

Effect of Agricultural Extension Services on Beneficiaries of the Nguni Cattle Project:

The case of Ncera and Kwezana villages, Eastern Cape Province

By

Lindokuhle Gwala

A dissertation submitted for the partial fulfilment of the requirement for the degree

of

Masters in Agricultural Extension



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Faculty of Science and Agriculture

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Declaration

I, the undersigned, hereby declare that, unless specifically indicated to the contrary in the text, this research is the result of my original work and that to the best of my knowledge. This dissertation has not been submitted elsewhere for fulfilment of a degree.

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Lindokuhle Gwala

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Date

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Abstract

The study was conducted to determine the effect of agricultural extension services on beneficiaries of the Nguni Cattle project in Ncera and Kwezana villages, both in Nkonkobe local Municipality of the Eastern Cape Province. The objectives of this study were to determine the quality of extension services offered to the beneficiaries of the Nguni cattle project, relationship between extension officers and beneficiaries of the project, lastly was to determine communication strategies used by extension officers to communicate with the project beneficiaries. A total of 73 Nguni cattle project beneficiaries were interviewed. Semi-structured questionnaires were administered to the beneficiaries of the project who were willing to participate in the study. Xhosa speaking enumerators assisted in data collection. Focus group discussions were later carried out in both villages to determine effect of agricultural extension services on socio-economic status of the beneficiaries. The focus groups were divided into three groups of different ages and gender. The majority of the beneficiaries in the project were males (62.2 % Ncera and 75% Kwezana). There was an association between gender and extension services. Farmers depended on different sources of income. Old age pension and animal sales being the main contributing sources and also having a significant difference. The results of the study further revealed that the beneficiaries were faced with cattle production challenges, lack of extension support services being the main challenge.

The results of the study indicated that the majority of beneficiaries had no access to extension services. Only 37.8% and 32.1 % at Ncera and Kwezana respectively reported that they had access to extension services. Although the latter is the case it was further explained by the

beneficiaries that extension services offered to them were of poor quality due to poor communication strategies used to provide these services. Beneficiaries also reported the relationship between them and extension officers' as poor. It was concluded that extension services had an effect on beneficiaries of the Nguni cattle project, largely based on the constraints they face on the project and limited access to extension services.

Key words: Extension services, communication strategies, Nguni Cattle project, focus groups

Dedication

To my late father (Vukile Simani) and grandfather (Gogo Nasangile Gwala).

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List of abbreviations

ABCD	Asset Building and Community Development
DA	Department of Agriculture
DRDAR	Department of Rural Development and Agrarian Reform
ECDC	Eastern Cape Development Co-operation
FAO	Food and Agricultural Organisation
IDC	Industrial Development Co-operation
IFAD	International Fund for Agricultural Development
ILRI	International Livestock Research Institute
Ms excel	Microsoft Excel
NDA	National Department of Agriculture
NERPO	National Emergent Red Meat Producers Organisation
PRAs	Participatory Rural Appraisals
SAGI	South African Government Information
SAS	Statistical Analysis System
SPSS	Statistical Package for Social Science

CHAPTER 1: INTRODUCTION

1.1 Background of the study

The livestock sector in South Africa accounts for 75% of the national agricultural output of which cattle farming is the largest sub-sector (NDA, 2008). An estimated population of 14.1 million cattle are found in this country of which 60% are found in rural areas (NDA, 2008). The Eastern Cape Province is leading in cattle production with an estimate of over 3.2 million heads. Cattle production in communal areas of South Africa is a norm (Mgomezulu, 2010). Hence development strategies that are aimed at improving livelihoods in these areas involve cattle production, the Nguni Cattle Project being an example. The Nguni breeds have pigmented skins covered with fine short hair of different mixtures of colour (black, red, brown, cream and dun) (Cattle Breeds, 1997). Besides its resistance to ticks and immunity to tick borne diseases (Mapiye *et al.*, 2007), Nguni breed has good meat quality and forage ability qualities with low maintenance (Muchenje *et al.*, 2008). The historical development of the Nguni has resulted in a breed with good temperament and mothering ability (Cattle Breeds, 1997). Its suitability of extensive production systems makes it an ideal breed for livestock production (Mapiye *et al.*, 2007). The attributes of the Nguni have prompted a number of agencies to introduce them in rural communities of South Africa (Mapiye *et al.*, 2007).

The University of Fort Hare and the Industrial Development Co-operation (IDC) started the Nguni Cattle project in 2004 with the aim of upgrading communal herds (South African Government Information, 2010), alleviate poverty and improving livelihoods of communal farmers (Musemwa, 2009).

The programme is funded by the IDC, while University of Fort Hare is responsible for providing research and training to farmers, as well as administrative work (Farmer's weekly, 2012) and the Eastern Cape Department of Rural Development and Agrarian Reform (DRDAR) provides training, animals, veterinary and extension services. Extension services have been used as means of diffusing new technologies in developing countries (Birkhaeuser *et al.*, 1991). However, most field staff lacks the necessary technical training and field experience to effectively deliver the services to farmers (The World Bank group, 2012). The environment in which farmers operate today is changing and requires new ways to provide extension services (Syngenta Foundation for Sustainable Agriculture, 2013).

The mission of agricultural extension (training and education) in Africa is to work towards improvement, relevant effective research and extension (Lindley *et al.*, 1996). Thus the involvement of agricultural extension officers is essential for improving agricultural and rural development. Agricultural extension is an educational process which has its goal, the communication of useful information to farmers, helping them to learn how to use the information so as to build a better life for themselves, their families and their communities (Swanson, 1984). Agricultural advisory services (including traditional extension, consultancy and agricultural information services) are expected to disseminate information to farmers (FAO, 2006). Therefore, communicating proactively and provision of relevant information about Nguni breeds could allow the agricultural industry to have more of an influence in shaping peoples' perceptions on the production of the Nguni breed.

1.2 Problem Statement

Success of the Nguni Cattle Project depends largely on the provision of extension services (IDC, 2007). Research on the Nguni Cattle Project has been done and it was highlighted that farmers are faced with challenges of high bulling and mortality rate (Tada, 2012) and poor rangelands (Gwelo, 2012). These problems might indicate the lack of access to extension services by the beneficiaries of the Nguni Cattle Project. However, although the Nguni Cattle Project needs extension officers to be involved, there is limited information about agricultural extension services offered to the beneficiaries of this project. Communal cattle producers need training on cattle management and animal performance so extension services are needed in order to form communication linkages with farmers (Tada, 2012) and also build farmers' capacity to increase cattle production (Musemwa, 2009).

1.3 Justification

Agricultural information is the basic necessity for farmers as it plays a vital role in enlightening them, raising their level of knowledge and eventually help in the decision making process regarding farming activities (Asaduzzaman and Itohara, 2009). However the ability of the livestock sector to attain its full productive potential is influenced by the availability of extension support services (Agholor, 2012). Therefore there is a need to address the access and provision of extension services, particularly amongst communal farmers (Nel and Jack, 2013). These services are a key to agricultural development and improvement of livestock production in rural areas. Studies on production and marketing constraints faced by the Nguni cattle beneficiaries have been done but information on extension services offered for this development initiative is lacking.

Hence the evaluation of agricultural extension services in Nguni cattle project is a matter of concern, as to persuade and give assistance to farmers so that the Nguni Cattle Project can maintain its success and sustainability as to meet its goal of poverty alleviation and improving rural livelihoods. This is critical in order to ensure that pure bred Nguni retains its genetic value through accurate administration of registered animals (IDC, 2007). The implications of this study will allow extension officers to understand how much effort they have to put on the Nguni cattle project to maintain its success. In addition, this study will help extension officers develop communication strategies for future communication with farmers.

1.4 Objectives

The main objective of the study is to determine the effect of agricultural extension services on beneficiaries of the Nguni Cattle Project in Nkonkobe local Municipality

The specific objectives are to:

- Determine the type and quality of extension services offered to the beneficiaries of the Nguni Cattle Project.
- Determine the relationship between Nguni cattle initiators and beneficiaries of the Nguni Cattle Project.
- Determine the communication strategies adopted by extension officers to communicate with the project beneficiaries.
- Determine the effect of extension services on socio-economic status of Nguni cattle project beneficiaries.

1.5 Research Questions

- What type and quality of extension services are offered to the beneficiaries of the Nguni Cattle Project?
- Is there any relationship between Nguni Cattle Project initiators and beneficiaries of the project?
- What communication strategies are adopted by extension officers to communicate with the project beneficiaries?
- What effect do extension services have on socio-economic status of Nguni cattle project beneficiaries

1.6 Hypothesis

The null hypothesis of this study is that agricultural extension services have an effect on beneficiaries of the Nguni cattle project in the Eastern Cape Province.

Specific hypothesis:

- There are no extension services offered to the beneficiaries of the Nguni Cattle Project beneficiaries.
- There is no relationship between Nguni cattle project initiators and beneficiaries of Project.
- There are no communication strategies adopted by extension officers to communicate with the project beneficiaries.
- Extension services have an effect on socio-economic status of Nguni cattle project beneficiaries.

1.7 Outline of the Study

This study is divided into six chapters. Chapter one is an introductory chapter for the whole study. It gives background information, problem statement, hypothesis and objectives of the study. The second chapter is the literature review; this chapter constitutes of a review of literature on livestock production in the Eastern Cape Province, the overview of Nguni cattle project to understand contribution and challenges of this project to the rural livelihoods. The concept of agricultural extension and extension services is reviewed which are very important to this study as the effect of extension services to the beneficiaries of the Nguni Cattle Project is the main objective of the study. In addition, theoretical framework of the study used to analyse extension services are presented and discussed. Information on communication channels that can be used to improve the flow of ideas between agriculture and rural areas in order to improve communal farming sector is also reviewed.

Chapter three is a methodological chapter. This chapter provides a brief description of the study area. It also explains sampling methods used and methods employed in data collection and analyse. Chapter 4 presents descriptive results of survey data in the two villages. It reports on demographic characteristics, income sources, land ownership and use, Nguni Cattle Project, extension services, communication strategies and veld management practises. Chapter five explores finding on effect of extension services on socio-economic status of the Nguni cattle project beneficiaries from a qualitative perspective using focus groups. This chapter focus on contribution of the Nguni Cattle project on the household's income and the society as the whole. It takes into consideration the challenges faced in the project and compares the state of agriculture before and after democracy. Chapter six is the general discussion, conclusion and recommendations.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Livestock farming is a tradition within South Africa's rural farming systems (Musemwa *et al.*, 2007) and a source of livelihoods for most rural communities in this country (Mgomezulu, 2010). It is a farming enterprise that is likely to improve household food security and alleviate poverty in communal farming areas of South Africa (Coetzee *et al.*, 2005). Livestock production is mostly used to develop communal areas, this include development initiatives such as the Nguni Cattle project. However to make sure that the Nguni cattle project sustains its objective of improving rural livelihoods, agricultural extension needs to play a role to develop good communication strategies or channels to enhance programme sustainability. In this chapter; literature on livestock production in the Eastern Cape Province, contribution of Nguni cattle project in rural livelihoods, challenges faced by communal farmers, agricultural extension services and rural development will be reviewed. In addition, theoretical framework of the study and information on communication channels that can be used to improve the flow of ideas between agriculture and rural areas in order to improve communal farming sector will be reviewed.

2.2 Livestock Production in the Eastern Cape Province

The Eastern Cape Province of South Africa is well known for livestock production, producing over a third of the country's livestock species; cattle, sheep, goats (Muchenje *et al.*, 2013), with 21% of South Africa's cattle, 25% sheep and 46% goats (ECD, 2013). This is due to its geographical morphology, soil types and scarcity of rain.

Parts of this province used to be called Ciskei and Transkei with 436 000 citizens reliant on smaller holder farms (Eastern Cape Business, 2007) and external sources of income for their survival (Monde *et al.*, 1997). Poverty levels in rural areas of this country are high (65%), yet this problem is neglected. It is further noted that there has been a decline in resource flow to the rural areas especially on the agricultural sector (Machethe, 2004). However, if livestock production is developed properly, the livestock industry can contribute very much towards enhancement of food production, economic development and human welfare (National Development Agency, 2012). Improving agricultural yield of this province is a necessity for improving food security and poverty alleviation (Eastern Cape Business, 2007). Since Eastern Cape Province is naturally endowed in livestock production, it is important to enhance livestock production to benefit rural communities and concerted intervention in approaches and strategies to implement change in the current livestock production levels. Hence the Department of Rural Development and Agrarian Reform together with the University of Fort Hare and IDC promote livestock production by initiation of the Nguni Cattle Project.

2.3. The Nguni Cattle project

The Nguni cattle project has been operating at the University of Fort Hare (Eastern Cape Province), the University of Limpopo (Limpopo and Mpumalanga Provinces), the University of Free State (Free State and Northern Cape Provinces), the University of Zululand (KwaZulu Natal Province) and North West University (North West Province) since 2004. In the Eastern Cape Province, this project is the collaboration between the Eastern Cape Departments of Rural Development and Agrarian Reform (ECDRDAR), IDC and University of Fort Hare. About 70 communities have benefited in the project since it has started (Tada, 2012).

The project was conceived to uplift livelihoods of livestock farmers in communal areas (Somoro, 2009) and re-introduce Nguni breed in into the communal farming areas of the Eastern Cape (Raats *et al.*, 2004). The benefiting communities are given are 10 in-calf heifers and two bulls to establish a nucleus of the registers Nguni herds. After five years these communities have to give back the same number of heifers and bulls they were initially given so that they can be given to another community.

2.4 The Nguni Breed

Nguni cattle is an indigenous and well known breed in Southern Africa which is easily notable by its distinctive pigmented hide and variety of coat colours, long reproductive lifespan and short calving interval (IDC, 2007). In addition, Nguni has traits of adaptability, fertility, productivity, good temperament, calving ease, tolerance to parasites and diseases (Mapiye *et al.*, 2007), good meat (Muchenje *et al.*, 2008) and hide quality (Farmer's Weekly, 2013). The bulls have well developed rounded cervio-thoracic humps which are muscular rather than fatty, whereas the cows have small almost nonexistent humps (Cattle Breeds, 1997).



Figure 2. 1 Nguni bull (Cattle breeds, 1997)



Figure 2.2 Nguni cow (Cattle breeds, 1997)

2.5 Contribution of the Nguni cattle to rural livelihoods

Different studies indicate that the majority of households in communal areas are depended on resources from livestock production. It has been shown that households are eager to keep livestock for multiple benefits they provide (Shackleton *et al.*, 2001) rather than for social status as it has been in the past (Duvel and Afful, 1996). However evidence suggests that Nguni breed, a well known breed in Southern Africa with historic value has high beef quality output (Muchenje, 2007). It also provides tribal people in communal areas with benefits these include consumption, spiritual and culture ceremonies (Farmer's weekly, 2013). Nguni cattle upgrades local cattle (Tada *et al.*, 2013) and improve the quality of existing herds in terms growth and meat (FAO, 2013). These breeds also provide milk, meat, hides, horns and income to rural households (Musemwa *et al.*, 2010). Cattle indirectly support crop production through provision of drought power and manure (Department of Agriculture, Rural Development and Land Administration, 2013). Cattle are important as they remain a store of wealth for communal farmers and still considered as a source of investment that has the potential to increase rate of investment in farming activities (Kongolo and Dlamini, 2012).

2.6 Challenges faced by communal farmers

Communal farmers have been facing various challenges such as lack of market related information, poor infrastructure and poor extension services (Kongolo and Dlamini, 2012). These challenges have led farmers to struggle to meet the demands for high quality diverse agricultural products (IFAD, 2013). Hence agricultural extension has to intervene and assist to improve agricultural technologies and implement effective production services.

2.6.1 Lack of information and communication

In communal areas there is insufficient market communication, this due to inefficient communication systems and poor information administration (Montshwe, 2006). Poor transfer of knowledge, skills and information is further manifested by limited interaction of the farmers with extension officers because of poor road networks and resources (Coetzee *et al.*, 2005). Bailey *et al.* (1999) suggested that information needs for communal farmers depends on prevailing production techniques and market conditions, type of product demanded, quality, quantity, price and market opportunities. Although considerable progress has been observed in the provision of communication system such as telephone and cellular phone network facilities, communal farmers still remain uninformed in terms of new production techniques, market prices, trends and auction sale dates (Mngomezulu, 2010). The reason to the latter is the severity of reliable information. Extension officers should play a role in disseminating information since provision of information to communal farmers is a way of maintaining transparency and inclusiveness (Montshwe, 2006).

2.6.2 Poor extension services

Communal farmers usually lack access to information as compared to commercial farmers therefore they lack the ability to realize their potential to improve their economic, social and environmental conditions. Livestock diseases, parasitism and death are the major threats to cattle production in communal production system (Hesterburg *et al.*, 2007). This is because of limited access to extension support services for example veterinary services and information about preventive medicines (Marufu *et al.*, 2009). Education from extension officers can help rural farmers to change their standard of living and bring sustainable development (Alfaro, 2004). Effective extension services are a call to promote efficient farming systems, placing emphasis on livestock production (Kongolo and Dlamini, 2012).

In addition, there is a need for extension officers to get information from researchers on veterinary services that can be rendered to communal farmers (Kimaro *et al.*, 2010). This will improve service delivery and accelerate agricultural development (Musemwa *et al.*, 2010).

2.6.3 Lack of market related information

The problem facing communal farmers including the Nguni cattle project beneficiaries is the lack of knowledge on cattle management (Mapiye *et al.*, 2009), this lead to poor marketing strategies. Lack of marketing facilities imposes a serious constraint on the market of livestock and livestock products (Mahabile *et al.*, 2002). In South Africa, there is a lack of marketing infrastructure such as sales pens and loading ramps and that is a serious constraint for communal farmers to market their cattle (Ndebele *et al.*, 2007). Communal farmers fail to attract buyers because they practise informal marketing where they use indigenous and local knowledge for pricing. Sometimes cattle are not sold or marketed because of cultural beliefs and customs, though the cattle kept maybe the one with high market value. This therefore results in selling the animal when it is too old and its market value being low since age has an effect on marketing (Musemwa, 2009).

2.6.4 Lack of infrastructure

The inadequacy of infrastructure is widespread in deep rural areas (Kgantsi and Mokoena, 1997) and poorly developed markets in these areas are as a result of lack of investment on infrastructure (Monde, 2003). However the latter can seriously impede development initiatives. Most communal farmers are located in remote areas away from major markets, where there is a serious lack of both physical and institutional infrastructure (NDA, 2008). Besides distance from markets, poor state of road networks in communal area of South Africa imposes a serious constraint.

It affects farmers' ability to attract many buyers in their areas since bad road network systems are associated with very high transport costs (NERPO, 2004). The most important physical infrastructural weakness for communal farmers are related to transport and holding facilities (Bailey *et al.*, 1999). Many rural communities complain of insufficient access to trader simply because of poor physical infrastructure e.g. roads so they have to pay for costs. Moreover small scale farmers are usually served by poor market infrastructure whereas development of markets can contribute to poverty alleviation (Monde 2003). In addition road infrastructure and transport availability have an influence on communal farmers' market participation (Gabre-Madhin, 2001). In both rural and agricultural development investment on infrastructure is important as it has positive effects on development (Ruijs *et al*, 2004).

2.7 Defining Agricultural extension

In an effort to improve knowledge, skills and technological adoption of farmers, it is important to have a realistic understanding of the instrument, agricultural extension (Raidimi, 2013). Agricultural extension is a non-formal educational process of providing knowledge, and skills, disseminates information and gives advice to farmers with the aim of improving their production, income and quality of life (Abrew, 2003). It is an essential pillar for rural community development and a strategy of agricultural research as it aims to bring positive behavioural changes among farmers (Mundi, 2013).

This process combines educational methodologies and communication techniques in promoting agricultural and rural development. It includes technology transfer, facilitation, adult education and information and extension services to bring changes in farming practices (Rivera and Qamar, 2003).

Extension services provide an effective link between agricultural research and farmers in enhancing inputs as well as flows of information that can improve farmers and other rural people's welfare an importance long recognised in development (Zivkoc, 2009). Critical access to the knowledge and information that rural people need in order to increase the productivity and sustainability of their production systems and improve the quality of their lives and livelihood is provided by extension services (The World Bank, 2013). The goals of extension include the transferring of knowledge from researchers to farmers, advising farmers in their decision making and educating farmers on how to make better decisions, enabling farmers to clarify their own goals and possibilities, and stimulating desirable agricultural developments (Van den Ban and Hawkins, 1996).

Agricultural extension would thus reduce the differential between potential and actual yield in farmers fields by accelerating technology transfer (reduce technology gap) (Witt, 2005) and helping farmers become better farm managers (Anderson and Feder 2003) It also has an important role to play in helping the research establishment tailor technology to resource circumstances of farmers. Extension thus has dual function in bridging blocked channels between scientists and farmers. Furthermore this process facilitates both the adoption and the adaptation of technology to local conditions.

2.7.1 Rural development and agricultural extension

The agricultural sector is crucial to rural development and contributes significantly to any initiative to alleviate poverty (NDA, 2008). For this reason there is a great need for strong access to extension advisory services. The need for reorientation of agricultural extension services was recognised due to the fact that delivery system is the key to transformation of small scale disadvantaged agricultural sector in South Africa (NDA, 2008).

The success or failure of any rural development initiative is depended on the impact of agricultural extension services since agricultural extension is the heart of rural development (Cobbet, 2013). Furthermore, rural development has its ultimate goal of improving the standard of living (socio-economic status) of rural communities. Hence it is important to look at the needs of communities prior to any development initiative strategy (Cobbet, 2013) as they have wealth of experience and knowledge in all areas of development especially where it concerns their livelihoods (Monde 2003).

Rural development is a participatory process through which rural people learn over time, through their own experiences and initiative, how to adapt their indigenous knowledge to their changing world (Ministry of Rural Development and Land Reform, 2009) and make best use and management of natural resources (water and land). Extension is one of the major service delivery mechanisms in agricultural and rural development; therefore it has a crucial role to play in the implementation of agricultural development initiatives in the rural communities. Rural development takes place in rural communities in an environment where farming is a dominant socio-economic sector (Zwane, 2012). Extension is a beneficiary of rural development's socio-economic infrastructure development success. Hence extension services have a role to play in the implementation of rural development programmes; role encompasses community need assessment, training of farmers in the new farming technology or innovation.

2.7.2 Role of Extension officers

Extension officer help to give guidance and advice to farmers for them to make wise decisions and practical application of useful knowledge to their farms and households in order to improve the productivity of their animals (Syngenta Foundation for Sustainable Agriculture, 2013). Extension services, information and knowledge on agricultural technology are provided to the farming communities by extension officers with an aim of supporting and improving farmers 'standard of living. Extension staff also acts as a catalyst between farmers and government whereby they support to the introduction and application of new applicable technologies developed by research institutions, universities and other public organisations (DA, 2013). For example in the Nguni Cattle Project, extension officers assist farmers to apply for the Project by writing the memorandum or motivation to be presented in the meeting where all stakeholder involved in the project are present. All in all, the extension officer is an important link between improved agricultural practices and rural development. In addition extension officers help in conservation and monitoring of the any agricultural development initiative (Tada, 2012).

2.7.3 Extension services and Livestock Production in South Africa

There is a widespread consensus that the agricultural extension service in South Africa are failing to have much beneficial impact on agricultural practices. Factors to the latter have been identified which include weak or absence of management, lack of commitment, negligence of poorest and most constraint farmers (Shackleton, 2012). Extension services need to focus on land based strategies of cropping and livestock husbandry and use of natural resources. This is because livelihoods of the poorer in this country are diverse in terms of both cash and non-cash income which includes cropping, livestock farming, local casual labour, state grants and remittances (Shackleton *et al*, 2000).

Extension agents must be capable of more than just communicating messages to farmers but comprehend a complex situation, have the technical ability to spot possibly problems and possess insightful economic management skills in order to advise farmers on more efficient use of resources (Anderson and Feder, 2009).

Livestock farming is by force the largest agricultural sector in South Africa and 69% of the land's surface is suitable for grazing. The South African national cattle herd has increased by 6 million head since 1970s and now stands near 14 million (Palmer and Ainslie 2006). Cattle are found throughout the country, but particularly in the Eastern Cape, KwaZulu-Natal, the Free State and the Northern Cape provinces (NDA, 2008) and herd sizes vary by farm type. Dairy cattle herd sizes vary between less than 50 up to 300, averaging approximately 110. Beef cattle farms range from fairly small farms (less than 50 cattle) to large farms and feedlots with more than 1000 cattle per farm.

The total number of cattle in South Africa at the end of August 2003 was estimated at 13, 5 million, consisting of various international dairy and beef cattle breeds, as well as indigenous breeds such as the Afrikaner and Nguni (NDA, 2008). The numbers were approximately 0, 9 % lower than the estimate of 13, 6 million as at the end of August 2002 (NDA, 2008). Most of South Africa's grazing land is stocked beyond its carrying capacity (Palmer, T. and Ainslie, A. 2006). This is most evident in communal rangelands of KwaZulu Natal and Eastern Cape Province which support more than half of SA's cattle (Palmer and Ainslie 2006). Overstocking can cause trampling and crusting of the soil this reduces soil fertility, therefore extension service infrastructure on veld management has to intervene ensuring that

the stocking rate are within the lands carrying capacity, monitor and manage veld condition for optimal productivity with minimal damage.

Responsibility for the transfer of information to farmers on livestock production has often fallen between extension services, which are geared to the extension livestock services and animal health concerns. However, there is now an increasing demand for livestock production extension in communal areas so indigenous knowledge cannot be relied on (Morton and Matthewman, 1998). Most livestock production extension services are likely to be delivered under large scale farmers. To better deliver livestock production extension services to rural communities, such services should focus on the needs of people at the local level and that could empower extensionists to deal with variations between households, ensure direct links between livestock research and extension and develop adaptive and participatory methodologies for livestock research (Morton and Matthewman, 1996).

In deliverance of extension services such as animal health services one has to take in to consideration communication techniques. Extension services are an important element within the arrangement of agents that provide human capital enhancing inputs, as well as flows of information that can improve farmers' and other rural peoples' welfare (Anderson and Feder, 2009). Effective extension involves adequate and timely access by farmers to relevant advice. Extension can increase the rate at which adoption occurs and can play an important role in improving the productive efficiency of agricultural sector. Since farmers' performance is widely affected by human capital, this includes both natural and inherent and learned skills and the ability to process the information (Jamison and Lau, 1982).

2.7.4. Functional areas of support for livestock production

Communal scale cattle production system in South Africa has not achieved adequate attention regarding land rights, extension support services, access to credit and market opportunities. These constraints have been recognised by the NDA (2008). Agricultural related projects tend to collapse due to limited agricultural development support. Key functional areas of support to farmers using land for farming include extension services, skill development and capacity building, financial assistance, infrastructural support, and lastly is the access to markets ranging from informal local sales of output and marketing arrangements with commodity organisation (Jacobs, 2003).

2.7.4.1 Agricultural extension services

Agricultural sector is crucial to rural development and it may have a significant contribution to any development programme initiated to alleviate poverty. For this reason, there is a great need for strong extension and advisory services (farming advice) led by governments operations in partnership with relevant role players (DA, 2013). Extension support services are an entry point to other agricultural development assistances and the capacity of these services varies according to provinces. South Africa's agricultural sector has two track extension systems whereby there is a well developed extension support for large scale commercial agriculture and alongside services for small scale producers in formers homelands of Limpopo and Eastern Cape provinces. These provinces have large number of agricultural extension officers and are different in the quality and efficiency of extension services (Jacobs, 2003).

The frequency of visit by extension officers to farming project is related to the availability of resources, staff and the nature of agricultural activity (FAO, 2013). Undependable evidence from most provinces in South Africa indicates that extension officers visit projects less frequently than they should (Jacobs, 2003). Ideally an extension officer should visit a project at least once a week but in practice they only visit once a month or twice in two months (Jacobs, 2003). In areas where projects have managers, extension officers only meet with the managers and there is no direct communication with the community and communal farmers whether in focus groups or via technology media (Anderson and Feder, 2003).

2.7.4.2 Infrastructure

Infrastructure is a generally a capital stock that can help to provide goods and services to the public (Chaminuka, 2008). Nevertheless there is a lack of infrastructure in former homeland areas, the roads and fences are in poor state. In order to address the infrastructural disparities and calls for improved service provision; extension officers should intervene and find ways of giving advice to farmers as what help they can get to review infrastructure gaps and ensure a co-ordinated list of infrastructural requirement is provided, concentrating on rural towns and service centres (Jacobs, 2003). In cattle production system these include farm infrastructure like fencing and watering tanks.

2.7.4.3 Training, mentorship and management

Training farmers in any agricultural project is crucial for project's viability and sustainability (IFAD, 2013). In order for farmers to get the required skills for the project being initiated, extension officers have to facilitate training for these farmers (Jacobs, 2003). Universities and Research institutions can assist farmers by providing workshops on management programmes working hand in hand with extension officers. These training programmes may include management and mentorship programmes aimed at skill transfer.

2.7.4.4 Access to finance

Funding and credit with farming operation and working capital is required for any agricultural development to be effective, sustainable, and generate income. Most of all is vital for start up inputs and fixed capital improvements. It is difficult for communal farmers to get credit because they seldom meet the requirements and conditions set by financial institutions (Jacobs, 2003).

2.7.4.5 Markets

There is active interest of the private sector which is evident in the form of buyers and auctioneers, transferring responsibility for the marketing of cattle to owners probably presents the least difficulty (Makhura, 2001). Organising market days where numbers justify this, will require collective action, and dealing with travelling buyers individual action. However, traditional livestock farming systems differ across South Africa. In the eastern and south eastern regions, cattle herds are firmly locked into systems of use by the household, with very few animals being available for disposal on the formal market and are not actively traded. While, small stock and their fibre products are actively traded (Jacobs, 2003). This variability means that, within broad policy, local approaches are likely to result in greater benefits than the blanket programmes of the past.

2.8. Participatory Extension Approach

Participatory approach is concerned with a broad range of agricultural subjects, shifting its local focus from time to time as village problems change or as new needs arises. Inorder to achieve effective extension, there should be an active participation between farmers, research and extension personnel (George, 1988).

When research workers, input suppliers decide on programme goal as well as methods to be used, there are greater chances that programme will fit their needs and interest. Farmers also need to be part of deciding team because when they know what kind of activities the extension staff will conduct and communication channels used they are likely to attend. A benefit of this approach is the supportive relationship and exchange of information between rural farmers; research personnel and extension staff, with the aim of increasing activity among farming people (George, 1988). Extension officers may use this participatory extension approach in the Nguni cattle project by discussing with the farmers and empowering them in identifying their challenges.

The information gathered can help extension officers improve service delivery, accelerate and improve agricultural development (Musemwa *et al.*, 2007). Dissemination of information by the extension officers to farmers can play a role in improving and strengthening farmers' ability to negotiate (Musemwa *et al.*, 2007). The participatory approach builds on farmers' own capacities and the ability to organize them into groups to identify needs and priorities, plan extension programmes/projects, implement and evaluate. This approach is recommended for implementing a multi-sectoral, client-focused, coordinated, demand-driven and participatory extension service.

2.8.1 Principles of the participatory approach

2.8.1.1 Community participation and involvement

Farmers need to participate in all decisions affecting them due to their demographic principle and farming environment. They must also be active participants in their development (Monde, 2003). Their participation must be substantive and significantly impact the outcomes, not involve just attendance of meetings.

This will promote ownership, increase demand for services and empower or strengthen clients (farmers) (NDA, 2013). Thus the need to ensure that local people themselves have a say in the policy process cannot be overemphasized (Monde, 2003).

2.8.1.2 Needs-based development

Projects and/or programmes will be based on needs identification, assessment and prioritisation in collaboration with farmers/communities or their representatives (DA, 2013). The establishment of multidisciplinary project teams is necessary. Needs based development helps to focus on the aspects of their community and their project rather than the negatives and helps identify available and existing skills and resources in local community and identify solutions to the problem they face in the community (Jacobs, 2003). For community development needs assessment can help to mobilise communities to address local issues through problem identification (ABCD, 2013). It is important to look at the community driven development rather than development by extension agencies. This can be achieved by collecting stories from communities through organising of focus groups meetings (Cunningham and Mathie, 2002).

2.8.1.3 Institutional linkages and structures for participatory extension

The participatory approach relies on partnership and networking for agricultural related information. The extension officer and the clients jointly identify problems, opportunities and potential solutions (Zwane, 2009). Since extension officers cannot solve all problems, they act as facilitator in building partnerships with private sector, research, local municipalities, farmer organisations, markets (inputs and outputs) and credit institutions to address problems in order to implement participatory extension and representing farmers (DA, 2013).

Such entities should link up with formal structures like district municipalities to act as overarching or umbrella organisations, taking responsibility for development and the initiating and commissioning of (NDA, 2008). Flexibility and adaptation to meet situation specific circumstances is important.

2.8.1.4 Coordinated extension and advisory services

With a multiplicity of service providers, coordination is essential to ensure quality and adherence to minimum norms and standards (DA, 2013). The provinces should coordinate (through a forum) the various types of service providers linking with the community institutions (e.g. local municipalities or farmer organizations) (Zwane, 2009). Advisory services provide critical access to the knowledge and information that rural people need to increase the productivity and sustainability of their production systems (The World Bank, 2013).

The provision of effective and co-ordinated extension advisory services to small scale, medium and large scale farmers remains a significant challenge in the nine provinces of South Africa (Phuhlisani Solutions, 2010). Extension and advisory services should focus on improving the welfare of smallholder farmer so that they can pay market rate for whatever advisory services they require (Pye-Smith, 2013). Government policies and national extension and advisory services should also recognise that farming is not simply a matter of producing food, fibre and fuel. Farmers are the guardians of natural resources and national policies should encourage sustainable resource management as well as more efficient food production.

2.8.1.5 Monitoring, evaluation and accountability

The monitoring and evaluation criteria should include as much evidence as possible. Indicators should be set for inputs, activities, participation, client reactions, knowledge gain, attitudinal change, practice adoption or behaviour change, and impacts on social, economic and environment (DA, 2013). The results of evaluation must be communicated to stakeholders and clients to enhance future support of extension and advisory services.

2.9 Media as a communication strategy for rural development initiatives

The South African Agricultural extension service is challenged to improve and develop the rural communities through agricultural activity. This is essentially promoted through the transfer of information and technologies to farmers in order to increase sustainable agriculture (DA, 2013). Agricultural information is intended to get to rural farmers through extension workers, community libraries and media. Nevertheless farmers are faced with challenge of limited access to information (Nnenna *et al.*, 2011). Agriculture is all about communication and linkages with farmers.

Agricultural science can provide a wide portfolio of information from which farmers may choose options suitable for their local conditions through media communication (Speedy, 1994). Media can act as a good source of information since lack of information in developing countries and rural areas is a constraint. Media refers to any form of communication that simultaneously reaches a large number of people including but not limited to radio, newspaper, television, recordings, video instrumental programmes, tape recorder, books, agricultural pamphlets, local government agricultural agencies and internet (Roger and Joseph, 2011). Radio is the most powerful and cost effective medium.

However other traditional methods and modern communication are equally viable depending on the situation and availability, like face to face exchange (via demonstration, loud speakers mounted on cars, village meetings and visits by extension officers and village meetings) one way print media (newspapers, newsletter, magazines and posters (Rivera and Qamar, 2003).

Strategies that include media communication for rural development as a significant aspect of agricultural are sorely needed (FAO, 2006). This is so because the provision and supply of information through media is important as it extends to a greater number of people in a short period of time. Media centres are an important innovation for reaching final agricultural information users in rural areas. Communicating through media is given prominence because of its value in dispersing; its critical role in shaping public opinion (Chiminuka et al., 2008).By proactively engaging media and having an open door policy on organisation is positioned to build trust and credibility of managing peoples' perceptions (Chiminuka et al 2008). This can include information on services that government and the private sector provide and how to access this support. Media is valuable as it can assist agricultural producers with information and advice as to agricultural innovations and development initiatives such as the Nguni cattle project.

Nguni breeds are increasing in popularity but there is a gap on broadcasting issue related to this breed although media can be a good platform to market and expose the benefits of the Nguni breed in Africa. However, communicating proactively about Nguni breeds, breeds becoming popular in Southern Africa for the production organic beef (Muchenje *et al* 2008, Mapiye *et al*, 2009) could allow the agricultural industry to have more of an influence in shaping peoples' perceptions on the production of the Nguni breed.

Gaining knowledge about the Nguni breed can assist farmers and extension officers to determine what information is currently being communicated and how they can shape future communication about this breed.

2.9.1 Media and the Nguni Cattle Project

In the Nguni Cattle Project; the magazine called Farmers Weekly, internet and sometimes articles on the news paper (daily dispatch) are used as a communication strategies to farmers (Phiri, 2009). However, communal farmers are faced with challenges these include lack of access to the magazine and internet due to high costs and the above mentioned communication media are too scientific for rural farmers to understand. It has been suggested that, radio is the most powerful and cost-effective communication medium that is commonly used by communal farmers (Rivera and Qamar, 2003).

Radio and personal communication are still used as main source of information. However, access to agricultural information through radios, televisions and internet by communal farmers is still limited. In most cases information is broadcasted and written in Afrikaans and English. This makes the information irrelevant to the majority of communal farmers understanding their local languages only e. g. isiXhosa, isiZulu, Sesotho (Mgomezulu, 2008).

2.10 Theoretical Framework of the Study

Agricultural extension and rural advisory services provide access to the knowledge and information that rural people need to increase the productivity and sustainability of their production systems and thus improve the quality of their lives and livelihoods (The World Bank Group, 2013). It is important to consider agricultural advisory services as part of the wider system of knowledge generation, exchange and use in the agricultural sector.

Birnner *et al.* (2006) designed a framework to analyse the impact of extension services. This framework deals with the performance and impact of agricultural advisory services hence it can be used to guide the establishment of monitoring and evaluation systems of agricultural advisory services.

This framework can also be used to make findings of different research projects comparables, thus improving the understanding of the role and operation of advisory services. Birnner *et al.* (2006) designed this framework to analyse and assess performance of extension advisory services provided to farmers based on their needs and opportunities (P). The choice of governance structures is of fundamental importance in the design and reform of agricultural advisory services considering the role the organisation can play in providing and financing agricultural advisory services. When analysing the impact of advisory services feedback from farmers is important as it links impact of extension services to contextual factors. Contextual factors include community aspects, production system and market access, service providers and policy environment. The influencing factors in this framework are the contextual factors, quality of extension services provided and the farm household. This study is concerned on how the quality of extension services provided to farmers (advisory methods: H) impact productivity, income, employment status and farm household at large depending on the communication technology e.g. media being used.

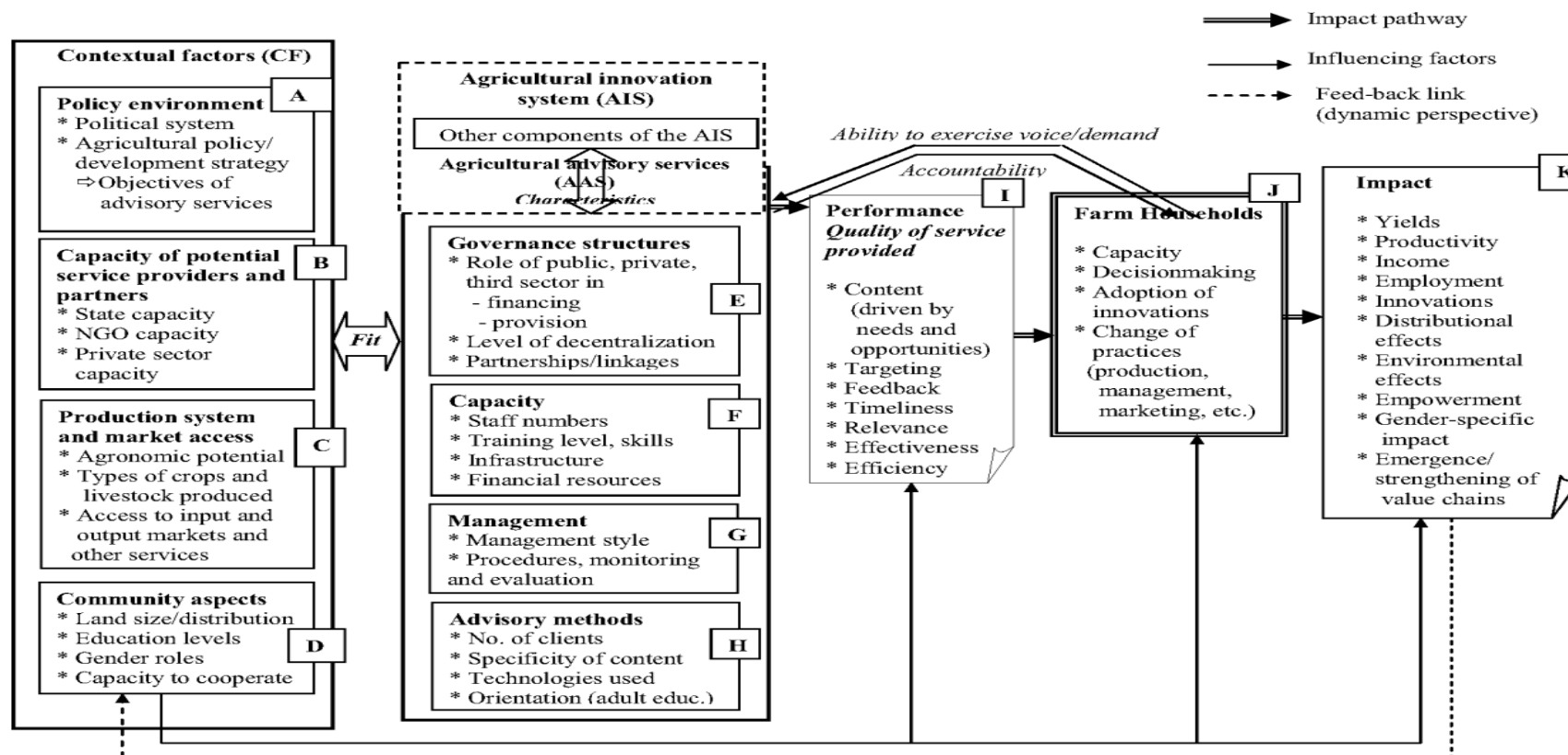


Figure 2. 2 Framework for designing and analyzing agricultural advisory services (Birnner *et al* 2006)

2.11 Summary

The contributions and benefits provided by the Nguni cattle project have contributed significantly to the livelihoods of the rural communal. Farmers in rural communities acknowledge the upgrading and conservation role of Nguni Cattle within their herd because of the contribution and benefits it provides to the households. Moreover provision of information to rural farmers through agricultural extension services is a need. Hence extension officers have to intervene, assist farmers to acquire information and extension services to improve their farming and standard of living. Face to face exchange medium e.g. extension visits can be used as a strategy to communicate with farmers using simple language they will understand. Advising farmers in their decision making process and allowing them to participate in any development initiative being implemented enables them to clarify their own goals and possibilities and also stimulating desirable agricultural developments.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter gives an overview of the methods and materials used for data collection. The chapter starts by describing the study area, sampling and data collection methods, interpretation and also data analysis methods of the study are explained.

3.2 Selection and description of the study area

The study was conducted in Ncera and Kwezana communities in the Nkonkobe local Municipality. Nkonkobe local Municipality is an administrative area in Amatole district Municipality of the Eastern Cape Province in South Africa. It is named after the Winterberg mountain range “Intaba zenkonkobe” in IsiXhosa (Eastern Cape Business, 2007). A legislative seat of this municipality is Alice town and is situated about 140 km North West of East London on R63. This Municipality is bordering the Nxuba Municipality to the west and Amahlathi Municipality to the east and is found on 32°47's 26°38'E co-ordinates. It covers 3725 km² with mostly rural population (Eastern Cape Business, 2007). The climatic conditions of the study areas are presented in Table 3.1.

Table 3. 1 Pedo-Climatic Conditions of Communities with Nguni Cattle Project in Nkonkobe local municipality

District	Municipality	Community	Annual Rainfall(mm)	Mean annual temperature (°C)	Altitude (mm)	Soil Type
Amatole	Nkonkobe	Kwezana	450-600	16	500-550	Loam
		Ncera	450-600	17	500-550	Loam

Source: Acocks (1988).

3.3 Materials and Methods

3.3.1 Quantitative data

3.3.1.1 Sampling procedure

Two communities in Nkonkobe local Municipality with the Nguni Cattle Project were purposively chosen (Ncera and Kwezana). Sample size of the study was 70 beneficiaries. All Nguni Cattle project beneficiaries in these communities who were willing to participate were interviewed. During the data collection process, participants were told the objective and confidentiality of the study. Interviews were conducted at the community halls. All respondents were household heads.

3.3.1.2 Data collection

The data was collected from respondents using semi structured questionnaires. The questionnaire contained both closed and open ended questions. Open ended questions allowed the respondent to give full expression to the question.

The questionnaire was designed in a way that it encompasses; household demographic information, animal possession, extension services and visits, communication strategies, farmers' knowledge of Nguni cattle project and veld management practices. To enhance data collection methods enumerators who understand IsiXhosa assisted in data collection since respondents were Xhosa speaking and needed translation. All enumerators were informally trained on how to approach and record information gathered from the farmers.

3.3.1.3 Data capturing

The data gathered from beneficiaries of the Nguni Cattle project was coded and captured in Microsoft Excel (Ms Excel).

3.3.1.4 Statistical analyses

The frequencies of demographic characteristics (household size, age, gender, employment status and education) was analysed using PROC Freq of SAS (version 9.1.3). Chi square test was used to determine degree of association between categorical variables; demographic, quality of extension services offered to the beneficiaries of the Nguni cattle project beneficiaries, management practices and communication strategies adopted by extension officers to communicate with the beneficiaries of the project.

3.3.1.5 Conceptual framework

The framework for designing and analyzing agricultural advisory services designed by Birner *et al.* (2006) (see Figure 2.2) was used as a reference to discuss or explain the quality of extension services delivered to the beneficiaries of the Nguni cattle project beneficiaries in Ncera and Kwezana communities.

The findings of the study on quality of extension services was related back to this conceptual frame work as to show how quality of extension services provided to farmers affect the socio-economic variables (income, employment, gender, innovation) and the overall household of the Nguni cattle project beneficiaries

3.3.2 Qualitative data collection

3.3.2.1 Sample procedure

Focus groups discussions were carried out in two communities (Ncera and Kwezana) of Nkonkobe local Municipality in the Eastern Cape Province, see Appendices 5, 6 and 7. All beneficiaries of the Nguni Cattle project in these communities were invited to a community hall by the researcher. Focus group discussion were conducted separately to youths (≤ 35 years both males and females) and adults (≥ 36 years) divided into male and female groups. Local leaders were also involved in the discussions joining the group of adults. According to National Youth Policy of 2009-2014 (2009), youth refers to young people falling within the ages groups of 14-35 years.

Focus group discussion is one of the appropriate tools in identifying community problems and for understanding the socio-economic and cultural aspects of the community (Alam and Ihsan, 2012). Unlike the use of semi structure questionnaires, focus group discussion offers communities to act as an active analyst of their own situations whereby they estimate, quantify, compare, rank and list priorities of resources, constraints and opportunities based on their circumstances (Chambers, 1994 and Bhandari, 2003). These discussions were facilitated with the use of semi-structured interview guide questions. The discussion questions were based on sources of income, farming systems, contribution of the Nguni Cattle project to rural household, challenges faced by Nguni Cattle Project beneficiaries, extension services

and farmers perception on delivery of extension services. The discussions were conducted in IsiXhosa with the assistance from informally trained enumerators. The number and gender of beneficiaries who participated in the discussion are presented in Table 3.2.

Table 3. 2 Distribution of farmers who attended the focus group discussions in each community during 2013 (n=65)

Community	Number of farmers	Youth	Women	Men	Local leaders
Ncera	44	9	13	20	2
Kwezana	21	4	5	10	2

3.3.2.2 Data capturing

The data was captured and coded in Microsoft excel.

3.3.2.3 Statistical analyses

The data was analysed using Statistical Package for Social Sciences (SPSS).

3.6 Ethical Consideration

The rational for ethical approval as to ensure that the research process is conducted ethically was followed. This involved establishing procedures for the informed consent of Nguni Cattle project beneficiaries involved in the research as well as appropriate handling of research findings (secure storage of data, confidentiality where agreed).

3.7 Limitations of the study

The challenges faced while collecting data was that youth did not want to participate in the interviews more especially in Kwezana, and most farmers were unable to recall some of the required information. Since the study was conducted in only two communities of Nkonkobe local Municipality due financial constraints, it is recommended that a bigger study should be

done in all municipalities benefiting from the Nguni Cattle Project. This will help to come up with realistic findings regarding effects of extension services on the Nguni Cattle Project beneficiaries.

3.8 Summary

The study was conducted in two communities of the Nkonkobe Local Municipality, namely Ncera and Kwezana. The data was collected from beneficiaries of the project using semi structured questionnaires. Descriptive statistics (SAS) was used to analyse frequencies of socio-demographics and Chi square was used to test the degree of association between demographic, extension services and communication strategies adopted by extension officers to communicate with the beneficiaries of the project. Conceptual framer work designed by Birnner *et al.* (2006) was used to explain the quality of extension services delivered to the beneficiaries of the project.

CHAPTER 4: DESCRIPTIVE RESULTS OF SURVEY DATA

4.1 Introduction

This chapter presents the findings of the survey carried out on beneficiaries of the Nguni Cattle project in Ncera and Kwezana communities. The main aim of this chapter is to describe these communities in terms of socio-economic characteristics. The household demographic characteristics, sources of income, historical background of the Nguni Cattle project, veld management practices, extension services and communication strategies are presented in this chapter. The variables discussed provide an understanding of the type and quality of extension services, communication strategies and challenges faced by the beneficiaries in the Nguni Cattle project and also veld management and cattle management practises.

4.2 Demographic characteristics of household heads benefiting from the Nguni Cattle project in Ncera and Kwezana

The results of the current study have shown that the Nguni Cattle Project mainly consists of male farmers, 62.2% and 75 %, at Ncera and Kwezana, respectively (Table 4.1). This is also evident in the study done by Montshwe (2006) that the domination of males in the agricultural sector is common in rural areas of South Africa. 40 % and 59.3 % of beneficiaries in Ncera and Kwezana, respectively, falling between the ages of 60-79 years dominated the project compared to those in other age groups. Of the interviewed participants it was observed that, in Ncera there was a participant who was <20 years old and few that were above 80 years (6.67%). The majority (48.9 %) of beneficiaries in Ncera were not married whereas in Kwezana most beneficiaries were married (44.4 %).

Moreover at Kwezana widowed and divorced participants made a tie of 7.4%. About 57.8% and 59.3 % of beneficiaries at Ncera and Kwezana respectively, had primary education (Grade 1-7), followed by those with no formal education and few had reached secondary education (see Table 4.1).

Also shown in Table 4.1, 44.4% of participants at Ncera and 57% at Kwezana were pensioners. Only one participant was employed in Ncera and none in Kwezana. It was observed that most (84% at Ncera and 85% Kwezana) participants spent their time at home practising agricultural activities such as growing crops (Figure 4.2) and looking after their animal herds. Lack of support services (seeds, fertilisers and veterinary services) for these activities was reported as a challenge.

Table 4. 1 Demographic characteristics of household head benefiting from the Nguni Cattle project in Ncera and Kwezana (n=73)

Characteristics	Ncera		Kwezana	
	No	%	No	%
Gender				
Male	28	62.2	21	75
Female	17	37.8	7	25
Total	45	100	28	100
Age (yrs)				
20-39	12	26.6	1	3.7
40-59	12	26.7	10	37
60-79	18	40.0	16	59.3
≥80	3	6.7	0	0
Total	45	100	28	100
Marital Status				
Single	22	48.9	11	39.3
Married	14	31.1	13	46.4
Widowed	5	11.1	2	7.1
Divorced	4	8.9	2	7.1
Total	45	100	28	100
Education level				
No formal education	10	22.2	7	25.9
Grade 1-7	26	57.8	17	60.7
Grade 8-12	9	20	4	14.2
Total	45	100	28	100
Employment Status				
Employed	1	2.2	0	0
Pensioners	20	44.4	16	57
Unemployed	18	40.1	9	28.6
Informally employed	6	13.3	3	10.7
Total	45	100	28	100

4.3 Association between, demographic information, community, extension services and communication strategies

The results on the association between demographic information, factors affecting quality of extension services and communication strategies in the Nguni cattle project are shown in Table 4.2. Each community had an association with the type and quality of extension services, communication strategies, frequency of communication and the relationship of farmers with extension officers. About 61.1% of farmers in Ncera consulted extension officers for any enquiry they have regarding their animals, whereas farmers in Kwezana did not have those opportunities, hence there is an association with frequency of communication between farmers and extension officers in Ncera. Research results revealed that there is low percentage of farmers with secondary education at Kwezana as compared to farmers at Ncera (Table 4.1). Farmers highlighted that, limited access to information about facilities they can use in cattle production and the fact that extension officers do not reach out and communicate frequently with them may be the reasons for the latter.

Age was associated with the following aspects; type, quality and frequency of extension services, communication of farmers with extension officers, frequency of communication and relationship between farmers' and extension officers. The reason to this association maybe due to the fact that, beliefs and cultural norms of a community are kept by older people as compared to young ones. Old people usually do not adapt easily to some of the services provided to them and tend to resist change until they see benefits of such change.

However it is important for the extension officer to always enlist support from local leaders to build closer ties with local farmers and encourage farmers' confidence in the extension service (FAO, 2013) Frequency of extension services by extension officers to the beneficiaries may also be connected to the availability of resources and the nature of agricultural activities (Agholor, 2012).

All Nguni Cattle Project beneficiaries from both genders were served equally in terms of extension support services. Nevertheless gender was associated ($p < 0.05$) with quality of extension services and communication frequency. Domination of males in Nguni cattle project than females could be the reason for this association. Both male and female beneficiaries suggested that, in order to improve quality of extension services and the relationship between them and extension officers; frequency of communication and understanding of farmers' local needs is the key. There was also an association between educational status and access to extension services, type of extension services, quality of extension services, communication strategies and the relationship between farmers and extension officers. This association could have been caused by education level of farmers. Nguni cattle project beneficiaries with secondary education, communicated with extension officers using telephones as communication strategies (see Table 4.8) as compared to those with primary and no formal education.

Table 4.2 Representing association between community, demographic information, extension services and communication strategies in Ncera and Kwezana during 2013 (n=73)

	Access to extension services	Type of extension services	Quality of extension services	Frequency of extension services	Communication with extension officers	Communication strategies	Communication frequency	Relationship between farmers and extension officers
Community	NS	***	***	NS	NS	**	*	*
Age	NS	**	*	***	***	NS	*	***
Gender	NS	NS	*	NS	NS	NS	*	**
Education level	*	*	*	NS	***	*	NS	*

***p<0.001;**p<0.01;*p<0.05

4.4 External and local sources of income for Nguni Cattle Project beneficiaries

The beneficiaries of the Nguni cattle project in Ncera and Kwezana obtained their household income from different sources, namely; state transfers, salaries and wages and agricultural activities. About 44.4% and 33.3 % of beneficiaries at Ncera and Kwezana respectively, survived mostly on old age pension (Table 4.3) with employment options mainly limited (Table 4.1). In both communities, external sources of income made major contribution to beneficiaries' income. A study by Monde (2003) in Guquka agrees with the current findings. However these communities also use the cattle they have as a local source of income, which is their way of life (Table 4.4). In both villages income earned from animal sales (goats and cattle) (68.9% at Ncera and 40.7% at Kwezana) was the main income generator among agricultural activities followed by crop sales. Although the latter is the case, beneficiaries highlighted that they received no extension support services to assist them manage their animals for a continued income generation. Moreover, Birnner *et al.* 2006 stated that the quality of extension services provided to farmers affects agricultural productivity and household income.

Table 4. 3 Various sources of income for household heads benefiting from the Nguni Cattle Project Nguni in Ncera and Kwezana during 2013 (n=73)

External sources of income			
Sources	Monthly Range (R)	Communities	
		Ncera (%)	Kwezana (%)
Cash remittances	300-550	6.7	7.4
Remittances in kind	560-990	11.1	14.8
Salaries and Wages	≥ 2000	13.3	18.5
State transfers			
Child support grants	100-290	24.5	22.3
Old age pension	1000-1280	44.4	33.3
Disability grants	1000-1280	0	3.7

Table 4. 4 Local sources of income for household heads of Nguni cattle project beneficiaries in Ncera and Kwezana during 2013 (n=73)

Sources	Monthly	Communities	
	Range (R)	Ncera (%)	Kwezana (%)
Non agricultural activities			
Hawking food	300-550	0	3.70
Hawking other	560-990	0	11.1
Spaza Shop	300-550	4.44	3.70
Agricultural activities			
Crops in kind	100-290	2.2	0
Crops cash	300-550	8.9	18.5
Animal cash	≥ 2000	68.9	40.7
No local sources of income	0	15.6	22.2

4.5. Land ownership and use in Ncera and Kwezana

4.5.1. Land ownership

All beneficiaries of the Nguni Cattle project had access to communal land. The land was used for residence, home gardens and animal camps. In both villages field cropping was not practised due to lack of infrastructure (fence, irrigation pipes) and capital (money and tractors). Ainslie and Ntshona (1997) and Monde (2003) identified the same constraints in arable land.

4.5.2. Home garden sizes and activities in the Ncera and Kwezana during 2012 and 2013

At Kwezana and Ncera, 85.7 % and 84.4 % of beneficiaries, respectively owned home gardens. Home gardens are food plots located within the residential areas (Monde, 2003). The size of home gardens for the interviewed beneficiaries ranged between 50-1000m². Beneficiaries of the Nguni cattle project grew maize, potatoes, cabbages, spinach, beetroot and carrot in those home gardens. These vegetables were grown for consumption, selling and source of feed for animals. From the figure 4.2 it is evident that 51.1 % of the beneficiaries in Ncera grew potatoes whilst few grew other crops (carrot and green pepper). In Kwezana the opposite was true (see Figure 4.2).

Crops that were mostly consumed in both villages were potatoes, spinach and carrot. Since the majority of the participants were unemployed (Table 4.1), 55 % of the beneficiaries reported that they were selling ≥ 21 kg of potatoes over a period of three months and 44.4 % selling spinach per month for income generation. Due to draught, 35% and 29 % of maize at Ncera and Kwezana respectively and 24.7% and 31 % of beetroot at Ncera and Kwezana respectively, were not in a good state to be sold or eaten by human beings so they were used to feed cattle.

Farmers reported that they receive no agricultural support services concerning their crop production although most of them were pensioners and unemployed and had no money to buy agricultural inputs.

a) Ncera



a) Kwezana

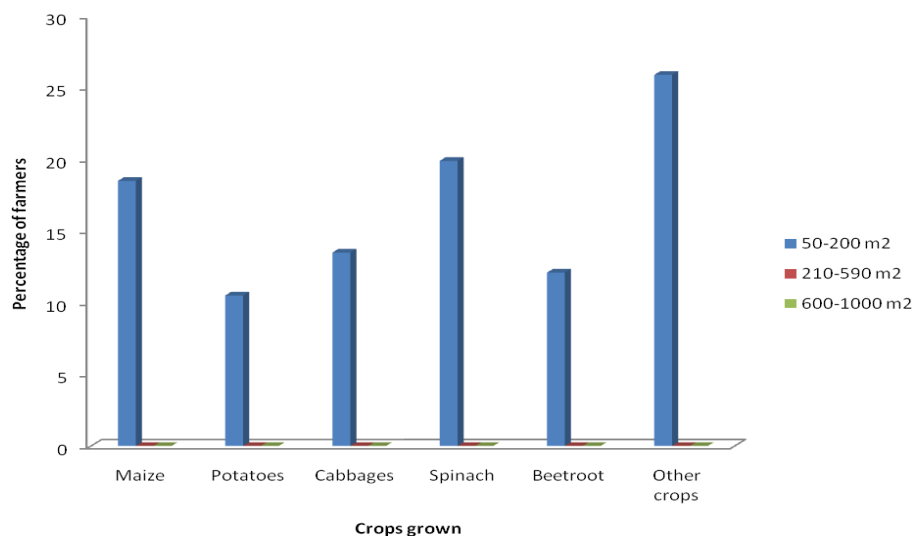
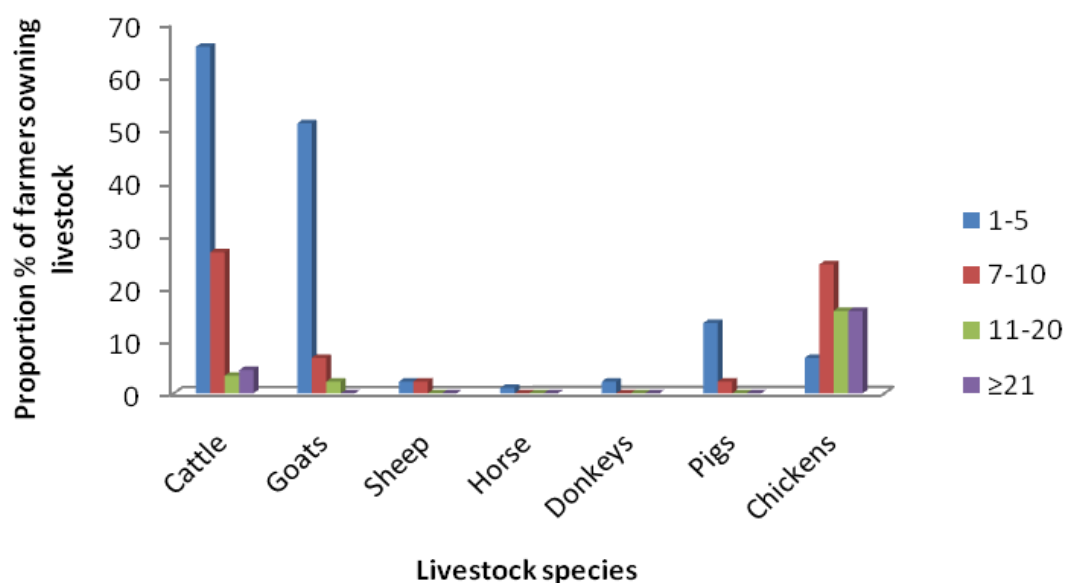


Figure 4.1 Size of home gardens and crops grown by Nguni cattle project beneficiaries in Ncera and Kwezana in 2012-2013(n=73)

4.5.3 Livestock ownership and contribution to beneficiaries' livelihoods

Cattle were the most livestock species kept by Nguni cattle project beneficiaries, followed by goats and pigs as shown in Figure 4.2. Most farmers owned cattle herds ranging between 1-5 (65.6% Ncera and 70.4%) and 7-10 (26.7 % and 18.5%). Cattle and goats were in great percentages because of the vegetation and climatic conditions of the Eastern Cape Province (Musemwa, 2009). Livestock species were kept for different uses (Figure 4.3). Cattle were mainly kept for consumption, selling, cultural rituals and manure; while goats were kept for selling and culture; while pigs were kept for selling and consumption. All interviewed farmers at both villages did not use animals for draught power. Indeed none of the farmers practised field farming system except home gardening, and they stated lack of extension support services (crop inputs, poor infrastructure) as main reasons for this. A study by Gwelo (2012) in Dikidikana and Kwezana agrees with the current findings.

a) Ncera



b) Kwezana

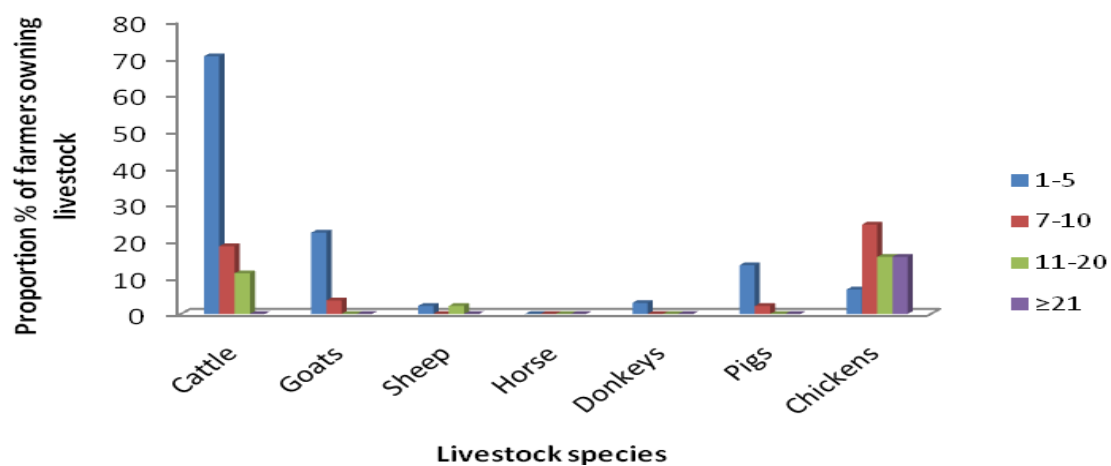
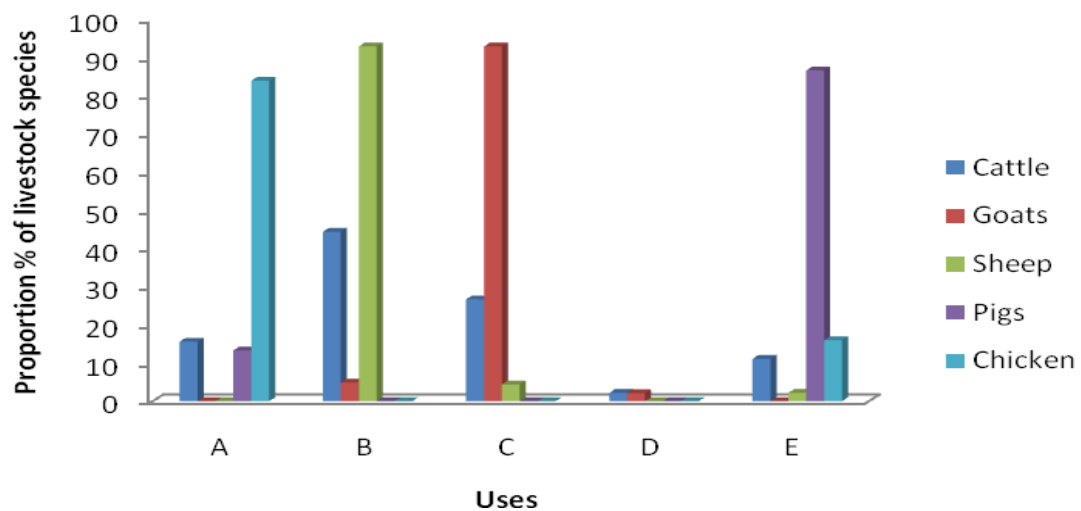


Figure 4. 2 Livestock owned by beneficiaries of the Nguni Cattle in Ncera and Kwezana during 2013 (n=73)

a) Ncera



a) Kwezana

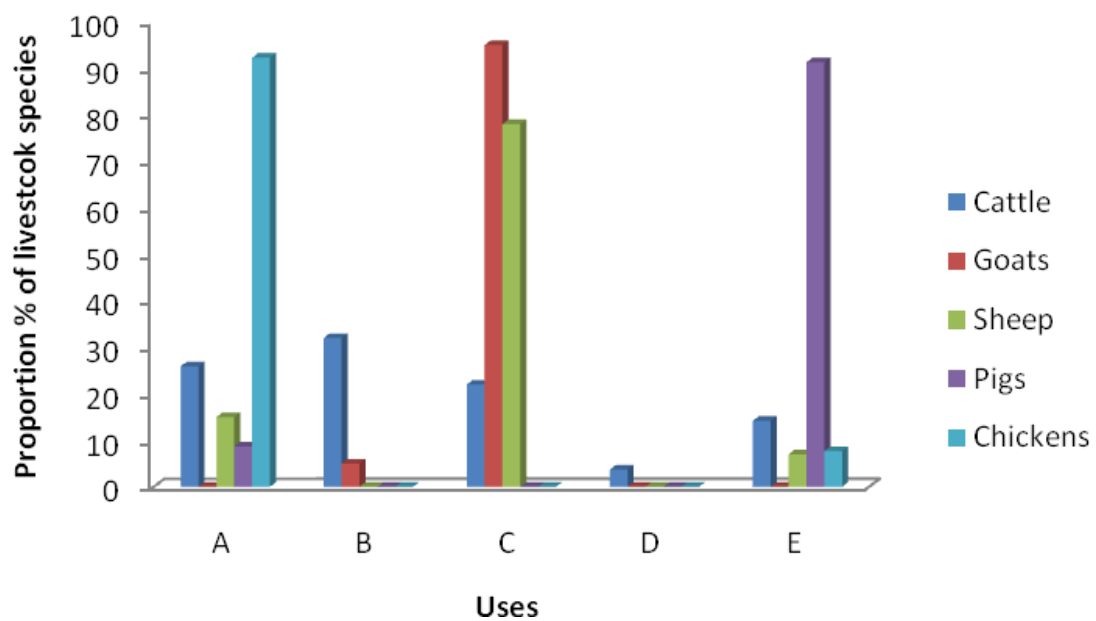


Figure 4. 3 Livestock contribution to livelihoods of beneficiaries in Ncera and Kwezana during 2013 (n=73)

A=Consumption, B=Consumption and culture, manure, C= Selling culture, D=All of the above, E=Selling and consumption

4.6. Contribution of Nguni cattle to beneficiaries' livelihoods

Nguni cattle have a significant contribution on beneficiaries' socio-economic status (Figure 4.4). Contribution played by Nguni cattle differs according to each household. Findings of the current study show that majority of the beneficiaries kept Nguni cattle for selling purposes and to replace their local breeds. Study by Tada (2012) reported the same. Manure provided by Nguni cattle was used as a fertiliser for crop production, since limited access to crop production inputs was reported by beneficiaries. As shown in Figure 4.5, few farmers kept Nguni cattle for skin hides production due to limited knowledge on how to process animal skin and limited access to skin hides markets. The type of farming system and the degree of market access are important to design extension services (Birnner *et al.* 2006), so extension officers need to situation analysis for any farming system in order to deliver the appropriate extension services. Only 10% and 7.2 % of beneficiaries, at Ncera and Kwezana respectively, used Nguni Cattle for cultural rituals. Small body size of these breeds was reported as the reason that few beneficiaries use it for cultural rituals. They further explained that if they had access to extension services and good relationship with the extension officers, contribution of the Nguni cattle project to their livelihoods would be more that it is at present.

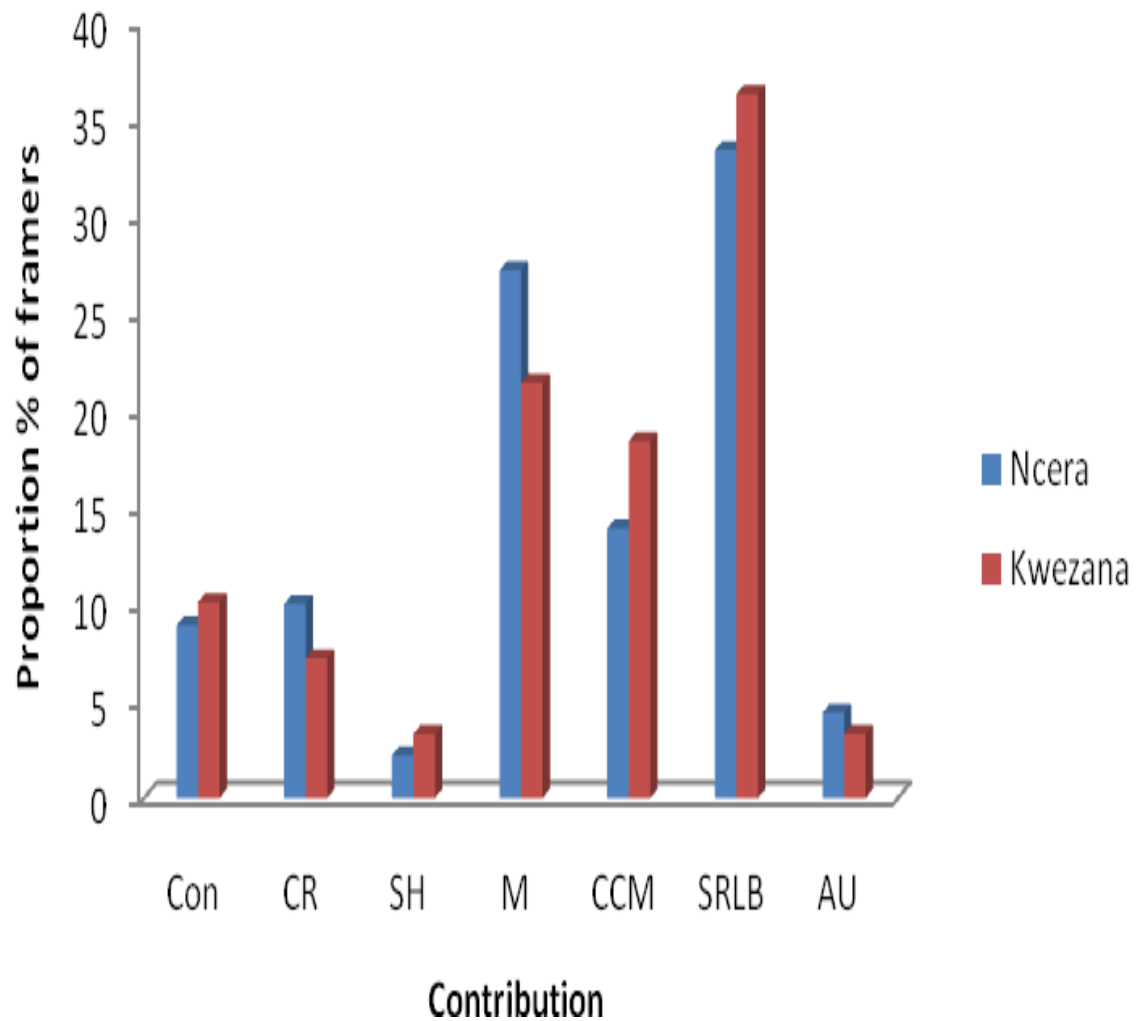


Figure 4. 4 Uses of Nguni Cattle in households of project beneficiaries in Ncera and Kwezana during 2013 (n=73)

Con-Consumption, CR=Cultural Rituals, SH-Skin Hides, M=Manure, CCM=Consumption, Culture and Manure, SRLB= Selling and Replace local breeds, AU=All uses

4.7 Farmers understanding on the background history of the Nguni Cattle project and extension services

In both communities the participants highlighted that the Nguni cattle project started in 2005. Each community received ten heifers and two Nguni bulls. Beneficiaries of this project have project structure and constitution. Meetings are held every week on Wednesdays. The committee which was selected for this project is responsible for organising the meetings. It was reported that the project is in a process of being registered as a co-operative.

About 91.1% and 92.6% of beneficiaries at Ncera and Kwezana respectively, indicated that the idea of the project came from the University of Fort Hare. All beneficiaries were aware of the project objectives (Table 4.5). Findings of the study further showed that few (4.4% Ncera and 3.6% Kwezana) beneficiaries of the project did not recognise other project implementers except the University of Fort Hare. In both villages the majority of farmers reported that they get project support services project from the University of Fort Hare (Table 4.5).

Table 4. 5 Background history on the objectives,implementers and supporting institute for Nguni Cattle project in Ncera and Kwezana communities since 2005-2013 (n=73)

Characteristics	Ncera %	Kwezana %
Project idea		
Community	8.9	7.4
University of Fort Hare	91.1	92.6
Project Objectives		
Change local breeds to Nguni	22.2	41.1
Community development	46.7	41.1
Poverty alleviation	24.4	11.1
All of the above	6.7	6.8
Project implementers		
University of Fort Hare	53.3	39.3
Industrial Development Co-operation	0	3.6
Department of Rural Development and Agrarian Reform	4.4	0
All of the Above	37.8	53.6
Do not know	4.4	3.6
Project Support		
Department of Agriculture	20.0	3.6
University of Fort Hare	64.4	60.7
Both of the above	15.6	35.7

4.8 Farmer training and infrastructural development

Only one percent of beneficiaries in Ncera received agricultural training and none in Kwezana. From the training the beneficiary received skills on how to identify the Nguni breed with its features and also management skills. The beneficiary shared the skills with the community. In the study by Tada (2012) farmers' highlighted animal handling facilities, fencing as the key assistance and infrastructural development needs. This was also evident in this study.

4.9. Constraints faced by beneficiaries of the Nguni Cattle project

Although Nguni cattle have socio-economic contribution to households of the beneficiaries, farmers mentioned some challenges that hindered sustainable cattle production. Those constraints were lack of fencing for rangelands, lack of veterinary support, lack of infrastructure (roads, dipping and cattle handling facilities), draught and lack of knowledge, marketing challenges and limited participation of youth (see Table 4.6). Due to absence of fencing farmers mentioned that cattle are being knocked by cars since both villages are near the national roads as described in the methodology. Farmers from Ncera also associated stock theft with absence of fencing. They suggested that if government could employ stock inspector or rangers, stock theft can be minimised.

The majority of Nguni cattle project beneficiaries reported lack of veterinary support services from government as a major constraint that affected cattle production. They highlighted that the dipping tanks were built by the community and received no assistance from extension officers. Farmers bought vaccines for dipping their cattle from Umtiza farmers crop. Cattle were usually dipped six times during summer season. About 6.7 % of farmers at Ncera reported that they are also faced with a challenge of water pollution from the University of

Fort Hare piggery. They suggested that government should set a policy standard with the University of Fort Hare in order to keep water in their dam clean for sustainable cattle production. In Kwezana beneficiaries reported that, during rainy seasons they do not fetch their cattle from the veld, because the area is dominated by dongas and eroded soil. Hence they are at risk of theft. They further explained that they reported the challenge to government, but no infrastructural support has been provided yet.

Table 4.6 Constraints faced by beneficiaries of the Nguni Cattle project in Ncera and Kwezana during 2013 (n=73)

Constraints	Ncera	Kwezana
	%	%
Lack of fencing	15.8	13.4
Stock theft	6	0
Lack of veterinary support	34.7	32.9
Water pollution	6.67	0
Draught and lack of knowledge	11.2	12.4
Marketing challenges	2.3	4.6
Lack of infrastructure	17.9	28
Lack of advice,marketing and infrastructure	3.4	6.2
Limited participation of youth	2.1	2.6

4.10. The perceptions of Nguni Cattle project beneficiaries on availability and quality of extension services, and communication strategies

About 62.2% and 67.9% of beneficiaries at Ncera and Kwezana respectively, indicated that they had no access to extension services (Table 4.7). Few beneficiaries had access to extension services, although that was the case, they emphasised that these services were not provided by government officials (extension officers) but the University of Fort Hare. Findings of the study further showed that only two types of extension services (marketing of animals and animals products and animal health advice) were received by farmers quarterly. Of the services mentioned above, animal health advice was the service mainly rendered to the beneficiaries.

In the present study 60% and 75% of farmers at Ncera and Kwezana respectively, reported poor communication between the beneficiaries and extension officers. As shown in Table 4.8, it was observed that communication strategy that was mostly used by extension officers to communicate with the farmers were agricultural pamphlets which are distributed once a year. Farmers rated this strategy as poor, due to the fact that they usually did not understand what is written on the pamphlets and is a one way communication strategy. Farmers further explained that using agricultural pamphlets as a communication strategy is a challenge to them because in this strategy they do not get a chance to explain their problems and suggested solutions as it is the case on extension visits, farmer days and workshops. Hence the majority of beneficiaries in both communities rated the quality of extension services offered to them by extension officers and the relationship between beneficiaries of the project and extension officers as poor (see Table 4.9).

Table 4. 7 Extension services provided to the beneficiaries of the Nguni cattle project in Ncera and Kwezana during 2013 (n=73)

Characteristics	Ncera		Kwezana	
	No	%	No	%
Extension services				
No access to services	28	62.2	19	67.9
Access	17	37.8	9	32.1
Service providers				
Extension officers	5	11.1	0	0
University of Fort Hare	20	44.4	18	66.7
Both	3	6.7	0	0
Type of extension service				
Marketing of animals or animal products	6	13.3	1	3.6
Animal health advice	22	48.9	17	60.7
Frequency of extension services				
Monthly	8	17.8	1	3.6
Quartely	12	26.7	15	53.6
Yearly	8	17.8	2	7.1

Table 4. 8 Communication strategies used by extension officers to communicate with project beneficiaries during 2013 (n=73)

Characteristics	Ncera		Kwezana	
	Freq.	%	Freq.	%
Communication with extension officers	18	40	7	25
No communication	27	60	21	75
Communication strategies				
Extension visits	3	6.7	1	3.5
Telephone	4	8.9	2	7.1
Workshops	2	4.4	1	3.5
Agricultural pamphlets	9	20	4	10.7
Frequency of communication				
Weekly	6	13.3	0	0
Monthly	8	17.8	1	3.8
Quartely	3	4.4	0	0
Yearly	10	22.2	6	21.4

Table 4. 9 Quality of extension services and relationship between extension officers and beneficiaries as rated by beneficiaries of the Nguni cattle project in Ncera and Kwezana during 2013 (n=73)

Rate of services	Relationship				Quality			
	Ncera		Kwezana		Ncera		Kwezana	
	Freq	(%)	Freq	%	Freq	%	Freq	%
Poor	43	95.6	25	89.3	42	93.3	26	92.9
Moderate	2	4.4	3	10.7	3	6.7	2	7.1

4.11 Beneficiaries perceptions on veld management practises and extension services

Nguni cattle project beneficiaries indicated that they practise communal ranging system; which was also found by Nqeno (2008). The animals fed on natural veld (Appendix 4). Farmers attributed difficulties in controlling stock grazing and practising rotational grazing due to lack of fencing (Table 4.6). Fencing is essential to maintain grazing land in a good condition and also to control animal grazing (Mapiye *et al.*, 2006). Fence is also essential because animals tend to walk for long distances away from households and end up being stolen. The findings of this study showed that, in winter, the condition of grazing lands are usually poor due to low rain fall and poor cattle and rangeland management. Low farmers level of knowledge was mentioned as another reason for poor grazing land condition.

Beneficiaries of the project burn their veld during spring with the belief that they want new grass to grow. During this burning season, animals starve and lose body weight because of limited access to grass since there are no rested camps for grazing while others are burnt. Farmers explained that they are faced with grazing and cattle management challenges because of limited access to extension services. Farmers suggested solutions for the above constraint that; government should assist by providing supplementary feed for their cattle and fence their rangelands so that they can practise rotational grazing. Farmer also suggested that farmer days may be used as one of the strategy to educate them on rangeland and cattle management. Moreover from this study it was observed that extension officers do not monitor the Nguni cattle project in terms of progress and infrastructural support.

The present study agrees with the findings of the theoretical framework designed by Birnner *et al.* (2006) that poor quality and limited access to extension services has an effect or influence on farmers' household and the community as the whole. These services affect decision making and change of production and management practices. These services then latter affect productivity, income and employment status of beneficiaries, the Nguni cattle project itself and gender-specific. For provision of good quality extension services it is important that the services tailor the needs of the beneficiaries and be specific to the content (cattle production).

4.12 Conclusion

Majority of the Nguni cattle project beneficiaries involved in the survey were males and old age pensioners; by which most of them were educated up to primary level with no formal training in agriculture. Due to the lack of formal training in agriculture, the majority of farmers indicated the need for training, especially focusing on cattle and veld management and disease resistance. Income was earned from different sources with external sources of income making major contributions. Under local sources of income, agricultural activities played an important role with livestock sales providing a large percentage. Beneficiaries kept different type of livestock, with cattle, goats and pigs being the most preferred. Farmers had different reasons for keeping Nguni Cattle but it was observed that a large percentage kept this breed for sales. Majority of the beneficiaries had no access to extension services. Hence the quality of extension services and the relationship between beneficiaries of the Nguni Cattle project and extension officers was rated as poor. After the survey was carried out on beneficiaries of the Nguni Cattle project, there were gaps that needed to be filled. Focus groups were used as a tool to fill the gaps. Chapter 5 will provide information on the effect of

extension services on socio-economic status of Nguni Cattle project beneficiaries using focus group discussion.

Chapter 5: A Qualitative Data Analysis of the effect of extension services on socio-economic status of Nguni Cattle project beneficiaries

5.1 Introduction

The focus of this chapter is on qualitative data analysis of the effect of extension services on socio-economic status as experienced by different age groups of project beneficiaries in Ncera and Kwezana. It reports on various sources of income received by households, access to extension services and agricultural training, socio economic importance of Nguni Cattle. The chapter begins with the presentation of sources of income for different age groups of project beneficiaries interviewed. Thereafter presenting the challenges faced by these participants. Farmers' perceptions on agricultural extension services and cattle production are also discussed in this chapter.

5.2 Results and discussion

5.2.1 Classification of main sources of income according to different age groups participating in the Nguni cattle project

The results on sources of income showed that beneficiaries depended on two sources of income state grants and animal sales for their survival. This was also reported by Mngomezulu (2010). Different age groups of beneficiaries who were involved in each income category were then identified. The results of the analysis are shown in Table 5.1. Youth indicated child support grant and pension of their parents as their monthly sources of income. Women headed households depended on three sources of income these include pension, child support grant and animal sales. Men reported that their households mainly depended on pension and animal sales as it was discussed in chapter four. Research done by Musemwa (2010) supports this.

From the information presented in Table 5.1 it is evident that the majority of beneficiaries' households relied on two to three sources of income. According to Monde (2003), household combine more sources of income to make ends meet. As shown in Table 5.1 combination of grants and animal sales was the most important and people highlighted that difference in their income. All the statements on sources of income reported by youth, men and women were supported by local leaders as true. There was a significant difference ($p < 0.05$) between sources of income.

Table 5. 1 Sources of income for Nguni cattle project beneficiaries in Ncera and Kwezana

	Youth	Men	Women	Local leaders
Sources of income				
Pension	X	X	X	X
Child support grant	X	0	X	X
Animal sales	0	X	X	X
P<0.045				

X-Indicating the available source of income

0 no source of income

5.2.2 Access of Nguni cattle, agricultural training and decision making

Farmers at Ncera and Kwezana indicated that they accessed Nguni cattle through the University of Fort Hare, two bulls and 10 heifers were brought to them by Nguni cattle project officers. Additionally farmers highlighted that no agricultural training was provided to them before the initiation of the project. The beneficiaries further explained that they are not involved in decision making process regarding this project. They are just told what is to happen without their views and needs being considered. Project beneficiaries suggested that government should consult and involve them as communities in any development programme to be initiated.

5.2.3 Cattle ownership and sales

Cattle ownership of farmers from both communities differed according to different age groups. Youth owned no cattle before the initiation of the Nguni cattle project but after the project was initiated they own a number of cattle as shown in Table 5.2. Cattle ownership for adult men was ranged between 6 and 10 cattle whereas for women was ranged between 1 and 5 cattle in both communities. It is evident from the current study that livestock numbers had increased after the initiation of the Nguni cattle project. The increase in number of cattle owned resulted in increase of animal sales and profit made by each group of farmers except youth (Table 5.2). These beneficiaries further explained that they make profit from animal (goats and local breeds and Nguni Cattle) sales yearly especially during December holidays. This is the time of the year where most families conduct their ceremonies these include weddings ceremonies, boys initiation school and family gatherings. The highest recorded increase in profit for animal sales was made by men followed by women. Local leaders agreed with the statement made by men that, profit from animals sales has increased by the amount greater than R9000 since the Nguni cattle project was introduced in their

communities. Nguni breeds increased the number of the cattle in these household because these breeds are highly adaptable to harsh environment and can withstand draught conditions.

Table 5. 2 Average number of cattle owned and sold before and after the initiation of the Nguni Cattle Project in Ncera and Kwezana (n=73)

	Youth	Men	Women	Local leaders
Cattle owned before the NCP	0	2	2	2
Cattle owned after the NCP	1	3	3	3
Cattle sold before the NCP	0	1	1	1
Cattle sold after the NCP	0	2	2	2

Nguni cattle, 1= 1-5, 2= 6-10 , 3=11-15.

Table 5. 3 Profit in cattle production after initiation (2005-2013) of the Nguni cattle project in Ncera and Kwezana (n=73)

	Profit before 2004	Profit After 2004
Youth	0	0
Men	1	2
Women	1	1
Local leaders	1	2

P<0.01, 1=R5000-9000, 2= >R 9000,

5.2.4 Socio-economic importance of Nguni cattle in Ncera and Kwezana

Nguni cattle project beneficiaries kept Nguni breeds for different purposes see Table 5.4. Farmers with different ages prioritised reasons for keeping cattle differently. Surprisingly the ranking of these groups in both communities was the same. Selling Nguni cattle was ranked as the most important use by men, women and local leaders. A study by Mngomezulu (2009) agrees with these findings. These breeds were sold within their neighbourhood, community and relatives for funeral and wedding ceremonies. Limited access to marketing facilities for animals and animal products was mentioned as the reason for selling cattle on local communities. Farmer respondents further explained that when needs arise they obtain cash from selling cattle. Local leaders also highlighted that since the majority of communal farmers are unemployed the money received from animal sales helps them to pay school fees and funeral expenses within the village. The ranking for manure was the second in importance from all age groups as it was used for crop production. Lack of extension support services such as financial support and high unemployment was a reason highlighted for the use of manure as fertiliser. Musemwa (2009) also reported limited access to extension services as the constraint to cattle production. All age groups from both communities indicated that they did not use their animals for draught power since they do not practise field cropping as discussed in chapter 4. Table 5.5 below confirms indeed that cattle in Ncera and Kwezana are the source that many used to improve their living standards.

5.2.5 Change in society since the initiation of the Nguni cattle project

Beneficiaries of the Nguni cattle project in both communities received 2 bulls and 10 heifers when the project started in their area in 2005. Results of the study revealed that Nguni breeds improved the community in terms of increase in cattle ownership and income. Community meetings that are held weekly by beneficiaries created collaboration and improved communication between community members and local leaders. Farmers further explained that the project helped them to share ideas and indigenous knowledge related to cattle production.

Table 5. 4 Uses of Nguni cattle as indicated by different focus groups in Ncera and Kwezana during 2013 (n=73)

	Consumption	Cultural rituals	Skin hides	Selling	Manure
Youth	1	0	0	0	2
Men	4	3	5	1	2
Women	3	0	0	1	2
Local leaders	4	3	0	1	2

1 rank most important use within the communities

5.2.6 Major constraints faced by Nguni cattle project beneficiaries in Ncera and Kwezana communities and suggestion for future impact

The findings of the study shows that lack of fence for grazing lands, lack of dipping facilities, lack of dams, poor road conditions, lack of marketing and veterinary support services, stock theft, dipping facilities, high unemployment rate of youth, youth not interested in agriculture were the major constraints that affected cattle production in both research communities. The ranking of these constraints differs according to age groups and there was a significant ($p < 0.05$) difference between these constraints (Table 5.5).

The absence of fencing for the grazing lands was mentioned by men, women and local leaders as the major constraint that affected grazing land management practises. Stock theft was mentioned and ranked equally by all groups as a constraint that hindered cattle production. Both challenges mentioned above were also evident in the study by Mngomezulu (2010). Only youth mentioned high unemployment rate as a major constraint. Local leaders, men and women did not support or agree with youth with the reason that if youth could engage in agricultural activities, complaining about limited job opportunities would be a different story. As indicated in Table 5.4 local leaders reported that youth does not want to engage in agriculture. This is the same with the findings by Lesoli (2011) and Gwelo (2012) that youth in the villages of the Eastern Cape province demonstrated low interest and commitment to agriculture and lack of participation in livestock rangeland management. This affects cattle production because there will be limited transfer of indigenous knowledge from generation to generation.

Table 5. 5 Major constraints faced by different age groups of Nguni Cattle project beneficiaries at Ncera and Kwezana communities during 2013 (n=73)

	Focus group			
	Youth	Men	Women	Local leaders
Constraint				
Lack of fence	2	1	1	1
Limited dipping facilities	0 ^b	2	2	7
Lack of dams	0	6	6	5
Poor road conditions	4	5	4	4
Lack of marketing support services	0	7	7	6
Lack of veterinary support services	5	4	5	8
Stock theft	3	3	3	3
High unemployment rate of youth	1 ^a	0	0	0
Youth not interested in agriculture	0	0	0	2
p<0.05				

^a Rank 1 indicates the most important constraint within a community.

^b Constraint not mentioned

5.2.7 Veld Management and Animal Health

Majority of farmers from all groups reported that they rarely monitored health status of their cattle because of limited knowledge and training on disease cattle management. The former statement could be the reason to death and late treatment of animals. According to study done by Nqeno (2008), veterinary extension support recommended farmers to dip their cattle weekly during rainy seasons. Respondents of the current study opposed this statement, lack of veterinary support services and unavailability dipping facilities being the reasons. Hence their cattle spend long periods without being dipped. Farmers indicated that they used to have fencing for their grazing lands since these lands are their main source of feed for their animals. As shown in Table 5.5 lack of fencing for communal grazing lands, necessitated to poor veld management. Lack of poor management and infrastructure as indicated by Bester *et al.* (2003) and Ndlovu (2007) affected cattle production and management. Although the latter is the case there is no provision of infrastructural support services from extension officers. Farmers also explained that there were no regulations set by community members to manage rangelands and farmers were not empowered to make disciplinary decisions on members of the community who misuse rangeland resources.

5.2.8 Participation of farmers in Nguni cattle project

Different genders from both study areas have different role they play in the project and gain different agricultural skills and experience to raise their level of knowledge. Nguni cattle project beneficiaries from Ncera community mentioned that only 17% of youth farmers were actively participating in the project. This activeness was seen in terms of the role they played in the project; herding cattle to and from communal grazing lands and assisted in dipping cattle during dipping seasons.

Local leaders at Kwezana indicated that youth in this community does not participate in any activities in the project. Poor youth participation implies a breakdown in the transfer of indigenous skills from elders to the youth as suggested by Lesoli (2011) Adult males reported they were the ones who did most of cattle production activities; Musemwa (2009) found the same results. Large domination of males in this project could be the reason. The cattle production activities done by men included cattle management and handling, ear tagging (to know the parents of the off-spring) and dipping activities. These activities increase farmers' level of knowledge in terms of cattle production.

Women are minimally involved in cattle production activities as compared to men. They reported their fulltime involvement in many household activities (looking after children, cooking and cleaning) as the reason to the latter. Although farmers play these roles in cattle production, they indicated some challenges they encounter, lack of extension support services being the major challenge. Farmers from both study areas further explained that they require training and assistance in cattle management, record keeping, feeding management and disease control as these are essential in cattle production. A study by Nqeno (2012) also highlighted these facts.

5.2.9 Effect of Nguni Cattle Project on beneficiaries' local indigenous knowledge, cultural value and beliefs

Findings of this study indicated that farmers are rich and diverse in terms of local knowledge that passes through generation. Farmers pointed out that they used indigenous knowledge to run the project because they receive limited assistance from extension officers. This is evident on the study done by Chamber (1988) that farmers depended on indigenous or local knowledge for improved farming system.

Beneficiaries of the Nguni cattle project reported that, the project affects their local indigenous knowledge and cultural beliefs, because within the community they have different beliefs and customs depending on each household. Most of the beneficiaries believe that Nguni cattle are not suitable for cultural ceremonies due to their small body frame they prefer exotic (Brahman) and non-descript cattle. They suggested that combination of local and scientific knowledge can change their attitudes and local belief. Furthermore they highlighted that opportunities in indigenous cattle production exist in South Africa, but most of the small scale farmers do not utilize these opportunities due to lack of assistance from extension officers.

5.2.10 Farmers' perceptions on agricultural extension services and cattle production

In both communities lack of extension support services from government was mentioned to be a challenge that affects cattle production. Farmers also mentioned that government used to support communal farmers with veterinary support such as dipping of livestock for ticks and vaccination. But of late government is providing veterinary support for only state controlled diseases. As a result, farmers are experiencing high cattle disease rate. According to Mwale *et al.* (2005) conventional veterinary medicines are rising and becoming unaffordable to many resource-limited livestock farmers in most African countries. Farmers also explained that agricultural extension interventions to support farming projects are limited. The roads were in a bad condition and no tractors were being provided by government. In addition veterinary support services for cattle production were also limited.

Farmers further elucidated that projects are being implemented in the certain communities but no training and farming skills are provided. They are expected to use indigenous and local knowledge to run the projects. Hence the most projects experience financial losses' and infrastructural vandalisation. In both communities beneficiaries of the Nguni cattle project stated that they think historical issues have an effect on limited access to extension services. The homeland Governments' Departments of Agriculture used to supply agricultural support services for farmers but for the new government the opposite is true. According to Kwaru and Gogela (2002), land cultivation declined abruptly as the new government sold out production implements they provided to communal farmers, stating that it would no longer do farming for the people. Hence beneficiaries reported that government services before 1994 were better as compared to the current government.

5.3 Conclusion

In both research areas farmers' respondents depended on government grants and animal sales for improved livelihoods. Farmers indicated that they received no marketing facilities for these sales. Farmers owned different number of cattle, men being the ones with large number of cattle before and after the Nguni cattle project. Historical issues had an impact on limited access to extension services as perceived by beneficiaries. From the study it is evident that beneficiaries received no extension services support services to improve their socio-economic status. Although that the case is evident Nguni cattle project has improved of beneficiaries' income and social status.

Chapter 6: Discussion, conclusion and recommendations

6.1 Introduction

This chapter highlights the general discussion, conclusions of this study, based on the findings and puts forward some recommendations which are believed to be of benefit to development of communal farming sector and governmental organizations who intend to embark livestock projects implementation with particular emphasis on farmer participation and provision of extension services.

6.2 General discussion

The Eastern Cape Province has a potential in livestock production. Cattle production is the most important livestock sub-sector in South Africa. It contributes about 25-30 % to the total agricultural output per annum (Musemwa, 2009) and has a great potential to alleviate poverty in communal areas of South Africa. Extension services comprise information dissemination by extension workers to farmers as stated by Anderson and Feder (2003). In addition, extension officers need to be sensitive to the requirement of communal farmers as to improve their technical knowledge. Since Eastern Cape Province has a potential in cattle production, this study was imperative in an attempt to discover and explore the effect of agricultural extension services in cattle farming putting more emphasis on the Nguni cattle project. Hence there is a need for extension support services to enhance sustainable cattle production. Jacobs (2003) highlighted that extension services are an entry point to agricultural development assistance and programmes.

In Chapter 4; quality of extension services offered to the beneficiaries of the Nguni Cattle Project, the relationship between project initiators and beneficiaries, communication strategies adopted by extension officers to communicate with the project beneficiaries were determined. Nguni cattle project beneficiaries in the surveyed communities were relatively old, most of them educated up to primary level, dependent on pension and animal sales for survival and do not have access to extension services. They kept different types of livestock species and have different reasons for keeping cattle, but most of the farmers keep cattle for sales. Adult males handled much of the activities in cattle production. Farmers were faced with different constraints and limited access to extension services was the major constraint.

Farmers often do not adopt effective and cost beneficial technology and information simply because the rendered services do not tailor to their existing perceived needs. Hence it is very important to understand farmers' perceptions of agricultural constraints and benefits of different technologies in solving these constraints (IFAD, 2013). Farmers obtain all information through friends and family members. The inability of farmers not to have much contact with extension agents as discussed in Chapter 4, affect their perception and awareness of information provided to them.

As discussed in Chapter 5, perception of farmers to information is not only affected by farmers' characteristics but also by socio-cultural factors (Duvel and Afful, 1996). In order to minimise cattle production constraints, increase in source of information to farmers is important. The needs of farmers should be assessed before any technologies are introduced to them as this would enable the researchers to know better the farmers needs.

Farmers perceived that extension officers have not improved on services delivery since 1994. They further explained that they prefer the former government than the present. Lack of extension services (market advice, veterinary services) was reported as a major constraint facing farmers. The specific hypotheses being tested was that; there were no extension services offered to the beneficiaries of the Nguni Cattle Project beneficiaries, there was no relationship between Nguni cattle project initiators and beneficiaries of Project and no communication strategies adopted by extension officers to communicate with the project beneficiaries were proven correct from the results of the study. Hence it is essential for government to provide extension services to enhance cattle production.

6.3 Conclusion

The Nguni cattle project played a major role in improving livelihoods of communal farmers. Nevertheless beneficiaries experience cattle production constraints. Limited access to extension services (lack of infrastructure, veterinary services, marketing facilities) being a major constraint. Hence farmers perceived the rate of the quality of extension services, communication strategies and relationship between extension officers and beneficiaries as poor. Therefore it was concluded that extension services had a negative effect on beneficiaries of the Nguni cattle project. According to perceptions of farmers agricultural extension services have not been effective and efficient in improving their livelihoods. Thus communal farmers should be given a priority to support services like training, knowledge transfer and supply of farming inputs. Furthermore there is a need for regular training of farmers in the form of workshops and in-service training so that they can acquire skill needed to maintain the success of the Nguni cattle project.

6.4 Recommendations

There must be an effective way of monitoring and evaluating of extension services delivery which will improve current and future extension service delivery. There is a need for extension officers to stimulate and update farmers' knowledge. An extension agent is the best source of information and training for farmers' participatory development. Thus their credibility is important for effective extension services. Similarly more frequent contact with farmers is important for improving effectiveness of extension services. There is a need for government extension services agents in communal areas to arrange trainings for farmers and ensure availability provision of appropriate information and services enabling farmers to obtain good understanding of projects being initiated. Training of farmers and ensuring the availability of appropriate information enabling farmers to obtain good understanding of the problems is essential for sustainable cattle production. There is also a need to find ways for youth to gain interest in livestock production.

6.5 Areas of further research

More research should be conducted with the following factors in mind:

- Training of farmers before implementation of any development initiative.
- Involvement of farmers in any decision making process as to incorporate their needs at local level
- Monitoring and delivery of extension services in the communal farming sector
- Due to limited technical support and challenges during data collection, a small sample size was used during data collection, future studies may consider a bigger size

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Appendix 1: Questionnaire on the Effect of Agricultural Extension Services on Beneficiaries of the Nguni Cattle Project: The case of Ncera and Kwezana villages, Eastern Cape Province



The information provided will be treated as strictly confidential

Background information

Date.....Questionnaire number.....

Name of Municipality.....Name of Village.....

Name of the farmer.....

SECTION A: DEMOGRAPHIC DETAILS

Household information

Please provide the following information about your household

A1. Relation to househol d head	A2. Age	A3. Gender (m/f)	A4. Marita l status	A5. Educati on level	A6. employ ment status	A7. Occupatio n	A8. Field of employme nt	A9. Time home

SECTION B: SOCIO-ECONOMIC STATUS

Please state the sources of income available to your household as well as the amounts received from each source per month or per year.

External sources of income

B1. Source	B2. Cycle	B3. Income per cycle(R)	B4. No. of cycles per annum	B5. Net income/a(R)
1.Remittances (Cash)				
2.Remittances (Kind)				
3.Salaries & Wages				
4.Old age pension				
5.Disability grant				
6.Childsupportgrant				
7.Other government grants, specify				

Local sources of income

B6. Source	B7. Cycle	B8. Income per cycle (R)	B9.No.of cycles per annum	B10.Net income/a (R)
1.Hawking (Food)				
2.Hawking (Other)				
3.Spaza shop				
4.Crops kinds				
5.Crops cash				
6.Animals kind				
7.Animals cash				

SECTION C: LAND OWNERSHIP AND USE

C1. What type of land tenure do you have access to? 1) Communal 2) Freehold 3) Other

C2.How much land do you own (ha)? 1) <1 2) 1-2 3)5-10 4)>10

C3.How much land is used for cropping in hectares? 1) <1 (2) 1-2 (3)5-10 (4)>10

C5.How much land is used for grazing in hectares 1) <1 2) 1-2 (3)5-10 (4)>10

Indicate the crops grown during the last cropping season (2012-2013)

C6.Crop	C7.Are a (ha)	C8.Amount consumed (kg)	C9.Amount sold (kg)	C10.Amount fed to animals (kg)	C11.Amount donated (kg)
1.Maize					

2.Potatoes					
3.Cabbage					
4.Spinach					
5.Beetroot					
6.Other (specify)					

Please indicate the type of animals that you keep as well as the reasons for keeping them.

C12.Animal	C13.Yes / No	14.No. owned	C15.Reason for keeping these animals
1.Cattle			
2.Goats			
3.Sheep			
4.Horse			
5.Donkeys			
6.Pigs			
7. Chickens			
8.Other,specify			

SECTION D: NGUNI CATTLE PROJECT

Background of the Nguni Cattle Project

D1. When did the project start in your area?

D2. How many were you when you started the project?

D3. How many Nguni Cattle did you receive? 1) Heifers..... 2) Bulls.....

D4. Where did the idea of the project come from?

1.Extension officers	2.Community	3.University of Fort Hare	4.Other,specify
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D5. What are the objectives of the Nguni Cattle Project?

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D6. Who are the implementers of the project?

- 1) University of Fort Hare
- 2) Industrial Development Co-operation
- 3) Dept of Rural Development and Agrarian Reform
- 4) All of the above
- 5) Do not know

D7. Where do you get support for the project?

Dept of Agriculture	University of Fort Hare	Other, specify
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D8. Do you have structure for this project 1) Yes 2) No

D9. If yes what is the name of the structure/ association/co-operative?

D10. Do you hold meetings? 1) Yes 2) No

D11. If yes how often 1) Weekly 2) Monthly 3) Quarterly

D12. Do you have a constitution? 1) Yes 2) No

D13. If, yes who are the organisers?

.....
.....

D14. Are you registered or have a co-operative?

D15. Do you receive training in agriculture? 1) Yes 2) No

D16. If yes what kind of training?

.....
.....

D17. What kind of agricultural skills do you get from the training?

.....
.....

D18. Do you get in-service training? 1) Yes 2) No

D19. If, yes how often? 1) Weekly 2) Monthly 3) Quarterly 4) Yearly

D20. What are you being trained on?

.....
.....

D21. Indicate the uses of Nguni Cattle in your household	1) Consumption
	2) Cultural rituals
	3) Skin hides

	4) Draught power
	5) Manure

SECTION E: EXTENSION SERVICES AND COMMUNICATION STRATEGIES

Type of Extension Support Services

E1. Do you have access to extension services 1) Yes 2) No

E2. Who provides the services?

1. Extension officers	2. Non-government organisations	3. Other ,specify
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E3. What type of extension services do you get?	1) Marketing of animals or animal products (milk, meat, skin hides)
	2) Animal-health-advice
	3) Veterinary services
	3) Dipping facilities
	4) Sales pen
	5) Training on animal handling
E4. How often do you get these services?	1) Weekly
	2) Monthly
	3) Quarterly
	4) Yearly

E5. Do you have dipping tanks?

1) Yes 2) No

E6. Where do you get the vaccines for dipping?

1.Bought	2. Sponsored by the department	3.Get from other community members
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E7. How many times do you dip your cattle in each season?

Season of the year	Frequency of dipping cattle
Summer (Nov, Dec & Jan)	
Autumn (Feb, Mar & Apr)	
Winter (May, Jun & Jul)	
Spring (Aug, Sep & Oct)	

E8. Do extension services providers (extension officers) communicate with you for any agricultural information? 1) Yes 2) No

E9. If yes how do they communicate with you?	1) Extension visits
	2) Radio
	3) Telephone
	4) Farmer days
	5) Workshops
	6) Agricultural pamphlets
E10.How often do they communicate with you?	1)Weekly
	2) Monthly

	3) Quarterly
	4) Yearly

E11. How is the relationship between you (beneficiaries) and extension officers?

1) Poor 2) Moderate 3) Good

E12. Please provide an explanation for the answer given in E11

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

E13. Please indicate or rate the quality of extension services you receive?

1) Poor 2) Moderate 3) Good

E14. Please provide an explanation for the answer given in E13.

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

Veld Management Practices

E15. Where do your animals feed?	1.Veld
	2.Pastures
	3.Conserved feed
	4.Crop residues
	5.Bought in feed

E16.Do you get any extension support services on grazing land and cattle management?

1) Yes 2) No

E17.If yes what type of support do you get on?

Cattle management

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.....

.....

.....

Grazing land management

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.....

.....

E18. How is the condition of grazing land? 1) Poor- little grass

2) Moderate- reasonable amount of grass

3) Good- plenty of grass

E19.What is the reason of the above?

1) High stocking rate

2) Low rainfall

3) Poor rangeland management

4) Other, specify.....

E20. Is the grazing land fenced?

1) Yes

2) No

E21.Do you have access to water (dams) for your cattle?

1) Yes

2) No

E22. Do you burn camps?

1) Yes

2) No

E23. If yes, when?

1) Summer

2) Autumn

3) Winter

4) Spring

E24. Do you practise rotational grazing? 1) Yes 2) No

E25. Explain answer in E22

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.....

E26. How do you evaluate the veld condition?

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E27. Do extension officers monitor the project? 1) Yes 2) No

E28. If yes, what do they monitor? 1) Progress (increase in number of animals)

2) Animal health (veterinary services, diseases)

E29. Do you encounter any problems in this project? 1) Yes) 2) No

E30. If yes, please explain the answer in 29, and give suggestion on what can be done to improve or solve the challenges experienced?

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

END

Appendix 2: Semi-structure interview guide for focus group discussion

A qualitative analysis to determine the Effect of Agricultural Extension Services on Beneficiaries of the Nguni Cattle Project: The case of Ncera and Kwezana villages, Eastern Cape Province

The information provided will be treated as strictly confidential

Date.....

Community name.....

Focus group 1) Youth (≤ 35 years).....

2) Adults (male) (≥ 36 years).....

3) Adults (female) (≥ 36 years).....

Section A: Nguni Cattle Project

A2. How did you access the animals (Nguni cattle)?

A3. How were you prepared (e.g. type of agricultural training) for this project?

A4. How do you as beneficiaries or community participate in decision making regarding issues related to the project?

Section B: INCOME, LIVESTOCK OWNERSHIP AND USE

B1. What is/are your source (s) of income and how much do you earn?

B2. What type of animals do you keep? Indicate what they contribute to your livelihoods?

B3. How many cattle did you sell per year before joining the Nguni Cattle Project?

B4. How many cattle are you able to sell now (After joining the project)?

B5. When (time of the year) do you mostly sell your cattle or animal products (year) and please explain your answer? Use the calendar map provided to score/indicate your answer.

Nguni Cattle Project impact calendar on household income

	Jan	Feb	May	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
2004-2006												
2007-2009												
2010-2013												

Use circle to indicate months that you mostly get your income from animals

Mark with an X to indicate income from animal product

B6. How do you sell your animals?

B7. To what extent do you have access to marketing facilities for your animals and animal products (milk, skin and meat)? Please indicate the market support services you receive

B8. What does the Nguni Cattle project contribute to your household and community?

B9. How does the Nguni Cattle Project affect your local indigenous knowledge, cultural value and beliefs?

B10. What is the change in the society since the Nguni Cattle Project was initiated?

SECTION C: EXTENSION SERVICES

C1. What kind of extension services do you have access to?

C2. What effect does each service mentioned in C1 have on household income and the community as a whole?

C3. What role do the services mentioned in C2 play in improving your level of knowledge?

Veld Management and Animal Health

C4. Where do your animals feed, what support do you receive regarding feeding management?

C5. What kind of support services do you receive to manage your rangelands?

C6. Do you receive any veterinary support services? Indicate the kind of support you receive

C7. What kind of support do you receive in terms of physical capital (farm implements, roads)?

C8. What effect do extension services have on your socio-economic status as beneficiaries of the project?

C9. What was the state of extension services before 1994? How do you rate it compare to the current extension services?

C10. Do historical issues have an impact on the provision of extension services to the Nguni Cattle Project?

C11. What challenges do you face as the beneficiaries of the Nguni Cattle project?

C12. What do you think can be done to improve extension service delivery in the Project for the impact of the future?

END

Appendix 3: Consent form



University of Fort Hare
Together in Excellence

Ethics Research Confidentiality and Informed Consent Form

Please note:

This form is to be completed by the researcher(s) as well as by the interviewee before the commencement of the research. Copies of the signed form must be filed and kept on record

(To be adapted for individual circumstances/needs)

Our University of Fort Hare (Department of Agricultural Economics and Extension) is asking people from your community / sample / group to answer some questions, which we hope will benefit your community and possibly other communities in the future.

The University of Fort Hare (Department of Agricultural Economics and Extension) is conducting research regarding Effect of Agricultural Extension Services on Beneficiaries of the Nguni Cattle Project: The case of Ncera and Kwezana villages, Eastern Cape Province. We are interested in finding out more about effect of agricultural extension services on socio-economic status of beneficiaries of the project. We are carrying out this research to help extension officers to understand how much effort they have to put on the Nguni cattle project to maintain its success. In addition, this study will help extension officers develop communication strategies for future communication with farmers.

Please understand that you are not being forced to take part in this study and the choice whether to participate or not is yours alone. However, we would really appreciate it if you do share your thoughts with us. If you choose not take part in answering these questions, you

will not be affected in any way. If you agree to participate, you may stop me at any time and tell me that you don't want to go on with the interview. If you do this there will also be no penalties and you will NOT be prejudiced in ANY way. Confidentiality will be observed professionally.

I will not be recording your name anywhere on the questionnaire and no one will be able to link you to the answers you give. Only the researchers will have access to the unlinked information. The information will remain confidential and there will be no "come-backs" from the answers you give.

The interview will last around (30 minutes). I will be asking you a questions and ask that you are as open and honest as possible in answering these questions. Some questions may be of a personal and/or sensitive nature. I will be asking some questions that you may not have thought about before, and which also involve thinking about the past or the future. We know that you cannot be absolutely certain about the answers to these questions but we ask that you try to think about these questions. When it comes to answering questions there are no right and wrong answers. When we ask questions about the future we are not interested in what you think the best thing would be to do, but what you think would actually happen (*adapt for individual circumstances*).

If possible, our organisation would like to come back to this area once we have completed our study to inform you and your community of what the results are and discuss our findings and proposals around the research and what this means for people in this area.

INFORMED CONSENT

I hereby agree to participate in research regarding the **effect of agricultural extension services on beneficiaries of the Nguni Cattle Project in Nkonkobe local Municipality**. I understand that I am participating freely and without being forced in any way to do so. I also understand that I can stop this interview at any point should I not want to continue and that this decision will not in any way affect me negatively.

I understand that this is a research project whose purpose is not necessarily to benefit me personally.

I have received the telephone number of a person to contact should I need to speak about any issues which may arise in this interview.

I understand that this consent form will not be linked to the questionnaire, and that my answers will remain confidential.

I understand that if at all possible, feedback will be given to my community on the results of the completed research.

.....

Signature of participant

Date:.....

I hereby agree to the tape recording of my participation in the study

.....

Signature of participant

Date:.....



Appendix 4: Grazing lands at Ncera village



Appendix 5: Men focus group discussion



Appendix 6: Women focus group discussion



Appendix 7: Men focus group discussion