for livestock production technologies.						
e	Public agricultural extension and advisory officer facilitates access to institutions that develops livestock production technologies.						

13	Question	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	
		1	2	3	4	5	
	Indicate your level of agreement with the following statements about Participatory Approach						Answer
a	Public agricultural extension and advisory officer facilitates participation and involvement in decisions that affect the production of my livestock.						
b	Public agricultural extension and advisory officer involves me in need identification, assessment and prioritisation.						
c	Public agricultural extension and advisory officer involves me in identifying problems, opportunities and possible solutions.						
d	Public agricultural extension and advisory officer facilitates partnership building with research institutions, private sector, farmer organisations and credit institutions to address my problems.						
e	Public agricultural extension and advisory officer coordinates access to various types of extension and advisory service providers						
f	Public agricultural extension and advisory officer involves me in monitoring and evaluation of my production activities.						
14	Indicate your level of agreement with the following statements about Project Approach						
a	Public agricultural extension and advisory officer was allocates a specific period to render services to me.						
b	Public agricultural extension and advisory officer has helped me to define my farming objectives.						
c	Public agricultural extension and advisory officer has helped me to develop production action plans.						
d	Public agricultural extension and advisory officer has helped me to develop production timelines.						
e	Public agricultural extension and advisory officer has helped me to develop production deliverables.						

THANK YOU FOR YOUR PARTICIPATION

APPENDIX 2: ETHICS STATEMENT AND INFORMED CONSENT

PROJECT TITLE:

The level of access to agricultural extension and advisory services rendered to emerging livestock farmers in uThungulu District Municipality, KwaZulu Natal province

Project leader: Ms. Norah Z. Nkosi, Extension Officer

Group Members: Ntokozo mdlalose, Economist; Nicolas Mkhize, Animal Production Specialist; Bongumusa Madondo, Extension Officer; Fano Mkhize, Extension Officer; Londiwe Mathethwa, Extension Officer; Ngezeni Biyela, Extension Officer; Mlungisi Xulu, Extension Officer; Zanele Nyawo, Extension Officer; Qinisiwe Mnyandu, Extension Officer; and Dr Nontuthuko Ntuli, UniZulu Lecturer.

Dear Farmer,

You are invited to participate in a research study on livestock farming to be conducted in uThungulu District Municipality of KwaZulu-Natal. You need to understand what is involved in our study before you agree to participate; and you have the right to refuse to participate if you are not satisfied with some of the aspects of this study. And if you agree to participate in the study, you still have the right to withdraw at anytime without giving any reason.

You are being asked to participate in this study because you are one of the livestock farmers in uThungulu District. Your participation in this study is entirely voluntary, and a decision not to participate will not in any way be used against you. The study will be done with your full participation and your involvement will be highly appreciated.

1. What your participation in this study means:

If you decide to participate in this study, you will be required to do the following:

- To sign this informed consent form;
- To provide information about your experiences with Government Extension Services that are offered to livestock farmers in your area;
- To provide information about your livestock production business including successes and challenges that you face; and how you manage your livestock in general;
- This study will be conducted in a form of a survey on your farm.

2. Risks involved in this study

There are no risks associated with this study because all we want from you is information, which you will be asked to provide to the interviewers for the time it will take to complete the Questionnaire. Your animals will not be affected in any way. Your current system and husbandry practices will not be interfered with at any time.

3. Potential benefits that will come from the study

The benefits of participating in this study are:

- You will get to appreciate what other livestock farmers in uThungulu District are doing and what their experiences are.
- You will get a clear picture of the situation of livestock production in rural areas of KZN.
- You will form part of a team that will identify research needs that maybe required in the future with regard to livestock production in rural areas.
- You will get answers to the questions that you may have.
- You will know what to do or where to go when you want to improve your knowledge and skills as you will have the departmental officials in your area.

4. Implications of the study

The study will assist in providing a better understanding of the role and effectiveness of Agricultural Extension Services in uThungulu District to support livestock farmers; as well as in identifying areas for improvement in years to come.

5. Compensation or incentives for participating in this study

Please note that you we **will not** pay anyone to participate in the study. We will not provide any financial compensation or incentives to you for participating in this study. Your participation is voluntary.

6. Your rights as a participant in this study

Your decision to participate in this study is voluntary. You have the right to decide not to participate, or to stop taking part at any time without providing reasons for doing so. Your withdrawal will in no way affect your farm business. You have the right not to disclose the financial records for your livestock enterprises if you do not wish to. Any questions you

may feel are too sensitive to answer you have the right not to. You will not be forced to answer any questions.

7. Statement of confidentiality and anonymity in the study

We pledge the confidentiality of all documents and information obtained during the course of this study. We will not reveal your identity at any time of this study. We will not reveal your name in any publication. Access to your data will be strictly limited to the interviewers. In addition, we will store your data and personal information in a confidential format, which will only be accessible to the researchers. When we document and present the results in the province, you may give permission for your name to be published, if you do not have a problem with that.

8. Qualifications of the interviews who will carry out this study

We are qualified Agricultural, Animal and Extension Scientists and Technicians. We are employees of the KwaZulu-Natal Department of Agriculture, Environmental Affairs and Rural Development. We have various and relevant qualifications and experience in Agricultural, Science, Extension and Training, which will enable us to carry out this study.

9. Approval of this study

The College Research and Graduate Studies of College of Agriculture and Environmental Sciences; and the KwaZulu-Natal Provincial Department of Agriculture, Environmental Affairs and Rural Development, have approved this study.

10. Contacts for additional information regarding this study

- a. The Project Leader:** Ms Norah Z. Nkosi, Cell: 082 853 7886;
Email: 42865778@mylife.unisa.ac.za
- b.** Should you have any further questions regarding the ethical aspects of this study, you may contact Prof E. Kempen, the Chairperson of the College Research and Graduate Studies, Tel: 011 471 2241, Email: kempeel@unisa.ac.za

11. The final word

Your co-operation and participation in this study will be greatly appreciated. Please sign the enclosed informed consent below if you agree to participate in the study. In such a case, you will receive a copy of the signed informed consent from the Project Leader.

WRITTEN CONSENT

I hereby confirm that I have been adequately informed by the interviewer about the nature, conduct, benefits and risks of the study. I have also received, read and understood the above written information. I am aware that the results of the study will be anonymously processed into a research report. I understand that my participation is voluntary and that I may, at any stage, without prejudice, withdraw my consent and participation in the study. I had sufficient opportunity to ask questions and of my own free will declare myself prepared to participate in the study.

Farmer's name: _____ (Please print)

Farmer's signature: _____

Date of consent: _____

Interviewer's name: _____ (Please print)

Interviewer's signature: _____

Date of interview: _____

VERBAL CONSENT

(Applicable when participants cannot read or write)

I hereby declare that I have read and explained the contents of the information sheet to the farmer. The nature and purpose of the study were explained, as well as the possible risks and benefits of the study. The farmer has clearly indicated that he/she will be free to withdraw from the study at any time for any reason and without jeopardizing his/her relationship with the health care team.

I hereby certify that the farmer has verbally agreed to participate in this study.

Farmer's name : _____ (Please print)

Interviewer's name: _____(Please print)

Interviewer's signature: _____

Date of interview: _____