STOCK FARMERS AND THE STATE.

A CASE STUDY OF ANIMAL HEALTHCARE PRACTICES IN HERTZOG, EASTERN CAPE PROVINCE, SOUTH AFRICA.

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A CASE STUDY OF ANIMAL HEALTHCARE PRACTICES IN HERTZOG, EASTERN CAPE PROVINCE, SOUTH AFRICA.

by

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DECLARATION

I, Vimbai. R. Jenjezwa, hereby declare that this dissertation entitled “Stock Farmers and the State. A Case Study of Animal Healthcare Practices in Hertzog, Eastern Cape Province, South Africa” is the result of my own effort and investigation except where stated, and that it has not been submitted for a degree to any other University, other than the University of Fort Hare.

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Signature:

Date of submission:

Place of submission: University of Fort Hare, Alice Campus

DEDICATION

This dissertation is dedicated to both my parents who encouraged me to further my studies. To my father, Lawrence Jenjezwa for committing himself to giving me the best education. To my mother, Jesca Jenjezwa for her motivation, support and prayers.

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ABSTRACT

The animal healthcare practices of most communal farmers involve the use of both conventional and ethnoveterinary medicines. This study presents information on the animal healthcare practices of stock farmers in Hertzog, Eastern Cape Province, South Africa. It also presents the findings on the social, economic and political aspects surrounding animal healthcare. The research applied two theories namely structuration theory and the Context, Practice and Belief (CPB) framework. Interviews and participant observation were used to collect data. The communal farmers widely used conventional medicines however, proper administration methods were not followed. Ethnoveterinary medicines were used to prevent and treat disease, even by the younger stock farmers. The stock farmers used ethnoveterinary medicines mainly because of the lack of finance to purchase the conventional medicines, even though the latter was preferred. The stock farmers actively participated in state programmes but felt that they needed more state veterinarian visits and state provided medications because they could not afford private veterinarians and conventional medicines. Therefore, this study attempts to contribute to an understanding of the use of ethnoveterinary medicine and communal farmers' animal healthcare practices.

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ACRONYMS

AHT	Animal Health Technician
ARDRI	Agricultural and Rural Development Research Institute
AsgiSA	Accelerated Shared Growth Initiative for South Africa
BATAT	Broadening Access to Agriculture Thrust
CAHW	Community animal health worker
CPB	Context, Practice and Belief
DLA	Department of Land Affairs
EC	Eastern Cape
GEAR	Growth, Employment and Redistribution
HACOP	Hertzog Agricultural Cooperative
IDP	Integrated Development Plan
ITCA	Inter-governmental Technical Committee for Agriculture
LCC	Land Claims Commission
LRAD	Land Redistribution for Agricultural Development
RDP	Reconstruction and Development Programme

CHAPTER I

THE STATE, COMMUNAL FARMERS AND ANIMAL HEATHCARE

Introduction

Livestock[1] rearing developed after hunter-gathering as lifestyles changed to more formalised structures which are currently commonly practiced (Livestock farming, 2009). In Southern Africa livestock have been of particular importance in rural societies and livelihoods over a long period of time. Cattle, for example, are used for draught power, to pay bride price and are also viewed as a form of wealth. Livestock are however prone to various diseases, particularly in Southern Africa because of the climate. The diseases can affect animal welfare, reduce productivity, and in some cases affect humans (Brown, 2005). Diseases are managed through herding practices, supplementary feeding and the use of preventative or curative medicines (Beinart, 2007a; Stroebel, 2004). It has been found that both conventional (scientific) and ethnoveterinary medicine are used to treat disease.

[1] Livestock are domesticated animals reared for subsistence or profit in an agricultural setting. These include cattle, goats, sheep, dogs, cats, pigs and horses.

Recently, there has been increased research on local and indigenous means of livestock management and treatment (Martin, Mathias & McCorkle, 2001; Masika et al., 2000; Masika, Sonandi & van Averbeke, 1997a, 1997b, 2000). The term “indigenous” is understood as the practices, beliefs and culture based concepts that have been held for an extended period of time and have been inherited from previous generations. Considerable knowledge of indigenous disease control and treatment methods is mostly found among resource poor livestock farmers. Such knowledge included transhumance, the use of herbal remedies, the use of plant products and fodder to enhance fertility and productivity, respectively, as well as surgical practices. These activities are collectively known as ethnoveterinary medicine (Martin et al., 2001).

Within this context and against the background of different perspectives on animal healthcare in the world, this research focused on the livestock farmers’ practices in animal healthcare. Animal healthcare includes the practices and means by which the well being of animals is maintained. This includes feeding practices and, the prevention, diagnosis and treatment of disease. The key aim of this study was to examine responses to livestock diseases in a village of the Eastern Cape Province and to evaluate the significance of state programmes and indigenous knowledge. The study area was Hertzog, a small rural community in the Kat River valley, north of Fort Beaufort in the Eastern Cape Province of South Africa.

In the next section, the conceptual framework that underlies the research is discussed, in particular the ideas that have informed writing on ethnoveterinary practices. Past research in South Africa and elsewhere is then reviewed, and some of the gaps in this literature are identified. Suggestions are made as to how this research will address some of these gaps. The concluding sections of the chapter outline the research questions, research methodology and techniques, research location, significance of the study and structure of the dissertation.

Conceptual Framework

This section discusses the various theories that have been applied in the research. The theories relate to state interventions in animal healthcare and ethnoveterinary research in terms of the issues related to it such as indigenous (also known as local) knowledge. The theories include structuration and the Context, Practice and Belief (CPB) framework.

Due to a significant study of the state and its role and contribution to animal healthcare, Giddens' (1986) structuration theory is applied. The theory involves a study of how social systems are developed and bound together, and how people engage with the social system (or structure). As people interact, social structures are produced and reproduced. In the process, a common way of doing things is developed. The actions performed are as a result of decisions made based on the agent's knowledge but within the

confines of the social structure. However, with time the social structure may change due to cultural, economic and political adjustments over time. A fundamental aspect to structuration is that agents are practically conscious of the actions they are involved in. Practical consciousness is the routine nature of an agent's knowledge in their everyday actions and interactions (Aitken & Valentine, 2006; Brooks, Atkinson & Wainwright, in press; Giddens, 1986; Johnston & Sidaway, 2004; King, 2005; Thrift, 2002).

Social systems are dual, that is, there is structure and agency which relate to each other in various ways over space and time. This aspect is central to structuration theory. Structure is regarded as the traditions, rules, resources, social relationships. It also includes the prevailing political and economic systems which exist temporally when actors bring them into place. Agency is the actors, that is, people in the social system who undertake social action and interaction. The actors continuously monitor their activities and have a theoretical understanding of why they undertake in those activities. The actors can usually explain why they partake in the activities but not their ultimate intentions or motives. Structure is not always known to the agent, however, structure shapes the actions of agency. Although, agency may be constrained, people may have alternative choices even if structure constrains their choices (Giddens, 1986; Johnston, Gregory, Pratt & Watts, 2000; Johnston & Sidaway, 2004; King, 2005; Structuration, 2000).

For example, the class, income group and family in which people belong to, constrains them. These cannot be changed but the people can to some extent choose something else, but within the constraints of that particular society. Various structures may exist, for example political structures which in this case include the state's Directorate of Veterinary Services in the Department of Agriculture (Aitken & Valentine, 2006; Brooks et al., in press; Gauntlett, 2002; Johnston & Sidaway,2004; Jones & Karsten, 2008; King, 2005; Structuration, 2000; Thrift, 2002).

Indigenous knowledge contains a wealth of information that can be valuable in improving livelihoods. The review of literature and proposed framework thus draws from recent research on ethnoveterinary practices as well as indigenous knowledge. Although there is a huge body of literature, only limited relevant theories can be explored. Drawing on the theoretical ideas from some of the literature (Dold & Cocks, 2001; Masika, van Averbeke & Sonandi, 2000; Matekaire & Bwakura, 2004; McCorkle & Mathias-Mundy, 1992; Njoroge & Bussmann, 2006; Schillhorn van Veen, 1997; van der Merwe, Swan & Botha, 2001), the context, practice and belief (CPB) framework can be applied to research on ethnoveterinary medicine or indigenous knowledge as a whole.

The other theory applied was the CPB framework which is also known as the knowledge, practice and belief complex. The development of knowledge is based on the history, demographic factors and biophysical features in an

area. CPB recognises knowledge as practice developed through interaction with the environment and experiential learning. The knowledge is derived from involvement rather than theoretical understanding. However, the knowledge accumulated is closely related to the belief subsystem in the particular community studied. Beliefs such as spiritual values also influence how people gather and apply knowledge. The CPB framework places considerable emphasis on the environmental and biophysical context in exploring how communities obtain knowledge (Berkes, 1999; Woodley, 2005). However, Woodley states that authors differ in the degree to which they emphasise environmental and spiritual elements. This may be caused by spatial differences and the difficulty in relating to cultural issues.

Most research on ethnoveterinary medicine is grounded in a society's knowledge on healthcare obtained from learning from their elders, use of the local environmental resources inventively, and adapting those practices over time in response to social, cultural, economic and political change (Berkes, 1999; Roth, 2004). CPB can change in time and space and this influences the content of indigenous knowledge. There has been loss of indigenous knowledge over time mainly due to the lack of documentation. Thus there is need for more research into ethnoveterinary medicine (Dilshad et al., 2008; Dold & Cocks, 2001; Martin et al., 2001; McCorkle, Mathias & Schillhorn van Veen, 1996; Masika et al., 2000; Matekaire & Bwakura, 2004; van der Merwe et al., 2001).

The CPB framework emphasises that by understanding the whole system of acquiring and applying knowledge, other aspects that are not obvious emerge through the linkages. In examining ethnoveterinary practices for example, it is helpful to analyse different elements. Practices such as the isolation of diseased animals, analysis of herbal medicines and ritual practices could reveal various aspects of a society's knowledge and belief. One aim of the CPB framework is to link all of these elements to better understand the indigenous knowledge. Indigenous knowledge thus represents context-based conceptions of the environment and provides the basis for understanding knowledge and action in daily life (Berkes, 1999; Woodley, 2003, 2005).

This study evaluated how social, economic and political structures influenced animal healthcare practices. Significant emphasis was placed on studying the role of the state in shaping local veterinary practices and knowledge, in particular dipping which was the most common state veterinary service. However, the study of indigenous knowledge necessitates the use of the CPB framework. Having outlined the conceptual framework, the next section summarises the past research findings on ethnoveterinary practices.

Literature Review

This section presents the literature review on livestock management with particular attention to animal healthcare. There is great emphasis on indigenous methods due to extensive use of these practices particularly in

resource poor communities. The terms ethnoveterinary medicine and ethnoveterinary practices are used in this study to sum up the indigenous medicines and methods used on livestock. This section begins with an explanation of ethnoveterinary medicine in terms of its origins, what it entails and how it can be useful in veterinary science. This is followed by descriptions of various other issues relating to livestock welfare. The final section outlines the gaps in the literature and which of these this research will undertake to address.

Overview of Ethnoveterinary Medicine

Ethnoveterinary medicine includes the knowledge, practices, beliefs and skills applied in raising livestock. It includes the herding strategies used to optimise nutrition and avoid disease, herbal remedies used to treat disease, the surgeries and knowledge about disease cause, diagnosis and treatment (Hesterberg, Bagnall, Perrett, Horner & Gummow, 2007; Mathias, 2001; McCorkle et al., 1996).

Ethnoveterinary practices are less formalised than modern practices. The knowledge is only transferred orally, from generation to generation, thus there is no documentation within the communities. Changes in communities towards modern practices threaten ethnoveterinary medicine into extinction, for example, the younger generations' reduced interest in agriculture as compared to the past (Martin et al., 2001; McCorkle et al., 1996; Masika et al.,

2000; Matekaire & Bwakura, 2004; Mathias, 2001;van der Merwe et al., 2001).

Ethnoveterinary practices have been developed through trial and error, experimentation and observation. The livestock farmers and health practitioners, who included traditional healers, were able to tell when an animal was ill, usually through the symptoms. Diseases were diagnosed through postmortems, symptoms of diseases, vectors of diseases, seasonal effects and species affected. Those in constant contact with the livestock, normally the herdmen, were usually the first to detect the initial symptoms of disease. Men tended to know more about large livestock whilst women were familiar with healthcare issues related to smaller animals (Dilshad et al., 2008; Getchell et al., 2002; Jacob, Farah & Ekaya, 2004; McCorkle et al., 1996; Masika, Sonandi & van Averbeke, 1997b; Matekaire & Bwakura, 2004; Schillhorn van Veen, 1997). Knowledge of how to avoid poisonous plants and treat poisoned livestock is also part of ethnoveterinary knowledge. The occurrence of poisonous plants and the diseases they cause helped to explain to some extent, environmental perceptions of disease (Brown, 2007).

The treatment involved the preparation and use of plant, human or animal material as well as the use of commercial products (such as salt and paraffin) and conventional medicines (Barboza, Souto & Mourão, 2007; Martin et al., 2001; Mathias, 2001, 2007; McCorkle et al., 1996). However, the most common were the herbal remedies. The livestock farmers, traditional healers

or herbalists prepare these herbal remedies (Masika et al., 2000). Herbal remedies have been used over a long period to treat both humans and livestock, with most research undertaken on herbal remedies for human diseases rather than animal diseases (Ladio & Lozada, in press; McCorkle & Mathias-Mundy, 1992; Pieroni et al., 2006; Schillhorn van Veen, 1997; van der Merwe et al., 2001). The surgical operations included castration, sterilisation, lancing boils, cauterising, amputation and de-horning with salt as the most used disinfectant (Abbas, Al-Qawari & Al-Hawas, 2002; Martin et al., 2001).

Various herding and livestock management practices were also involved, including transhumance and burning grazing lands. In South Africa, both black and white farmers practised transhumance (Beinart, 2007a; Brown, 2007; O'Farrell, Donaldson & Hoffman, 2007). Transhumance practices may be used to optimise nutritional benefits from various vegetation types but the movement may influence how diseases affect the livestock. For example, frequent movement removed the livestock from the build-up of parasites (Beinart; Macpherson, 1995). However, in some instances, transhumance spread disease as infected livestock carried the vectors to the uninfected areas and hence spread the disease over long distances. Due to developments in infrastructure, increases in herd numbers and a decrease in available space, fewer communities still practise transhumance. Other causes for its reduction included environmental and social issues such as

problems with water supply in areas moved to, and the interventions of state veterinary agents (Beinart).

Ethnoveterinary medicine has been used worldwide but most livestock farmers in the developed world, such as those in Western Europe abandoned it in favour of conventional medicines (Schillhorn van Veen, 1997; van der Merwe et al., 2001). This resulted from better access to veterinary medicines in developed countries and the adoption of the traditional remedies into conventional drugs through research. Some authors argued that ethnoveterinary medicine provided a fairly reliable alternative to scientific animal healthcare in cases of limited access or lack of funds to buy conventional medicines (Schillhorn van Veen; van der Merwe et al., 2001; Yadav, 2007). Ethnoveterinary medicine was useful for common and chronic diseases such as colds, skin disorders, worms, wounds, reproductive disorders and nutritional deficiencies (Mathias, 2001).

The main limitations of ethnoveterinary medicine were that there were no standard dosages and that some treatments were not as effective as the users believed them to be. Other limitations included the unavailability of some plant species at certain times of the year, the methods of diagnosis and the usually inaccurate perception of disease causation. These limitations caused preventable loss of livestock. Another limitation of ethnoveterinary medicine was that in some areas the plant resources were deteriorating, thus the raw materials used in medicine making were becoming less available with

time. Ethnoveterinary medicine was also not as fast working. The medicines were not as effective as conventional medicines in controlling epidemic and endemic diseases such as foot and mouth disease (Martin et al., 2001; Matekaire & Bwakura, 2004; Mathias, 2001; McGaw & Eloff, in press).

Veterinary Practices: Ethnoveterinary and Scientific

Veterinary science and policy were widely studied worldwide in terms of livestock diseases, medicines and livestock management. In South Africa, veterinary science played an important role in the economy because of the esteemed value of livestock in society (Brown, 2005). It was thus important for livestock farmers to practise proper livestock management and disease control for increased productivity. Due to diminished state intervention in disease control, approximately 80% of African livestock farmers relied in part on herbal remedies to treat their livestock (Koné & Atindehou, 2008; Masika et al., 1997a, 1997b, 2000; Mathias, 2007; Schillhorn van Veen, 1997; van der Merwe et al., 2001). Thus, ethnoveterinary medicine was important in animal healthcare in developing countries as it had the possibility of providing a cost-effective, sustainable and socio-culturally acceptable solution to livestock management problems (Abbas et al., 2002; Lans & Brown, 1998; McCorkle & Mathias-Mundy, 1992; Yadav, 2007).

Recently, there has been increased interest in ethnoveterinary practices and medicines throughout the world, that is, in Kenya, Egypt, China, Ethiopia,

India, Pakistan and to a limited extent, South Africa (Kamal & Kumar, 2004; Martin et al., 2001; McCorkle & Mathias-Mundy, 1992; Masika et al., 2000; Matekaire & Bwakura, 2004; Pieroni et al., 2006; Schillhorn van Veen, 1997; van der Merwe et al., 2001). Most ethnoveterinary research in South Africa was carried out in the Eastern Cape, North West and KwaZulu-Natal Provinces. The informants in most cases were men and old people but in some cases there were also females (Luseba & van der Merwe, 2006). The researchers found that, unlike commercial farmers, communal farmers relied greatly on ethnoveterinary medicines due to lack of funds, the rising costs of conventional medicines and difficulty in access to conventional medicines. Those who had other sources of income also used conventional medicines purchased from pharmaceuticals and farmers' cooperatives (Dold & Cocks, 2001; Lulekal, Kelbessa, Bekele & Yineger, 2008; Masika et al., 1997a, 1997b, 2000; Njoroge & Bussmann, 2006; Schillhorn van Veen, 1997; Stangeland, Dhillion & Reksten, 2008; van der Merwe et al., 2001; Yadav, 2007).

In the Madikwe District of the North West Province in South Africa, veterinary medicines were sold at local shops that administrative staff of the Directorate of Field Services managed. The staff had no knowledge of livestock diseases and on how to handle and store the veterinary medicines properly. The regular unavailability of veterinary medicinal products from local suppliers forced livestock farmers to travel to farmers' cooperatives in larger centres (Gehring, Swan & Sykes, 2002; Getchell et al., 2002). In the Eastern Cape

Province of South Africa, untrained sellers who often repackaged the medicines and did not put dosage and administration instructions dispensed commercial medicines to the livestock farmers. The medicines were diluted or fake in some cases (Mathias, 2007). This improper use and abuse of commercial drugs such as synthetic anthelmintics resulted in resistance of some disease causing organisms in livestock (Njoroge & Bussmann, 2006).

There were livestock farmers who did not use herbal remedies because they either thought they were outdated, had lost livestock as a result of the use of herbal remedies or did not know the ingredients and preparation methods. However, the use of nonspecific dosages or the toxicity of nonherbal medicines and mixing both herbal and conventional remedies may have been the cause of deaths (Getchell et al., 2002; Masika et al., 1997a, 1997b, 2000; van der Merwe et al., 2001). The type of ailment determined the choice of medication used, that is, whether herbal or conventional. For example, herbal remedies were used to cleanse the inner system by inducing purging and vomiting where illness was a condition of 'internal corruption' (Masika et al., 2000). Some livestock farmers in Kenya used ethnoveterinary medicines because they did not believe in using conventional medicines due to the means by which they were informed about them (Waller & Homewood, 1997).

Livestock farmers worldwide named diseases based on the affected part or symptoms. For example, the white farmers in South Africa used names such as *lamziekte* (lame sickness), *longziekte* (lung sickness) and *hartwater* (water

in the heart), whilst rinderpest in Masaai is called *olodua* (pancreas), and *nyongo* in Xhosa is gallsickness (Beinart, 2007b; Schillhorn van Veen, 1997). The most common diseases treated using ethnoveterinary medicines included gallsickness, blackquarter, redwater, diarrhoea, worms, heartwater and foot rot, and reproductive disorders such as low conception rate and retained placenta (Dilshad et al., 2008; Getchell et al., 2002; Jacob et al., 2004; Kamal & Kumar, 2004; Koné & Atindehou, 2008; Lulekal et al., 2008; Luseba & van der Merwe, 2006; Masika et al., 1997a, 1997b, 2000; Masika & Afolayan, 2003; Matekaire & Bwakura, 2004; van der Merwe et al., 2001). Dilshad et al. supported the use of plant materials for reproductive disorders due to the chemical content of plants which have nutritional, hormonal and antibacterial properties.

Natural phenomena, seasonal changes and evil spirits were perceived to be causes of diseases amongst farmers in Africa. Diseases with a seasonal pattern such as tick-borne diseases were often related to factors of the environment with similar seasonal patterns (Dilshad et al., 2008; van der Merwe et al., 2001). In central Eastern Cape, Masika et al. (1997b) established that it was perceived that cattle contracted gallsickness from eating healthy green grass which increased the amount of bile. Few related the disease to ticks. This was similar to van der Merwe et al.'s (2001) findings. This is partly true because grass growth was related to the increase in tick numbers, thus increasing the cattle's exposure and risk to attack.

Although supernatural acts were believed to cause disease (McCorkle et al., 1996), few livestock farmers believed witchcraft or evil caused disease.

Herbal remedies were used in conjunction with conventional medicines because the latter was believed to increase the strength of the herbal remedies (Dilshad et al., 2008; Getchell et al., 2002; Jacob et al., 2004; Luseba & van der Merwe, 2006; Masika et al., 1997a, 1997b, 2000; Matekaire & Bwakura, 2004; Tabuti, Dhillion & Lye, 2003; van der Merwe et al., 2001). In several instances, conventional and herbal treatment of livestock diseases was similar in approach. For example, for gallsickness the commercial veterinary products used for treatment were antibiotics, transfusions and laxatives whilst herbal remedies contained plants with antimicrobial and purgative properties (Masika et al., 1997b).

The plant parts used in medicines were leaves, roots, rhizomes, tubers, seeds, bulbs, bark, fruits and flowers (Dilshad et al., 2008; Masika et al., 2000; Koné & Atindehou, 2008; Tabuti et al., 2003; van der Merwe et al., 2001). The herbs were used individually or as a mixture with other plants (Dilshad et al.; Masika et al.). The diseases that affected the livestock were similar in different areas, but the herbs used differed. The most common plant families for medicines used were Euphorbiacae, Fabacae, Asteraceae and Lamiaceae families (Luseba & van der Merwe, 2006; Njoroge & Bussmann, 2006; Pieroni et al., 2006; Tabuti et al., 2003). If a plant was indigenous or common in an area, it was more likely to be used (Dilshad et

al., 2008; Tabuti et al.). Generally, the same diseases were treated using different plants in different localities depending on the plant species available in an area. Herbal plants used in remedies were either cultivated in gardens or obtained in surrounding natural vegetation depending on the nature of the plant. The medicinal plants were usually collected when needed and used fresh. However, at times, they were collected, dried and stored in a cool, dry place (Masika et al., 2000; van der Merwe et al., 2001).

The remedies were prepared using various methods including soaking, making infusions, powders produced from burnt or dried plant parts or by crushing plant parts. Water was the main solvent used in the preparation of the medicines. The medicine was administered in various forms depending on the disease. Topical applications were used for skin conditions, powders were rubbed into incisions, drops to treat ear and eye ailments and liquid dosages for mainly stomach ailments. Liquid dosage orally was done using cool drink or beer bottles of 200 millilitres, 750 millilitres or one litre capacity. The dose depended on the age and size of the livestock (Dilshad et al., 2008; Dold & Cocks, 2001; Koné & Atindehou, 2008; Luseba et al., 2006; Masika et al., 1997b, 2000; Njoroge & Bussmann, 2006; van der Merwe et al., 2001). Livestock farmers used other remedies including zootherapeutics such as rattlesnakes, chameleons and hornets and, commercial but nonveterinary products such as disinfectants, motor oil and Coca-Cola. Commercial products were mostly used for external parasites such as ticks (Getchell et al., 2002; Masika et al., 1997a; van der Merwe et al., 2001). Matekaire and

Bwakura (2004) established that ground snail shells were used to treat eye problems. Most of these remedies involved using fat from the animal to treat the diseased livestock. Human urine was used to treat cassava plant poisoning (Barboza et al., 2007).

Information from livestock farmers on the symptoms and likely causes of disease as well as treatments has always helped to develop veterinary practices and medicines (Brown, 2007). Hence, in order for further medical advances in veterinary science, there was a need to test the efficiency of plants in disease treatment. This could increase the range of medicines available to livestock farmers and may possibly make commercial medicines more affordable. This was difficult, however, due to the absence of controlled methods and well defined quantities in the preparation of herbal remedies. Institutions such as the Agricultural and Rural Development Research Institute *(*ARDRI) at the University of Fort Hare in the Eastern Cape Province of South Africa and students at the University of Pretoria in conjunction with Onderstepoort Veterinary Institute were undertaking in-vitro and in-vivo tests in 2008/2009. Other measures that can be taken to develop ethnoveterinary medicines are documentation of remedies used and monitoring of use in the field.

The threat of extinction of the knowledge on ethnoveterinary medicines, also necessitates more research and documentation on this topic. Most researchers in this field recommended that more research be undertaken on

the plants used, and for which diseases; the efficiency of the remedies and practices; possible side-effects; the development of herbal gardens, and improving access to, and the administration of, conventional medicines. The conservation status of the plants needed to be explored so as to ensure sustainable natural resources management. It is necessary to educate livestock farmers, veterinary medicine sales people and field agents on the proper handling of medicines (Dilshad et al., 2008; Gehring et al., 2002; Lulekal et al., 2008; Masika et al., 1997b, 2000; Matekaire & Bwakura, 2004; Njoroge & Bussmann, 2006; Schillhorn van Veen, 1997). It would also be useful for veterinarians to be involved in the research.

Few studies have examined the socio-cultural, economic and political contexts within which ethnoveterinary practices are undertaken. Health is defined by presence or absence of disease rather than considering daily activities (social), economic, political and cultural factors (Hill, 1993). There has been little research on state interventions in animal healthcare as well as how the state's contribution has changed over time and how the changes have affected the animal healthcare practices of resource poor communities (Davis, 2001). Having established that these gaps occur in past research on ethnoveterinary practices, the next section outlines preliminary studies undertaken in Mbotyi in the Eastern Cape Province to develop the research focus based on gaps found in previous studies.

Mbotyi: Preliminary Field Case Study

The preliminary study was undertaken in Mbotyi, a coastal village in the Pondoland area of the north eastern part of the Eastern Cape Province. The study was undertaken with Beinart[2] who was the principal researcher in the area. The field visit was undertaken in March 2008 and examined livestock management in the area, particularly in terms of disease control and the use of traditional medicines for treatment. In this study, the livestock studied included cattle, goats and horses which were used for either labour or food production.

The cattle grazed in open pastures in surrounding villages where there was more space and fewer ticks. This was mainly done in summer and during the cultivation period. The other livestock grazed locally as they were less prone to tick borne diseases which were common in the area. Other than diseases that result from the *qwela gqibe* tick, the most common diseases in cattle were gallsickness (*inyongo*), *umkhondo*, East Coast fever (*uxhaso*), *isidhiya* and *nonkhonywana. Qwela gqibe* had been a serious problem for a while and the livestock farmers were finding it hard to eradicate. Worms were the most common parasite that affected goats whilst ticks were common with horses. Another common parasite was horse flies which were dangerous to livestock. When the livestock died, the livestock farmer and his/her neighbours performed a postmortem to determine the cause of death. 'Real' causes and

[2] Professor Beinart is also researching on ethnoveterinary medicine. The Mbotyi study and this research constituted part of a larger project being undertaken in South Africa.

witchcraft were the perceived causes of diseases. Diseases such as gallsickness caused by *qwela gqibe* were classified as 'real'. However, diseases which were uncommon, unexpectedly killed livestock, affected one household or were found difficult to understand such as external bleeding, were believed to be as a result of witchcraft.

For treatment of disease, both scientific and traditional medicines were used. Conventional medicines for inoculation and injection such as Ivormac, Detomax and Valbazen were used. The most common scientific method of disease prevention was dipping. Although the state provided the dip, the Mbotyi livestock farmers failed to organise themselves to collect and manage the dipping programme efficiently. The Animal Health Technician (AHT) rarely visited the area, therefore, most livestock farmers bought spray dip from unlicensed vendors whose products' quality was questionable. Retailers repackaged medicines with no directions of use and possibly diluted them so as to maximise profits (S. Caine, personal communication, March 23, 2008).

There were various efforts undertaken to practise proper (scientifically proven) livestock management in Mbotyi, but these practices were not widespread. This may be due to traditional beliefs and lack of unity and understanding within the community. This resulted in the failure to establish effective dipping committees. Some livestock farmers could not afford commercial veterinary products and therefore did not use them. Regardless of economic and social

influences, most livestock farmers had taken up responsibility in dipping, vaccinating and inoculating their own livestock.

In the light of the literature review, the preliminary case study and preliminary interviews held with livestock farmers, the Eastern Cape's Provincial Director of Veterinary Services, a state veterinarian and AHTs, this research proposes to study the various factors that influence animal healthcare. The literature review gave a background to the questions used in the preliminary field research. Therefore, based on the preliminary field research, the research aim and objectives of this study are outlined in the next section.

Aim and Objectives of the Research

The aim of the research was to study the relationships between livestock farmers and the social, economic and political structures and how these factors influence livestock management especially the animal healthcare practices.

The objectives of the study were:

1. To examine the social, political and economic structures involved in the livestock management practices of communal stock farmers.
2. To examine (scientific and ethnoveterinary) knowledge that stock farmers have of livestock management with regards to disease prevention and control.

3. To determine the types and sources of veterinary medication stock farmers used and explain what influences the choice.
4. To explain what and how state veterinary services are disseminated.
5. To evaluate how state veterinary services influence stock farmers' practices in terms of disease prevention and control.

Having outlined the aim and objectives of the research, the next section describes the research methodology applied in this study.

Research Methodology

This section describes the research methodology used as well as the research techniques. The research methodology chosen for the study was an intensive case study approach which observed the characteristics of the community so as to thoroughly analyse diverse phenomena that interplayed within the community. Case studies are related theories used to avoid false impressions that result from generalisations (Blaxter, Hughes & Tight, 2007).

The intensive case study approach emphasises both historical[3] and qualitative[4] analysis (Babbie & Mouton, 2002). The intensive research method is concerned with processes, activities, relations and occurrences of events rather than statistics on particular circumstances. Hay (2000) asserted

[3] Historical analysis involves a study of activities that happened through time such as the development of knowledge in animal healthcare.
[4] Qualitative approaches involve the analysis of the way a variety of characteristics are patterned, or the relationships between objects (Thomas, 2003).

that this methodology explains human environments, individual experiences and social processes. Hoggart, Lees and Davies (2002) argued that qualitative research gives deeper insight into the research process through the use of many forms of data collection and analysis. Qualitative methodologies are characterised by a relational construction of knowledge between the researcher and research subjects. The relationship with the subjects results in a better awareness and comprehension of the actions, beliefs and perceptions of the subjects. Therefore, the selection of qualitative methodology is justified by the fact that qualitative methodologies were characterised by intensive approaches that explain the required information.

The qualitative research technique used was ethnography. Ethnography is a method or set of methods which involves the researcher participating in people's daily lives for an extended period of time, whilst watching, listening and asking questions on the activities undertaken (Hoggart et al., 2002; Thomas, 2003). The methods of ethnography applied in this research included participant observation and interviews. Interviews and participant observation techniques were used in the preliminary field research. Participant observation is used to understand the lives of people through involvement in their day to day activities. Narrative and secondary data analysis was also applied. The techniques thus relate to the triangulation approach where various techniques are used so as to overcome the disadvantages of another (Flowerdew & Martin, 2005; Hoggart et al.).

Geographical Information Systems (GIS) techniques were used to represent the area.

Face-to-face preliminary interviews were held during August and September 2008 with the Eastern Cape's Provincial Director of Veterinary Services, the state veterinarian, two Animal Health Technicians (AHTs) and a stock farmer. These were used to elicit information on the extent of state services provided, the problems faced and whether ethnoveterinary practices were acknowledged. The interview with the Director of Veterinary Services involved sending the interview questions over the internet prior to the interview meeting. The interview with the livestock farmer was held to ascertain the viability of the study. Response-guided approach questions were used (Thomas, 2003). The preliminary research also involved a visit to the Mpofu Training Centre. It is one of the centres where farmers in the Nkonkobe Local Municipality are trained in various agricultural practices such as livestock and crop production.

A pilot survey was undertaken between the months of August and September 2008 to identify the study area and the applicability of research techniques. The areas visited were Hertzog, Fairbairn and Philipton under the guidance of the AHTs who introduced the researcher to possible participants. The researcher with the assistance of one of the AHTs responsible for each of the areas, informed the prospective respondents about the nature of the research. The interview schedules were pretested on the livestock farmers. Basic

information about the area relating to the agricultural practices, type of livestock reared, types of medicines used, common diseases, herding strategies, the economic issues and the relationship between the AHT and the stock farmers was obtained. Other information relating to the livestock owners' knowledge, conceptualisations of disease and relationships with state agents was collected in the final interviews undertaken.

The preliminary interviews and field visits to different farming localities were undertaken to inform this study and to facilitate convergence between information garnered from the secondary data (literature review) and activities observed in Mbotyi. The data were collected between October and November 2008 and then between March and June 2009. The exact number of stock farmers in the study area was unknown because there were no accurate records. Based on the average of 35 cattle farmers that the AHT's records revealed as having dipped their cattle, a sample of 30 stock farmers and herdsmen was selected from Hertzog. The interviewees included males and females were people who owned or herded livestock. The sample was selected through the snowballing technique with the assistance of the AHT and contacts in the coloured community of Tamboekiesvlei (Rubin & Babbie, 2005). Interviews were also held with representatives from the Department of Agriculture's Directorate of Veterinary Services offices in Bisho and the state veterinarian in Fort Beaufort.

Narrative analysis was used to analyse the data collected using the stock farmers' interviews. It focuses on the sequence of events and how the past affects the future. It helped to understand the weaving together of different generations in the social and political structures present at each stage. Therefore, temporality is a factor that comes into play (Dauite &Lightfoot, 2004; Kvale, 2009). Secondary data analysis was adopted to enrich the study. This was based on documentary materials that included website materials, journal articles, minutes from meetings, state documents and publications. The secondary data included minutes taken from the information days and meetings that the AHTs held. These assisted in providing a better understanding and explanation of the livestock farmers' management practices and perceptions on animal healthcare. Past research has not delved into the various aspects related to livestock management and animal healthcare. These issues will be studied in this research. The next section justifies the location of the research.

Research Location

The study focused on Hertzog and Tamboekiesvlei, two neighbouring rural communities in the Nkonkobe Local Municipality of the Eastern Cape Province (Figure 1.). Tamboekiesvlei falls under Hertzog and is the area which mainly coloured people occupied. Therefore, the study area throughout this dissertation is referred to as Hertzog, but includes Tamboekiesvlei. The village is located in the Mpofu District and lies within the Kat River valley.

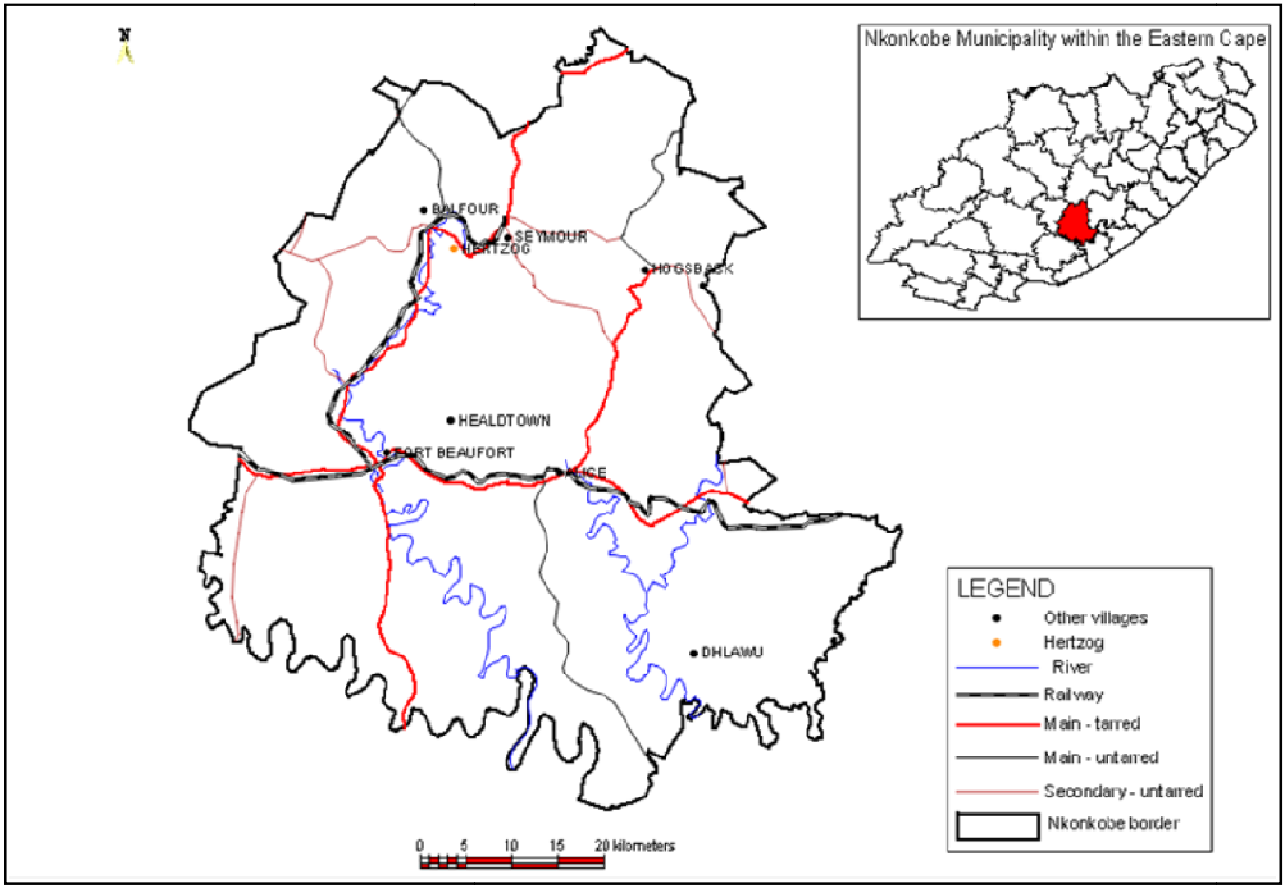

Figure 1. Location of Hertzog, within the Nkonkobe Local Municipality

This area lies south east of Balfour and north east of Fort Beaufort. It is part of the former Ciskei Homeland which was incorporated into the Eastern Cape Province in 1994. The Hertzog community had approximately 1 000 people (Nel & Binns, 2000). Hertzog lies in the foot hills of the Katberg mountains and upper catchment of the Kat River. There is moderately high rainfall (approximately 600 millimetres per annum) in this area and the valley soils are fertile. The Kat River provided an adequate supply of water throughout the year depending on the rainfall received. Land tenure was freehold compared to the surrounding areas where it is communal (Binns & Nel, 1999; Nel & Binns, 2000). Mostly coloured people and amaXhosa lived in Hertzog. The area had some state-funded community projects which involved irrigated farming that was part of the Hertzog Agricultural Co-operative (HACOP) (Binns, Hill & Nel, 1997; Nel & Binns, 2000). Most of the people in Hertzog were stock farmers. The livestock included cattle, goats and sheep and some stock farmers also had poultry.

Hertzog was selected for the research because it had stock farmers who had limited access to commercial veterinary products due to its location. The road from the village to the R67 was a gravel road and access to transport to the nearby towns (Fort Beaufort and Seymour) was difficult. The people in Hertzog travelled to Fort Beaufort which is about 35 kilometres away to buy food and medicine for their livestock from Umtiza Farmers' Corp and the pharmacy. This was the closest place from which they could access the veterinary products that the state did not provide. Thus the stock farmers had

limited resources and access to means to manage their livestock, and made the most of the available land and natural resources.

The stock farmers were also poor and depended on both the natural environment and state veterinary services. The stock farmers' main sources of income were urban incomes, state grants, pensions, profits from sales in spaza shops and stock sales. Spaza shops were small shops run from a room in the house where the owner resided which sold goods such as meat, cigarettes, snacks, flour, maize meal, sugar, salt and matches. The provision of state veterinary services also signified the great need for assistance in animal healthcare. The livestock farmers learnt most of their management practices from their parents but had developed these methods based on changes in the social, cultural, economic and political environment, in the provision of state services and the information they had been provided with. The knowledge that the livestock farmers had was also obtained from state veterinary agents, that is, the AHTs and state veterinarian. Therefore, both indigenous and scientific knowledge were applied in livestock management and animal healthcare.

The presence of both amaXhosa and coloured people also justified the choice of Hertzog as the study area. The racial differences between these groups produced some interesting findings. Thus, social interactions, economy and political issues were important influences on livestock management and

animal healthcare practices. The next section explains the significance of this study.

Significance of the Study

There has been extensive research on animal healthcare and ethnoveterinary medicine in particular (Dilshad et al., 2008; Dold & Cocks, 2001; Getchell et al., 2002; Jacob et al., 2004; Kamal & Kumar, 2004; Martin et al., 2001; McCorkle & Mathias-Mundy, 1992; Masika et al., 1997a, 1997b, 2000; Matekaire & Bwakura, 2004; Njoroge & Bussmann, 2006; Pieroni et al., 2006; Schillhorn van Veen, 1997; van der Merwe et al., 2001). Nevertheless, there was need for research in various places on how knowledge and methods of animal healthcare have changed over time. This study was important because of the challenges facing rural, small-scale livestock farmers even though there have been medical advances in veterinary science.

In most developing countries, conventional medicines were difficult to access and were not affordable to most communal farmers (Gehring et al., 2002; Getchell et al., 2002; Masika et al., 1997a, 2000). The withdrawal of most state veterinary services in South Africa after 1994 made it increasingly difficult for communal farmers to control diseases effectively. The livestock farmers consequently became heavily dependent on ethnoveterinary medicines (Masika et al., 1997a). Thus, the knowledge on animal healthcare was studied with interest as to how scientific knowledge and indigenous

knowledge interacted in a changing social, economic and political environment (Davis, 2001). It also helped to highlight information that had not yet been tapped from the indigenous people.

The project examined the broader issues relating to livestock, knowledge on animal healthcare, and state services as outlined in the aims. The CPB framework supported this approach. Structuration theory endorsed the study of the state (Woodley, 2003). This research was part of a broader research project being undertaken in various parts of South Africa. The information derived would add to the information on ethnoveterinary medicine, and intended on providing a better understanding of the background and reasons behind the use of ethnoveterinary medicine in animal healthcare.

This project also highlighted various aspects that have been neglected in previous research on ethnoveterinary medicine. Therefore, this research was significant in terms of the novel approach adopted to study livestock management in that it incorporated divergent, though related, conceptual frameworks which included structuration theory and the CPB framework. The next section outlines the structure of the dissertation.

Structure of the Dissertation

Chapter two outlines the contextual study area. It describes the setting of Hertzog within the Nkonkobe Local Municipality of the Eastern Cape Province.

The chapter describes the Kat River Valley within which Hertzog is located. It also briefly outlines the history of the study area from the 18th Century up to date.

Chapter three is the contextual background of the study. It describes general livestock management practices of stock owners. The veterinary history of South Africa and the Eastern Cape Province is included. The chapter also outlines South African veterinary legislation relating to the activities of the Department of Agriculture. The structure, organisation and general activities of the Eastern Cape Department of Agriculture are also included in the chapter.

Chapter four presents the findings of the research. The main themes include the demographic structure of the respondents, marketing channels, pastures and herding strategies, disease prevention and treatment methods and the state veterinary services.

The next chapter (five) discusses the findings of the research in relation to other research undertaken in the field and to the conceptual framework.

Chapter six is the Conclusion and suggests new research agendas.

CHAPTER II

THE KAT RIVER VALLEY AND HERTZOG

Introduction

Animal healthcare practices vary from place to place depending on the local structures such as physical, social, economic and political. The development of knowledge is based on history, demographic and biophysical factors hence these aspects of the study area were investigated (Berkes, 1999). This chapter begins with a description of the broader Nkonkobe Local Municipality and Kat River valley within which the study area, Hertzog, lies. Due to limited information available on Hertzog itself, most emphasis in this chapter is on the Kat River valley. Thereafter, a brief description of Hertzog village, including other agricultural activities and the Hertzog Agricultural Co-operative (HACOP), is presented.

Hertzog is located in the Eastern Cape Province of South Africa. It lies in an area known as the Kat River valley which is in the Nkonkobe Local Municipality. This area has a complex history whereby the amaXhosa, coloureds and the British settlers occupied the area. Hertzog is located in the part of the previously known Mpofu District that coincides with the Kat River valley. Mpofu District was

previously named the Stockenstroom District (Motteux, 2002). The district capital was Seymour and the secondary centre was Balfour (Hill & Nel, 2000). Mpofu District had a population of approximately 9 100 people in 1996. A survey undertaken in 1997 indicated that poverty levels were high, unemployment was at 42% and male absenteeism at 24% due to lack of employment opportunities locally (Nel, Hill & Binns, 1997). The next section describes the Nkonkobe Local Municipality and includes an outline of its location, and social and economic characteristics.

Nkonkobe Local Municipality

The Nkonkobe Local Municipality is located in the Eastern Cape Province which is the second largest province of South Africa (Figure 2). The Municipality falls under the Amathole District Municipality and is the second largest in the District. It covers an area of 3 725 square kilometres which is 16% of the Amathole District's area. The municipalities that surround Nkonkobe Local Municipality are Nxuba, Lukanji, Amahlathi, Makana and Ngqushwa Local Municipalities. Nkonkobe Local Municipality is divided into 21 wards and Hertzog is in ward seven of the Nkonkobe Local Municipality (Nkonkobe Local Municipality, 2008).

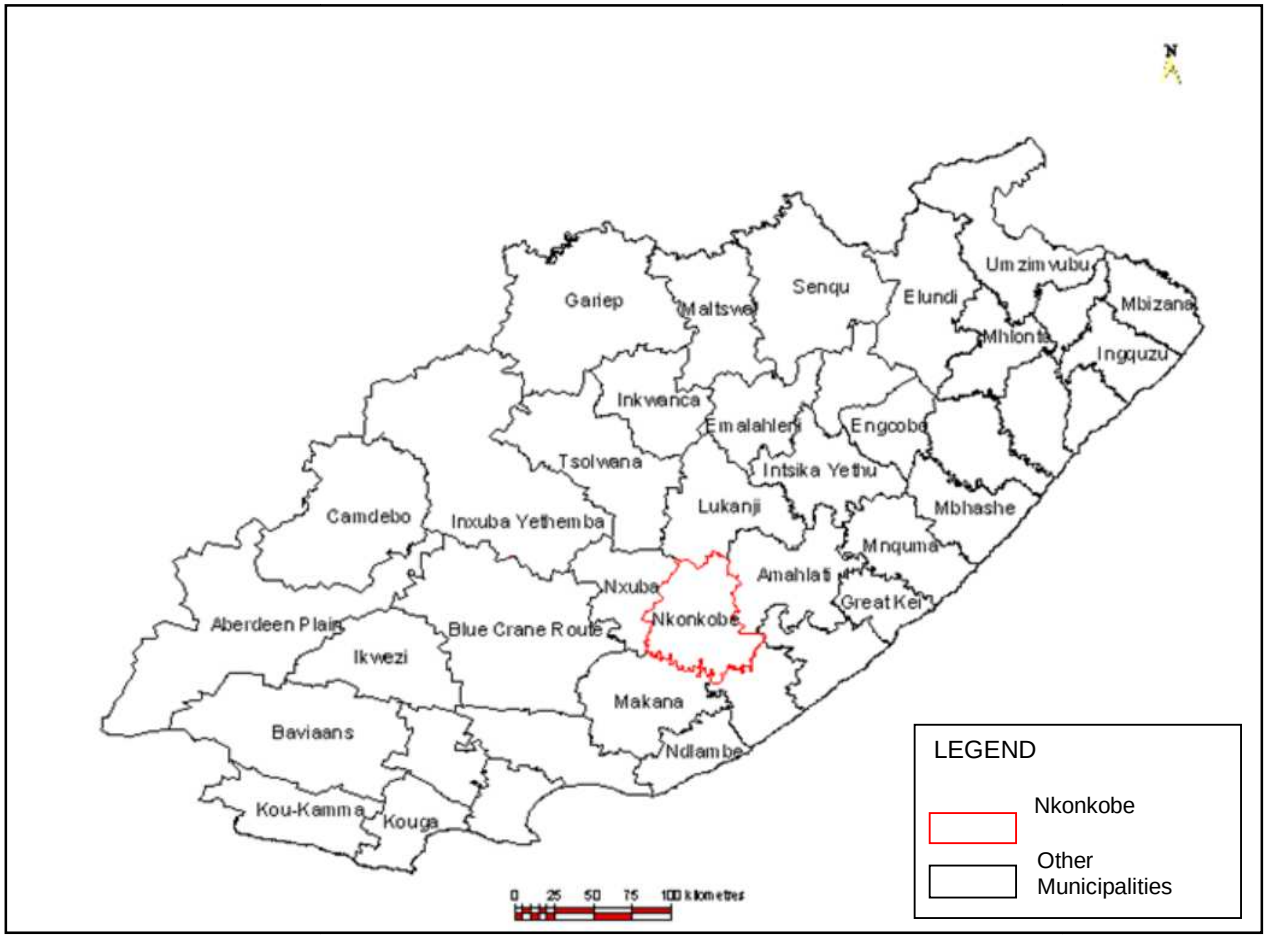

Figure 2. Location of Nkonkobe Local Municipality, within the Eastern Cape Province

Demography

According to the Department of Statistics (2001), Nkonkobe Local Municipality had a population of approximately 133 434, with 36 116 households. The majority of people (61%) resided in villages with only about 19% in urban settlements such as Alice and Fort Beaufort. About 20% of the population resided on farms and in scattered settlements (as defined in the census). The dominant racial group was the Africans (blacks) who made up 95% of the population. Coloureds made up 3%, Indians 0.4%, whites 1.2% and 'other' races 0.4%. There was a significant decline in the population levels between 1996 and 2001. There was a trend over the years of a declining population which was attributed to HIV/AIDS as there was no significant out-migration. The most dominant age cohort was people within the ages of 25 and 35. Approximately 40% of the people in the Nkonkobe Local Municipality were males and 60% females (Nkonkobe Local Municipality, 2008).

Infrastructure and Services

Most of Nkonkobe Local Municipality's roads were unpaved. However, as compared to other municipalities in the Eastern Cape, the Nkonkobe Local Municipality had more main tarred roads. Approximately 1 424,63 kilometres were untarred versus 192,82 kilometres of tarred road. Hertzog lies on the east of the arterial route (R67) that runs from Fort Beaufort to Queenstown. Most of the roads that linked the rural settlements were in a generally poor

condition. The main tarred roads link centres of economic activity such as Fort Beaufort and Queenstown and other major centres outside the Municipality. The Municipality also has rail transport facilities (Nkonkobe Local Municipality, 2008).

Ninety-three percent of the people in the Municipality had access to electricity in 2007/2008. Telkom land line telephones were available for use in both rural and urban settlements. People had access to cellular phones but the networks were inadequate in some rural areas. Storm water management was provided in the towns and former district centres, but had been poorly maintained. In the rural and urban settlements, no proper storm water management system was in place (Nkonkobe Local Municipality, 2008). There were major backlogs in development and service delivery.

Agriculture

Nkonkobe Local Municipality had both large commercial farms and, areas that black smallholders occupied. Whites owned most of the commercial farms. The main forms of agriculture were citrus production where irrigation schemes were in place and livestock (cattle, sheep and goats) farming. Citrus production, largely on commercial plantations, was the most important commercial crop. Citrus production was mainly undertaken along the Kat River banks in the middle and lower regions of the Kat River valley. Livestock farming was widespread on both commercial farms and small holdings. The

area had been exporting wool for over 150 years and this was still seen as a priority. There was a partnership between the Eastern Cape Department of Agriculture and the National Wool Growers Association. Recently, wildlife farming had quickly expanded on commercial farms.

In the former Ciskei Homeland area, some small scale crop farming and open grazing livestock rearing was still undertaken. The farming was mainly subsistence rather than commercial (Nkonkobe Local Municipality, 2008). In the upper catchment of the Kat River valley, there was limited market gardening practiced at HACOP. Livestock farming remained particularly important and much of it was on commonages or land held in customary tenure. The Mpofu Nature Reserve is at the upper Blinkwater stream. Small-scale community farming was also practiced in the lower and upper parts of the valley (Lerotholi, 2006).

The Kat River Valley

The Kat River valley lies in the foothills of the Winterberg and Amathole mountains. Kat River is a tributary of the Great Fish River (Figure 3.). The main tributaries of the Kat River are Fairbairn, Balfour and Blinkwater rivers. The catchment is about 80 kilometres long and covers an area of about 1 715 square kilometres (Holtzhausen, 2006; Farolfi, Gumede, Rowntree & Jones, 2008; Farolfi & Rowntree, 2005).

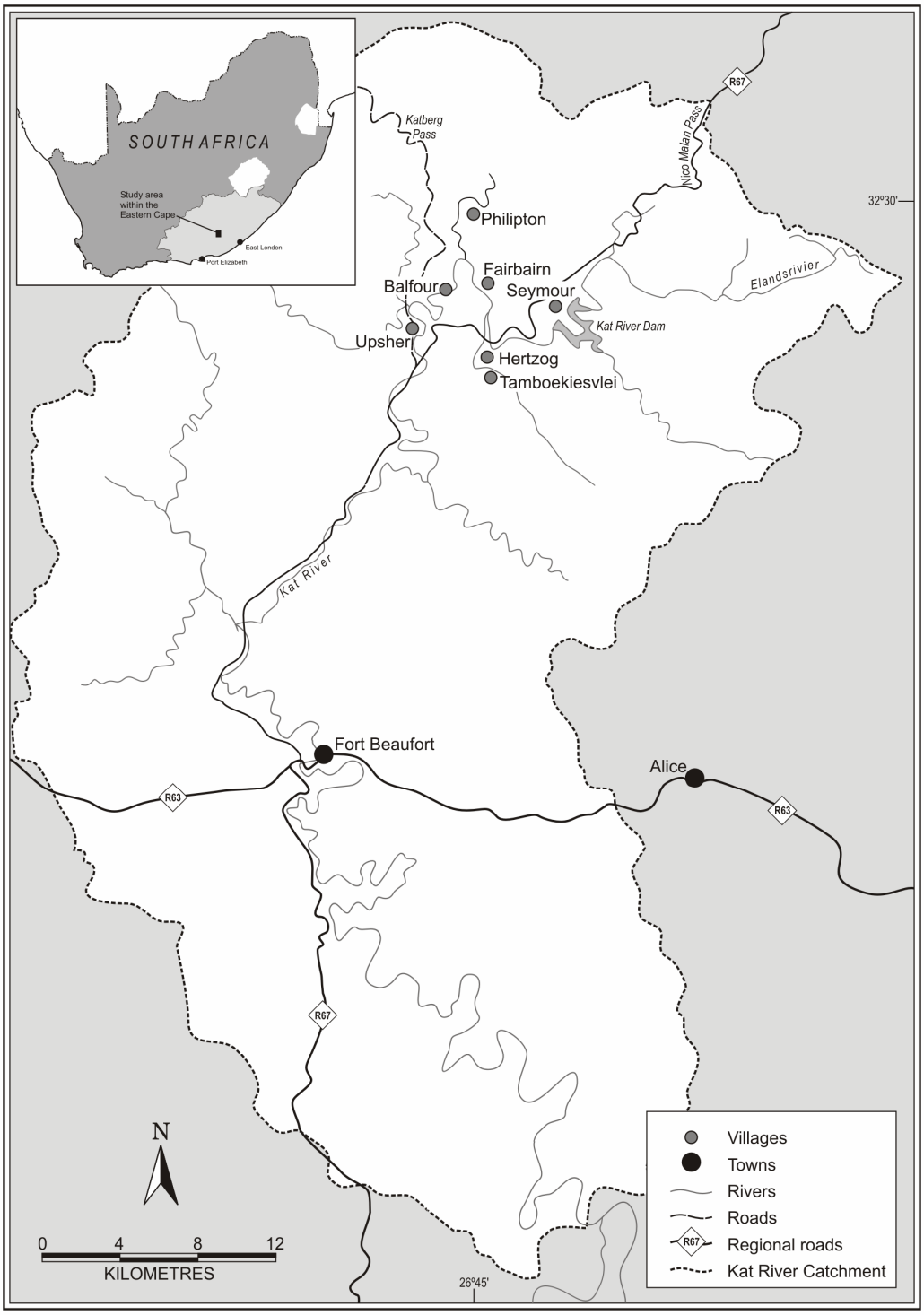

Figure 3. Kat River Catchment, Eastern Cape Province

Settlements in the Kat River valley tended to be along the main channel and tributaries because access to water was of central importance to agricultural communities (Lerotholi, 2006; Motteux, 2002). The Kat Dam was the main bulk water infrastructure and is located north of the catchment near Seymour. The dam was built for domestic and farming purposes and had a capacity of 24 million cubic metres in 1968 when it was built. Water in most villages was provided through communal or yard taps (Farolfi & Rowntree, 2005; Hill & Nel, 2000).

The climate was mild with summer temperatures ranging between 20 and 35 degrees Celsius and winter temperatures ranging between freezing and 20 degrees Celsius (Motteux, 2002). The area received an average rainfall of 600 millimetres per year (Nel & Binns, 1996) ranging from over 800 millimetres in the mountains to 400 millimetres in the lower valley downstream in Fort Beaufort (Farolfi et al., 2008; Lerotholi, 2006; Motteux). Thus, rainfall decreases from the upper reaches in the North to the lower reaches in the South. The climate can be described as sub-humid in the North to semi-arid in the South. These micro-climate zones are mainly related to the topography (Lerotholi, 2006). The vegetation changed from Eastern thorn bushveld where there was mainly Acacia karoo in the North to succulent thicket in the South where there is Acacia karoo, Euphorbia, Diospyros dichrophylla and Olea europaea (Shackleton & Shackleton, 2006). The next section provides an overview of settlement activities in the valley through time and the land ownership issues.

There is a dearth of geographical writings on the area, therefore, in order to provide background information on the study location, historical literature was used. Historical factors are also important in order to understand the background of the people in the study area. This section therefore provides a brief overview of selected elements of the history of the Kat River valley. It discusses the different land occupants of the area and the related land issues.

The land in the Kat River valley was always heavily contested due to the fertile and well drained soils (Motteux, 2002). Firstly there was contestation between the Khoikhoi and the amaXhosa, and later between the amaXhosa and the white settlers. Many farmers of all races and their families came into the area with high hopes. However, changes in politics and government destroyed the farmers' plans (Holtzhausen, 2006).

The amaXhosa and Dutch communities traded with each other. The amaXhosa exchanged cattle for tobacco, copper, iron and beads from the Dutch. At the same time, increasing numbers of the amaXhosa worked as cattle herders on the settler farms. Tension arose due to both lack of and poor compensation for, labour. Following the eastward migration of the colonists in the 18th Century, conflict arose between the amaXhosa and Dutch livestock farmers in the 1770s. This was when they encountered each other West of the Fish River. AmaXhosa and Dutch livestock farmers competed for land and pasture resources on the eastern frontier (Switzer, 1993). In 1780,

the Cape government proclaimed the Fish River as the boundary between the colony and the land of the amaXhosa (Giliomee & Mbenga, 2007).

In the 19th Century, white and coloured farmers who practiced a combination of intensive irrigated farming in the Kat River valley and extensive grazing of livestock in the plains and hills settled in the then Mpofu District. The area became well known for being one of the primary tobacco and citrus producing regions in the country (Nel, Hill & Binns, 1997). However, there were massive tensions between the mixed descendants of the Khoikhoi and the coloureds over the land. The Khoikhoi had settled in the valley whilst the coloureds' location along the frontier caused problems (Motteux, 2002).

From 1800 onwards, Ngqika, the head of the Rharhabe, and his followers began to settle in the Kat River valley. All land to the west of the Fish River was British colonial territory (Ross, 2003). In 1819, following further major conflicts, Lord Somerset, the Governor of the Cape, decided to move the colonial border eastward to the Keiskamma River. The land between the Great Fish and Keiskamma rivers (Figure 4.) became the neutral territory. It defined the old and new borders which were a buffer between the colony and the amaXhosa tribes. The land had thus been taken from Ngqika after Somerset decided to push the colonial border further eastward.

In 1822, the Cape government gave Chief Maqoma, the son of Ngqika, permission to settle in the neutral territory. The new governor, Sir Cole,

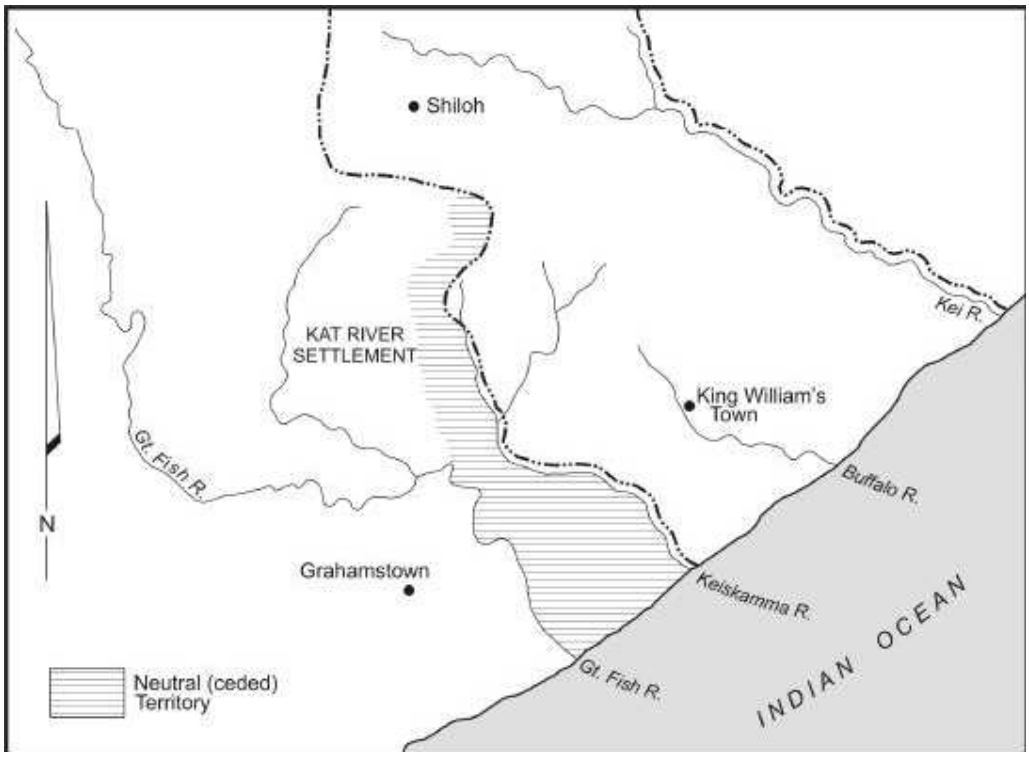

Figure 4. The Buffer Zone between the Fish and Keiskamma Rivers

(Source: Motteux, N.M.G. (2002). Evaluating people-environment relationships: Developing appropriate research methodologies for sustainable management and rehabilitation of riverine areas by communities in the Kat River valley, Eastern Cape Province, South Africa. Unpublished doctoral dissertation, Rhodes University, Grahamstown, South Africa)

decided to allocate the people of Khoikhoi and coloured ancestry a permanent settlement as reward for having fought in the frontier wars against the amaXhosa. Ordinance 50 of 1828 was passed which allowed the Khoikhoi and freed slaves who were collectively referred to as the coloureds to own

land. In 1829, Maqoma was expelled from the area because he was accused of having stolen Tamboekies' cattle. Khoikhoi settlers began to move in.

Within four years, 2 000 people had moved into the area and the numbers continued to grow. Hence, the Kat River settlement was established in 1829 and was in the area that had fluctuating borders of the earlier Cape Colony and later Ciskei Homeland (Bergh & Visagie, 1985; Kirk, 1973; Motteux, 2002; Ross, 1997, 1999, 2003).

The Cape Colony experienced a wool boom in the 1840s. By the mid-1840s, most of the productive land which lay along the border had been given to private individuals (Giliomee & Mbenga, 2007; Hill & Nel, 2000; Ross, 1999). However, new immigrants continued to move into the area because it was one of the only places where the Khoikhoi enjoyed some freedom and autonomy. White farmers were keen to move into the Kat River area along the frontier. The displacement of the coloured and Khoikhoi inhabitants of the area resulted in landless peasants who were forced to become labourers on the sheep farms. The whites gradually increased their occupancy of the area, and through the assistance of the colonial government's policies. The discovery of diamonds and gold further inland resulted in a temporary migration out of the Kat River valley (Hill & Nel; Giliomee & Mbenga).

There were many wars fought along the frontier due to tensions over land and, to a lesser extent, labour conditions. The two most well known are the

War of the Axe and Mlanjeni's War. The War of the Axe broke out in March 1846. There were Africans from the Mfengu tribe in the British army who comprised of about ninety percent of the Kat River settlement men (Ross, 1999, 2003). The African men were those who had left Xhosaland during and after the Hintsa War of 1835. They comprised of mainly mission converts and later on became the pioneers of commercial agriculture (Ross, 1999). The amaXhosa were again defeated in this war as in the Hintsa War.

Another war erupted in 1850 which coincided with a drought. This was Mlanjeni's War of 1851 which was also known as the Kat River rebellion (Kirk, 1973). This was the longest and bloodiest war fought on the Eastern Cape frontier in the 18th Century. The war was named after Mlanjeni, a prophet who was believed to protect the amaXhosa from the bullets of the Europeans. The amaXhosa took up arms and in contrast to the previous wars, a number of the Khoikhoi from the Kat River settlement joined the amaXhosa to fight against the British (Kirk). Initially the amaXhosa were quite successful as they had the assistance of the skilled Khoikhoi and used the natural vegetation cover to ambush the British forces and launch raids deep into the colony. However, the British army eventually made its way through Xhosaland, killing people, burning crops and seizing cattle. After the amaXhosa had surrendered, the British army seized most of the amaXhosa's land and installed magistrates so as to bring 'civilisation'. In 1855, lungsickness hit the amaXhosa cattle, killing two-thirds of the cattle in some areas and in other areas, entire herds. The situation was worsened by the cattle killing of 1856-7. This led to the

amaXhosa moving to the Cape Colony in search of employment (Bundy, 1979; Ross, 1999).

The aftermath of the wars changed land ownership significantly. For example, exclusive coloured settlements along the Kat River valley ended. Half of the coloured farmers were displaced as punishment for participation in the rebellion and white settlers began to dominate the area. Eventually, most land was confiscated from coloured settlers regardless of whether they participated in the war or not. All farmers had to lay claims for the return of their land and up to half of the original settlers lost their land either because they were judged rebels or were absent. It was difficult to obtain title deeds and friction continued between the white and coloured inhabitants (Motteux, 2002).

After the 1850s, the situation was relatively stable with white Kat River settlers claiming or purchasing land. In 1905, the Boedel Erven Act was passed. It stated that the 1836 to 1865 settlers of Kat River who had not received title deeds would get land on condition of there being at least 300 roods (303514.2 square metres). Another condition was that 75 percent or more of the settlers in a particular location were in agreement. The settlers could subdivide the land of the commonage among themselves. Land of more than 1 800 square metres was transferred to white settlers. This resulted in a shift from small, intensive farming practices to much larger sized farms, effectively displacing the coloured population except for those residing in Tamboekiesvlei who

occupied land given to them as a result of their military contributions. The deeds records show that coloureds, whites and the amaXhosa farmed this area up to the 1870s (Hill & Nel, 2000; Motteux, 2002).

In the early 20th Century, some amaXhosa returned as farm labourers and some retained title deeds to land. The 20th Century was an era of transition towards capitalist agriculture in South Africa (Bundy, 1979; Seethal, 1988; Zeleza & Eyoh, 2003). White settlers owned most of the country's land and employed black farm workers. Restrictions of Africans to access to land and the need to pay taxes forced them to work for wages. Passes and vagrancy laws that restrict mobility constrained the freedom of the workers. Agricultural production was increased to meet South Africa's demands and that of the external markets. Rural blacks fought to maintain control of their land and to regain access to land that whites had taken and to recover and build their herds of cattle. Black farmers competed with the white farmers for land, labour and markets, while white farmers competed with mine owners for labour (Zeleza & Eyoh).

In 1913, the Land Act (No. 27 of 1913) was passed. This Act defined a small portion of the country's surface area for black habitation. This area was approximately 7% of the country. The Native Trust and Land Act of 1936 increased the area set aside for Africans to 13.6%. In terms of these Acts, certain sections of land along the Cape Colony's eastern border and in other places were set aside for African occupation. Africans were not allowed to buy

or sell land outside these areas. These areas were known as Homelands or Bantustans and were overpopulated and poor. Insufficient land for grazing, cultivation and poor access to transport and markets as well as the loss of males to migrant labour constrained farmers (Bundy, 1979; Zeleza & Eyoh, 2003). The area along the old Eastern Cape frontier was the Ciskei homeland. Ciskei and Transkei were the two Homelands of the amaXhosa people (Hill & Nel, 2000; Motteux, 2002). The Kat River valley was in the northern half of the former Ciskei Homeland. In 1994, the Ciskei Homeland became integrated into South Africa (http://www.ciskei.com/).

In the 1950s and 1960s there was massive relocation in the Ciskei. White farmers sold their land to the South African Development Trust, which gave the land to mainly Xhosa speaking people. These people had been forcibly removed from the largely white owned farming districts. Others had moved in the hope of finding land. Ciskei was declared a self-governing territory in 1971 in terms of the National States Act of 1971 (Wagener, 1988). In 1975, some formerly white districts in the Ciskei were exchanged for small, fragmented portions of Ciskei according to consolidation proposals. White owned land in Mpofu was purchased to create a more consolidated homeland (Motteux, 2002).

Until the early 1970s, most of the Kat River valley area was commercial farmland belonging to the whites. The creation of homelands during the apartheid era resulted in the inclusion of large portions of the Kat River area

into the Ciskei. Although most of the land had been set aside for agricultural purposes, much of the land was never allocated, and government officials laid claim to it. An agricultural development corporation called ULIMCOR took over several of the previously existent commercial white farms (Farolfi et al., 2008; Farolfi & Rowntree, 2005; Shackleton & Shackleton, 2006). It was meant to provide farming assistance to interested black farmers (Motteux, 2002). Those who were selected to take over land were rarely given title deeds and very little support was provided. Land tenure is still an issue today and many of these farms have been abandoned (Holtzhausen, 2006).

In the late 1970s, the blacks seized the land, leading to out-migration of the white farmers. The majority of coloureds were forced to move to other areas of the Eastern Cape (Nel et al., 2000). However, some coloured workers and their families remained on the land, such as the coloureds in Tamboekiesvlei. The community that remained possessed farming skills and assets that included abandoned agricultural infrastructure (Mokgope, 2000). There was no clear government policy on land and although the workers lived in the valley, they were not given access to farming (Nel et al.).

Ciskei became ‘independent’ from South Africa in 1981. In 1984, Mpofu District was transferred to the ‘independent’ Ciskei Homeland and subsequently, all agricultural production ceased with the exception of a few state farms. The black and coloured community was denied access to the land for farming. Ownership of the land belonged to the state which did not

use the land to benefit of the local community. Most of the land lay fallow and was given to Ciskei politicians or their supporters and some was leased to white farmers. The Kat River valley was then referred to as `the East Cape valley that died' (Binns & Nel, 1999; Motteux, 2002). In the late 1980s, the Ciskei Department of Agriculture tried to reestablish large scale tobacco farming in the valley. Tobacco and potatoes had been farmed during the early 1990s for a short duration through private agriculture that the Ciskeian administration encouraged. However, both schemes failed most likely due to the lack of involvement of the local community (Nel et al., 1997).

By late 1993, most of the land in the valley had not been farmed for almost thirteen years. This drastically reduced the local employment opportunities which increased poverty levels and encouraged male out-migration in search of work. There was also overpopulation and a lack of basic services. However, the community of ex-farm workers possessed valuable assets, in particular, farming skills and experience, and also the abandoned land and reusable infrastructure. These positive aspects provided a strong potential base for community-driven Local Economic Development (LED) (Binns & Nel, 1999). Economic development was needed to help the area recover from the repression and unrest of the past (Hill and Nel, 2000; Motteux, 2002).

A relatively uniform community which was socio-economically stable remained after the out-migration of the former landowners. There was also an absence of any marked class distinction and privilege. This assisted in the

formation of a cooperative operating on principles of equality rather than race and class. These positive aspects helped make the Kat River valley unique in relation to other former 'Homeland' areas, and provided a potentially strong base for community-driven development (Nel at al., 1997). Hence, the Hertzog Agricultural Co-operative (HACOP) was developed based on the strengths of the area. HACOP is discussed in detail in the next section.

Hertzog Agricultural Co-operative (HACOP)

The Hertzog Agricultural Co-operative (HACOP) was established in August 1984. It practiced intensive market gardening under irrigation but has since become less productive. At establishment, there were 83 members in the Co-operative. The majority of HACOP farmers were women and many of them were successful. The farmers were mainly from Hertzog and Fairbairn with a few from Philipton. They were former workers on the commercial farms and are well experienced (Hill & Nel, 2000; Nel & Binns, 2000). HACOP jointly owned and administered ploughing and harvesting services and maintained the irrigation pumps and piping. Farming was mainly labour intensive, except for the use of tractors and a diesel powered pump. Through market gardening, cabbages, tomatoes, potatoes, spinach and pumpkins were grown as well as a few fruit trees (Nel et al., 1997).

In order to finance the Co-operative's activities, a commercial loan was secured from the Ciskei Agricultural Bank. The community was granted

temporary access to the land but ownership remained in state control. The state allowed the local farmers to work on the land for the next 10 years while it decided on how to deal with the ownership of land. This has not yet been resolved and the Department of Land Affairs has started to resolve the issue of land ownership. Access to land increased income levels in the area. The HACOP agricultural scheme managed to change the economy of the area with annual profits of up to R3 000, per quarter hectare, for each growing season having been recorded in the past. This was quite significant since most families had been dependent on a single pension fund. Thus, income and quality of life improved (Nel et al., 1997).

The HACOP agricultural scheme did not result in major infrastructure developments. Transport and basic service provision have not improved. The only development was the community hall which was built using funds from the Independent Development Trust (Hill & Nel, 2000). The absence of a reliable external market as well as drought which resulted in low production levels hampered the scheme's progress (Nel & Binns, 2000). In the Nkonkobe Municipality Integrated Development Plan (IDP) budget for 2007 to 2012, the HACOP irrigation scheme was identified as one of the schemes that needed to be revived. There was specific reference to the Hertzog and Philipton area for which funding was to be sourced (Nkonkobe Local Municipality, 2008).

The next section studies the Hertzog village which is the study area. Included is a brief explanation of land tenure issues in the area.

Hertzog

Hertzog is situated in the foothills of the Katberg mountains and in the upper catchment of the Kat River. The main tarred road (R67) cuts through Hertzog (Figure 5). The village is a few kilometres from the Mpofu Training Centre where farmers are trained and assisted with agricultural practices. There were two primary schools in Hertzog along the arterial road near the turn-off to the village and the other was on the hilltop. The inhabitants of the villages referred to the two schools as the coloured school and the Xhosa school, respectively. This was so because the coloured school mainly had coloured learners and educators whilst the Xhosa school had only amaXhosa learners.

The approximate population of Hertzog in 1996 was 1 000 people. Both amaXhosa and coloured people occupied the area. A survey undertaken in 1996 found that the maximum number of people in a household was 17 and the minimum was one. The average age in the community was 23 years. Gross monthly income ranged between zero and R3 000 whilst a majority of the population received between R250 and R1 000 a month. Pensions contributed around 35% of incomes (Motteux, 2002).

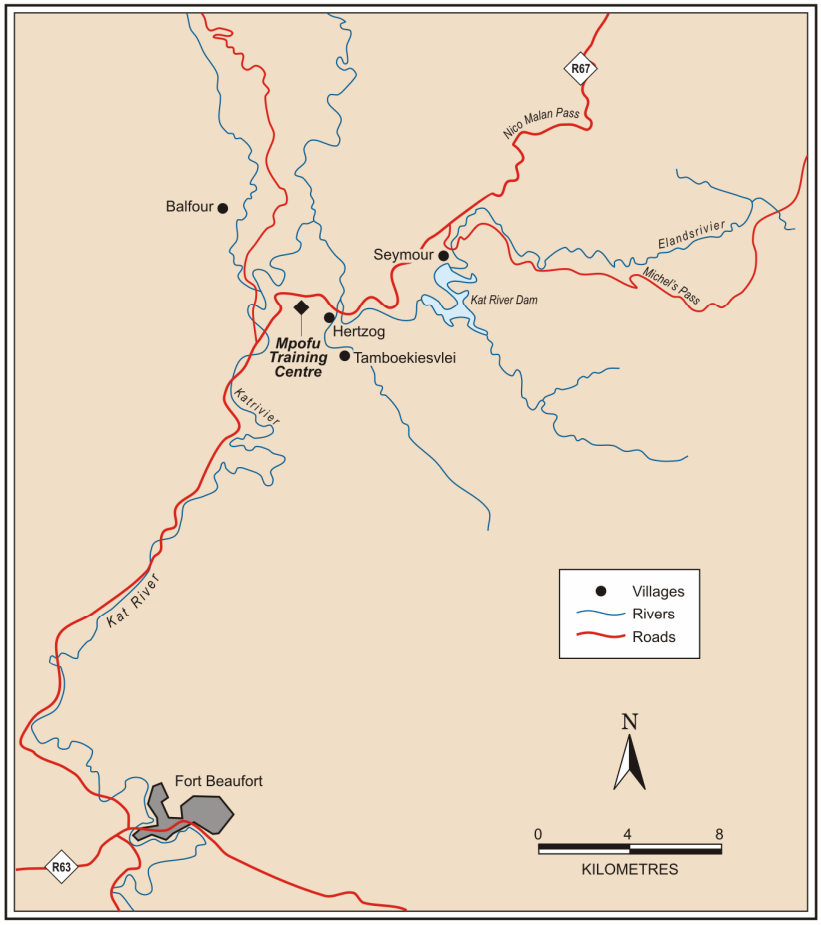

Figure 5. Location of Hertzog and Tamboekiesvlei,

Eastern Cape Province

Surveyor-General Hertzog planned both Hertzog and Fairbairn as settlements between 1831 and 1834. These settlements were laid out in the form of dispersed clusters of approximately six acres each in size and shared a large commonage. For much of the 19th Century, Hertzog was the district capital. However, Seymour later on became the district capital. Whites and some coloured people lived in the area. Coloured people lived in the upper region,

that is, Tamboekiesvlei, whilst the whites lived in the lower reaches (Motteux, 2002; Nel et al., 1997).

Between 1950 and 1970, farmers recognised that Hertzog had soil and topography with a high potential for production. At this time farmers practised a combination of intensive irrigation farming and livestock production. AmaXhosa and coloured people lived in the area at this time. They worked on the commercial farms even though wages were low as it was the only means to an income and to secure a home. The rainfall was highly variable, with irrigation from the Kat River supporting cultivation. The area became a focal point resulting in the continued development of the settlements (Motteux, 2002; Nel et al., 1997). Although there were currently various state services provided, including those that the Mpofu Training Centre provided to livestock owners in the area, there were still problems faced in animal healthcare. These included social, economic and political issues. There was a cattle dipping tank in Hertzog next to the Kat River. The stock farmers from both Hertzog and Tamboekiesvlei used the same dipping tank.

The British allocated Tamboekiesvlei to a German man named Christiaan Groepe. The British did this to reward him for his loyal service as a soldier in the British army that fought in the Kat River rebellion of 1851. He settled in Hertzog with 44 followers along the main Kat River. He married a Xhosa woman and had 10 children. The land was later shared amongst the children (Motteux, 2002).

The great grandson of Christiaan Groepe stated that:

> Groepe (great grandfather) married a slave. The Groepe family was the first coloured family in the Eastern Cape. They got to Kat River in 1829 and because of the services that the grand grandfather had rendered to the British government (Cape Colony), they gave him 2 000 hectares of land in the area which is the land from the road to Groepe's kloof. In the last will that he submitted to the office of the Cape in September 1886 (the Year that he died), he (the great grandfather) made 10 allotments of 13 hectares each to each of his 10 children. These children were both sons and daughters. He said the land must not be sold especially to an outsider (H. Groepe, personal communication, May 19, 2009).

The Hertzog area was culturally mixed with whites, coloureds and amaXhosa living there before the forced removals of blacks and coloureds. The amaXhosa and coloureds were relocated to Ciskei which was created in terms of the Native Trust and Land Act of 1936. The implementation of the National States Act of 1971 resulted in many white and coloured families leaving the Hertzog area (Grahamstown Resettlement Committee Newsletter, April 1988). One amaXhosa resident of Tamboekiesvlei stated that the coloured people moved away when the Ciskei government took over but some coloured people chose to stay and some of those that left returned in 1986 (M. Makhapela, personal communication, May 19, 2009). A coloured

woman from Tamboekiesvlei who moved to Friemersheim in 1987 and then returned to Tamboekiesvlei in 1990 stated that, “there were a lot of coloureds in the area but since 1980, due to the Ciskei government, many left even though they had not been asked to leave. The conditions made it uncomfortable to stay” (A. Pringle, personal communication, May 19, 2009).

Many amaXhosa remained in Hertzog and these were mostly former white farm workers and had no land tenure. A few coloured families who refused to move caused conflict in the area. The remaining amaXhosa and coloured people were unable to access land for farming, thus the land became fallow (Motteux, 2002). Tensions are still present in the community over land ownership, that is, whether land belongs to the amaXhosa or the coloured people. A Daily Dispatch newspaper in 1998 reported that the Department of Land Affairs (DLA) and the Land Claims Commission (LCC) was involved in the processing of restitution and redistribution claims for the Hertzog/ Tamboekiesvlei area (“Seymour land,” 1998). The process was still underway and no land had been redistributed by July 2009.

Conclusion

As a whole, there was poor development and service delivery in the Nkonkobe Local Municipality. Livestock farming was common and widespread and has been taking place in Hertzog and some parts of the

Municipality for many years. This chapter therefore presented a physical and historical background of the Hertzog and the wider area in which it lies.

The contextual background of Hertzog was deeply embedded in the history of the Kat River valley which has a complex history of land contestations. This chapter provided an understanding of how the bi-racial society developed in the study area (Aitken & Valentine, 2006; Johnston & Sidaway, 2004). The settlement of the Khoikhoi, amaXhosa, Dutch, Germans (such as Groepe) and British in part accounted for the mixed descendants of the people currently resident in the area. The amaXhosa and coloured people were oppressed and marginalised socially, economically and politically. These groups were forced to labour on white farms, but this enabled them to gain experience and knowledge on scientific agricultural aspects.

The CPB framework recognised that history influences the development of knowledge. Knowledge changes over time as a result of societal, economic and political changes (Berkes, 1999; Woodley, 2005). Most of the current livestock farmers hold vast knowledge on livestock and animal healthcare derived from interactions with each other. The knowledge included both scientific and traditional knowledge. The next chapter explains the contextual background of the study to provide a better understanding on animal healthcare and state veterinary services.

CHAPTER III

VETERINARY SERVICES

Introduction

Livestock owners manage their herds in a setting where various social, economic, political and physical structures determine the practices used (Stroebel, 2004). This chapter provides a thematic background to the study and a framework for the broader understanding of the specific elements of ethnoveterinary practices in the study area. The themes include the veterinary history in South Africa and in the Eastern Cape Province, and veterinary legislation and the Eastern Cape Province's state veterinary services. The history of the Eastern Cape Province's veterinary services includes information obtained from annual reports dating back to the 2001/2002 Financial Year. These themes were discussed in order to understand the background of veterinary services in terms of how the Directorate of Veterinary Services which is the institutional structure, was established and how legislation guides the actions of the state agents in animal healthcare. The next section describes the development of veterinary services in South Africa.

Veterinary History and Policy in South Africa

Veterinary services are the assistance that professionals offer to animal owners in relation to maintaining optimal animal health. These services include medical care, information and training on livestock management, laboratory testing of medicines and diseases, monitoring disease risk, controlling outbreaks and promoting hygiene at abattoirs. The developmental history of veterinary services as policies changed in South Africa is explained below.

Veterinary services were first established in 1870 in South Africa with the intention of carrying out activities to protect and promote the health of both humans and animals. The services were developed in Natal after an outbreak of babesiosis there. A colonial veterinarian was appointed in 1874, and based in Pietermaritzburg. However, little progress was made in terms of animal disease control because the causes of babesiosis, anthrax, blackquarter and African horsesickness were still unknown. All these diseases were believed to be one disease which manifested itself in different forms (www.nda.agric.za/vetweb/).

In 1876, the Cape of Good Hope appointed a colonial veterinarian, Professor Branford. He was able to distinguish between lung sickness, Tuberculosis, glanders, sheep scab and mange. However, diseases locally known as

galzieckte (gallsickness), *vermeerzieckte* (vomiting sickness), *lamzieckte* (botulism), *dikkop* (tribulosis), *meltzieckte* (anthrax) and *hartwater* (heartwater) were still not adequately explained in scientific terms. Branford advocated the general strategies of isolation and slaughter to cope with disease – policies that had been pursued in England to cope with rinderpest or cattle plague in the 1860s. He felt that animals in the Cape suffered from inadequate nutrition, and that veld and fire degradation were leading to disease. These ideas, already well established in the Cape, remained influential in the explanation of disease (www.nda.agric.za/vetweb/).

In addition to the indigenous pests and plagues, a number of animal diseases were introduced into South Africa from overseas. Foot and mouth disease which was in the then Bechuanaland (now Botswana) and Griqualand West (part of Northern Cape) spread to the Cape in 1893. This incidence together with the rinderpest epidemic of 1896 and the East Coast fever of 1902 resulted in the death of hundreds of thousands of animals, causing the country great damage. The early veterinary research and prevention was largely designed to cope with these major epizootics (www.nda.agric.za/vetweb/).

During 1908, shortly before the Union of South Africa was formed, the Veterinary Departments of the Cape Colony, Transvaal, Natal and Orange River Colony merged to form the Veterinary Services of the Union of South

Africa. The aim of the Veterinary Services was to fight against the animal disease problems of the country. In order to achieve this, it was necessary to have a research institute in addition to a government organisation. The government organisation had the legal competence, funds and staff to control and eradicate existing diseases and to prevent diseases from being imported from abroad. The Veterinary Services Department was established to promote animal health and increase livestock production (www.nda.agric.za/vetweb/). Therefore, the Onderstepoort Veterinary Institute was opened in Pretoria and performed research on veterinary practices, livestock diseases and medicines. Both white farmers and Africans benefitted from veterinary developments because the state felt that both parties had to be able to make a living from the land. Another reason was that the health of livestock from one party depended on the health of livestock from the other (Brown, 2005).

In 1910, the Veterinary Department received the largest allocation of state funds which reflected the importance of livestock in the country's economy. Many diseases were unique to South Africa, hence the European trained researchers often encountered new diseases. The training of veterinarians in South Africa was officially launched in 1920 at the Transvaal University College (now University of Pretoria) and the first students qualified in 1924. The large distances between farms, as well as the poverty of many farmers, prevented the emergence of private veterinary services until the 1940s.

African owned cattle were often used for testing particularly due to potential compensation claims linked to the white farmers (Brown, 2005). Veterinary Field Services was a separate division but after Dr. Theiler's retirement in 1927, the new Chief Director restructured the Veterinary Research and Veterinary Field Services. The divisions were then jointly known as the Veterinary Services Branch of the Department of Agricultural-Technical Services (www.nda.agric.za/vetweb/).

Prior to 1994, the dual agricultural system had white commercial farmers who were well developed as a result of benefits derived from the apartheid government. The black farmers depended on the state for finance, land, infrastructure and delivery of services. The majority of these black farmers were part of the homeland system which had been deprived of the necessary resources for viable agriculture. In 1994, each of South Africa's nine provinces established its own Department of Agriculture. The provincial departments, funded through the provincial governments, determined their own objectives whilst considering national objectives. The new government introduced a socio-economic policy framework known as the Reconstruction and Development Programme (RDP). The RDP programme was to redistribute wealth through interventionist state policies so as to combat poverty and unemployment. Based on the principles of the RDP, the Department of Agriculture developed a new concept known as Broadening Access to Agriculture Thrust (BATAT). The focus was on financial services,

information and technology transfer, marketing, human resources development and delivery of services. BATAT principles were based on the fact that some people were previously excluded from state agricultural services for many years. BATAT aimed at broadening access to education and training, and agricultural services to previously disadvantaged men and women of all races (Xingwana, 2006a; 2006b).

In 1996, the South African state shifted its macro-economic policy to a structural adjustment programme called Growth, Employment and Redistribution (GEAR). GEAR was aimed at achieving equity and redistribution through economic growth and job creation. This resulted largely in the abandonment of the key principles and policies of the RDP and the adoption of neo-liberal economic principles including privatisation, subsidy removal, downsizing of the public sector; and encouragement of small black entrepreneurs. The Department of Agriculture's budget was cut resulting in fewer free veterinary services offered to communal farmers (Isaacs, Hara & Nielsen, 2005; Organisation for Economic Co-operation and Development Agricultural, 2006).

After 2001 the Department of Agriculture introduced a programme called the Land Redistribution for Agricultural Development (LRAD). The LRAD programme provided emerging farmers with access to state owned land and the leasing of land with an option to purchase. In February 2006, the

Accelerated Shared Growth Initiative for South Africa (AsgiSA) was launched. AsgiSA focused on the need to provide assistance to emerging farmers through high-level skills development. One of its key projects was livestock development (Xingwana, 2006a) but unfortunately not much was done in terms of this policy for veterinary services.

In 2008, the Veterinary Services Directorate was run under the National Department of Agriculture. In 2009, the Department of Agriculture changed to the Department of Agriculture, Forestry and Fisheries as announced in the Government Gazette No. 32387 of 7 July 2009. However, since this research was undertaken mainly prior to this, the Department will be referred to as the Department of Agriculture. There is legislation that defines the activities of the Veterinary Services Directorate (www.nda.agric.za/vetweb/). This legislation is outlined in the next section. The next section also describes the legislation related to the veterinary professions involved in state activities.

Veterinary Legislation

This section describes the Acts used in the Veterinary Services Directorate of the Department of Agriculture. The Veterinary Services Directorate bases its activities on three main Acts which are the Animal Diseases Act of 1984, the Meat Safety Act of 2000 and the Animal Identification Act (O. Letuka, personal

communication, August 7, 2008). The Veterinary and Para-Veterinary Act of 1982 which defines the roles of veterinary professionals is also discussed.

The Animal Diseases Act of 1984 mandate is to provide for the control of animal[5] diseases and parasites so as to promote animal health and related matters. Animal disease refers to any disease that impedes the normal bodily functions of the animal due to any protozoon, bacterium, virus, fungus, parasite or other organism. Animal diseases which do not occur in South Africa are regarded as controlled, notifiable diseases. Controlled diseases are any disease which has a prescribed control measure. All controlled animal diseases are notifiable but not all notifiable animal diseases are controlled (Animal Diseases Act, 1984).

The AHT is expected to notify the state veterinarian when a controlled or notifiable disease is observed in an area. This is done so as to control the spread of disease and minimise loss due to death. According to the Animal Disease Act of 1984, the notifiable diseases are lumpyskin disease, Rift Valley fever, blue tongue and swine erysipelas. These diseases are also classified as notifiable because when detected, the animal owner or AHT has to notify the Veterinary Services Directorate.

[5] In this Act, animals refer to any mammal, bird, fish, reptile or amphibian.

The controlled diseases[6] are African horsesickness, African swine fever, anthrax, Aujesky's disease, bacterial kidney disease, bovine brucellosis, bovine tuberculosis, bovine spongiformencephalopathy, contagious bovine pleuropneumonia, contagious equine metritis, corridor disease, dourine, foot and mouth disease, hog cholera, infectious haematopoietic necrosis, infectious pancreatic necrosis, glanders, Nagana, Newcastle disease, paratuberculosis (Johne's disease), psittacosis and ornithosis, rabies, rinderpest, salmonella enteritidis, scrapie, sheep scab, swine vesicular disease, vesicular stomatitis and viral haemorrhagic septicaemia ("Controlled and notifiable diseases", 2000).

Under Section 11, animal owners are required to take all precautions necessary to prevent the infection and spread of any animal disease. When any disease affects the animals, the owner is required to apply the prescribed treatment. A veterinarian who discovers the disease is required to report the case to the Director of Veterinary Services through the local Department of Agriculture office. If the disease is one of the state controlled diseases, the animal owner as well as the veterinarian are required to immediately report the case to the Director of Veterinary Services (Animal Diseases Act, 1984).

[6] Diseases such as contagious bovine pleuropneumonia, rinderpest, scrapie, Aujesky's disease, Infectious haematopoietic necrosis, bacterial kidney disease, infectious pancreatic necrosis ,Viral haemorrhagic septicaemia, vesicular stomatitis, swine vesicular disease, hog cholera and contagious equine metritis have either been eradicated or do not occur in South Africa but are still regarded as Controlled Animal Diseases according to the Animal Disease Act of 1984 ("Controlled and notifiable diseases", 2000).

Under Section 13, the Department of Agriculture is responsible for providing advice on animal healthcare and to perform veterinary services for controlled diseases. Services are charged for, at prescribed rates. State veterinary services are not charged for if the service supports the interests of the livestock industry, when there have been abnormal mortalities or when there is an unusual animal disease. If the resources such as quarantine facilities or medication are unavailable, the state is not obliged to render the service (Animal Diseases Act, 1984).

The Meat Safety Act of 2000 is designed "to provide for measures to promote meat safety and the safety of animal products; to establish and maintain essential national standards in respect of abattoirs; to regulate the importation and exportation of meat; to establish meat safety schemes; and to provide for matters connected therewith" (Meat Safety Act, 2000, p. 2). This Act ensures that meat supplied to the consumer is nourishing and free of disease.

According to the Animal Identification Act of 2002, animal owners are required to apply for registration of an identification mark and to mark their livestock in the prescribed manner in order for identification purposes (Animal Identification Act, 2002). This enables livestock to be differentiated and avoids squabbles over ownership when livestock from different owners mix. It also helps livestock owners to claim when their livestock gets lost and impounded.

The Veterinary and Para-Veterinary Act of 1982 defines the roles of the AHT. The AHT is supposed to inspect all livestock, game and poultry in disease control areas, at auctions, sales and during routine farm visits and inspections. Other responsibilities include implementing vaccination and parasite control programmes, and to perform meat and abattoir inspections. The AHTs are also required to carry out extension services including training and education, to collect specimens for research purposes and to provide primary healthcare services to resource poor communities (Veterinary and Para-Veterinary Act, 1982).

Therefore, the above mentioned Acts are the legislation that defined the structure and activities of the Veterinary Services Directorate. The following section outlines the veterinary history of the Eastern Cape Province.

Veterinary History of the Eastern Cape Province

In this section, the veterinary history of the Eastern Cape Province is given, beginning from the 19th Century up to 2009. It discusses the economic and political structures than interplayed in the history of the veterinary services. Budgetary information from the 2001/2002 Financial Year up to 2009 is also included.

In the 19th Century, stock farmers treated their livestock themselves and did not seek veterinary advice as individual animals were not seen to be of significant value. During the 20th Century, the Veterinary Services Department initiated a tick control programme to eradicate East Coast fever which had entered into the Transkei through illegal stock movement. Transkei was a field laboratory to test the vaccine developed at the Onderstepoort Veterinary Institute. However, this vaccine was not effective. When it was established that the disease was tick borne, regular dipping to kill the ticks proved to be the most effect means of control. East Coast fever was largely under control by the 1920s and eventually eradicated in 1955 through regular dipping. The dipping of livestock was compulsory for both white and African farmers. It remained compulsory in the homelands because animal health authorities viewed cattle from the homelands as a source of infections. The Department hoped to reduce and possibly eradicate ticks in these areas (Brown, 2005; Masika et al., 1997a).

During the 1970s, management of the dipping service was handed over to the former homeland (Ciskei and Transkei) administrations. In Ciskei, stock farmers paid a fee for each animal that was dipped. In Transkei, fees were collected in the form of a grazing levy. The Ciskei Department of Agriculture also provided medicines and information about diseases (Dold & Cocks, 2001). Enforcement of the dipping programme was gradually relaxed, and then completely removed after the granting of 'independence' of the

Homelands. When the Homelands were reincorporated into South Africa in 1994, the Provincial Department of Agriculture took over responsibility for the dipping service including the supply of chemicals and personnel. The resource poor farmers, who were mainly black, had a lot of influence on the services that they required. The Veterinary Services Department tried its best to meet the farmers' service demands. The demands of the farming community continue to inform the services provided (Getchell et al., 2002).

State policy on dipping in the Eastern Cape Province has also varied over the last few decades. In April 1996, budgetary constraints as a result of the GEAR policy caused the Department to cease the supply of chemicals and it then only supplied personnel (Getchell et al., 2002; Masika et al., 1997a). At present (2008/2009), the state provides free dip but responsibility for collection and dipping rests formally with the local areas' dipping committees. The reduction in state intervention increased the need for resource poor farmers to find alternative means of disease control including the use of ethnoveterinary medicines.

AsgiSA EC aimed to exploit the Eastern Cape's agricultural potential and to ensure value adding activities through the processing of agricultural produce (including dairy, meat and leather) from rural communities. It also aimed to manage one million livestock units and build a meat processing facility (Agriculture and AGRO-processing, n.d). Cattle were handed over to

communities in the Chris Hani District Municipality. Implementation of livestock improvement programmes in connection with AsgiSA EC has so far (2009) only been in Elliot in the Chris Hani District Municipality. This was because the policy was fairly new and few projects had been implemented.

The Departmental vision in the 2001/2002 Financial Year was to be a dynamic support service provider for sustainable agricultural growth and economic development. It remained much the same up until 2007/2008 when the focus changed to sustainable growth for food security and economical development. The mission in the 2001/2002 Financial Year was to facilitate and coordinate optimal agricultural production and sustainable development through equitable access to resources and meaningful participation from all stakeholders thus contributing to a better life for all in the Eastern Cape Province. The mission changed in 2005/2006 to also include promoting sustainable food production and commercial agriculture. In 2006/2007, the mission also included supporting and promoting small-scale food production and commercial agricultural development, through equitable access to, and optimal use of resources. The Departmental mission in 2007/2008 was to work towards the eradication of underdevelopment, poverty and unemployment. The mission statement did not include support for sustainable food production as in the previous Financial Year (Department of Agriculture, 2002; 2006; 2007; 2008).

In the 2001/2002 period the Department had five programmes namely Administration, Agricultural Technology and Transfer, Veterinary Services, Agricultural Engineering Services, and Projects and Planning. The sub-programmes in the Veterinary Services programme were animal health, export control/animal diseases surveillance, veterinary public health and veterinary laboratory services. The veterinary services programme faced challenges in meeting the targets of all vaccination programmes, appointing staff to fill critical posts such as veterinarians, minimising African horsesickness outbreaks, improving transport in the Directorate and training AHTs in red meat inspection (Department of Agriculture, 2002).

In 2002/2003, the veterinary services programme had 195 posts of which 155 were filled. The vacancies mainly occurred for state veterinarian and AHT posts. The inability to attract veterinarians resulted in serious problems in service delivery. The proposed solution was to provide incentives through discussions with the Inter-governmental Technical Committee for Agriculture (ITCA). The Department dipped 3.6 million of the historically disadvantaged farmers' cattle more than 12 times during the year (2002/2003) resulting in a noticeable reduction in tick borne diseases. The sheep scab campaign resulted in better prices in the market. Mpofu Training Centre successfully worked together with the National Wool Growers Association. The engineering directorate of the Department managed to sort out the water problem faced at the Mpofu Training Centre in 2001 thereby enabling training

programmes to resume. However, the Training Centre also faced problems of insufficient training facilities (Department of Agriculture, 2003).

In the 2003/2004 period, research on addressing tick related animal diseases had produced an animal breed that required minimal dipping in tick infested areas. The breeds included Bonsmara and Nguni breeds. A retention strategy was the proposed solution to the problem of attracting and retaining veterinarians due to the rural nature of the Province. Some (unspecified) state veterinarians and 77 AHTs were appointed to the Veterinary Services programme in the 2003/2004 period (Department of Agriculture, 2004). Although there were new recruitments, there was still a backlog in the filling of positions.

In 2004/2005, there was a massive outbreak of highly pathogenic avian influenza, and Tuberculosis in dairy herds in parts of the Province. The filling of state veterinarian posts still remained a challenge. The limited mileage allowed with a Fleet Africa vehicle hampered service delivery because AHTs did not visit areas which were further away as often as necessary. The primary animal healthcare focus was to set up community based dipping structures. The Department provided dipping material so as to curb ticks and tick borne diseases. However, the poor state of dipping tanks resulted in the absence of disease control campaigns in certain areas. It also led to resistance from communities where the AHTs were not actively involved as

the communities felt neglected (Department of Agriculture, 2005). The focus on community based dipping structures has been maintained up to date and the efficiency depended mainly on the dipping committee's organisational skills.

In 2005/2006, the purpose of the Directorate was to promote animal health through the control of animal diseases of economic and zoonotic importance. An additional focus of primary animal health care was to engage in inoculation campaigns using appropriate strains of vaccines. Challenges faced included filling the four vacant state veterinarian posts. The posts for Mthatha and Middleburg had been vacant for over seven years. The Department still faced challenges in attracting and retaining staff with critical skills. The long term solution proposed to the staffing crisis was to offer bursaries in engineering, veterinary and agricultural sciences (Department of Agriculture, 2006).

During the 2006/2007 period the Department developed upon livestock improvement skills including preventing controlled diseases and pests. The seven budget and programme structures were Administration, Sustainable Resource Management, Farmer Support and Development Services, Veterinary Services, Technical Research and Development Services, Agricultural Economics and Structured Agricultural Training as compared to the five in the 2001/2002 Financial Year. There were still staffing backlogs mainly as a result of the slow recruitment process. During the lumpyskin

disease outbreak in January 2007, livestock farmers in Mbashe collected an amount of R167 000 to purchase vaccine (Department of Agriculture, 2007). This showed that if farmers organised themselves and coordinated their efforts, they could maintain herd health.

During the 2007/2008 Financial Year, the seven budget and programme structures were still in place. The Department acknowledged the lack of infrastructure including the lack of fencing of arable and grazing lands, dipping tanks and stock water dams in the communal areas. Another challenge to animal healthcare was the lack of adequate farmer training. The Eastern Cape Department of Agriculture had three training institutes namely Tsolo Agricultural Rural Development Institute, Fort Cox Agricultural College and Mpofu Training Centre in 2008/2009 (Department of Agriculture, 2008). These training institutes were where training and skills development workshops were run for small scale and emerging farmers. Fort Cox Agricultural College also offers agricultural courses to the general public (www.agr.ecprov.gov.za). The president of South Africa in 2008, Kgalema Motlanthe, acknowledged the needed for more veterinarians in rural areas (Nel, 2008).

Table 1. Distribution of Funds from the Department of Agriculture to the Veterinary Services Directorate

Financial Year	Total Departmental Allocation (R000)	Veterinary Services Allocation (R000)	% of total	Veterinary Services Expenditure (R000)
2001/2002	563298	83105	14.75	
2002/2003	571591	96107	16.81	71652
2003/2004	681103	96852	14.22	86515
2004/2005	882143	91485	10.37	88114
2005/2006	821819	98889	12.03	88563
2006/2007	869670	106081	12.20	117919
2007/2008	1077006	124569	11.57	128526

Source: Department of Agriculture (2002; 2003; 2004; 2005; 2006; 2007; 2008)

The budgetary allocations in the Eastern Cape Department of Agriculture to the Veterinary Services Directorate from the 2001/2002 up to 2007/2008 Financial Years are given in Table 1. There was an increase in budgetary allocations to the Department of Agriculture since 2001/2002. This could be attributed to the overall increase in allocation from the national budget and the fact that the Eastern Cape had the largest herds of livestock. However, in the 2005/2006 and 2006/2007 Financial Years, the Departmental allocation decreased from the 2004/2005 Year. For the Veterinary Services Directorate,

allocations increased over the years except for the 2004/2005 Financial Years. The percentage allocation varied between 10% and 16% over the 2001 to 2008 period. However, since the 2003/2004 Financial Year, the percentage allocation of the Departmental funds to the Veterinary Services declined from the 2002/2003 Financial Year.

The Department of Agriculture was allocated R1.2 billion for the 2008/2009 Financial Year from the Eastern Cape Province's budget. R45.1 million of the additional allocation was to be used to fence arable land and R7.5 million to adjust the employees' conditions of service (Nel, 2008). The next section provides recent livestock statistics of the Eastern Cape Province.

Livestock Farming in the Eastern Cape Province

In 2008, approximately 590 000 square kilometres of land in South Africa was used for cattle, sheep and goat farming. This area represented 53% of all agricultural land in the country. Cattle were mainly found in the Eastern Cape, KwaZulu-Natal, Free State and North West provinces with the Eastern Cape having the largest herd of cattle. The total number of cattle at the end of August 2008 was estimated at 14,15 million, comprising various international dairy and beef cattle breeds, as well as indigenous breeds such as the Afrikaner and the Nguni (Department of Agriculture, 2009).

Figure 6. illustrates approximate cattle numbers in the Eastern Cape Province taken in August in the Years 2004 to 2008. In 2004, there were approximately 3 042 000 cattle in the Province and the number increased to about 3 082 000 in 2005. In 2006, numbers dropped due to the drop in the Department of Agriculture's testing and vaccination.

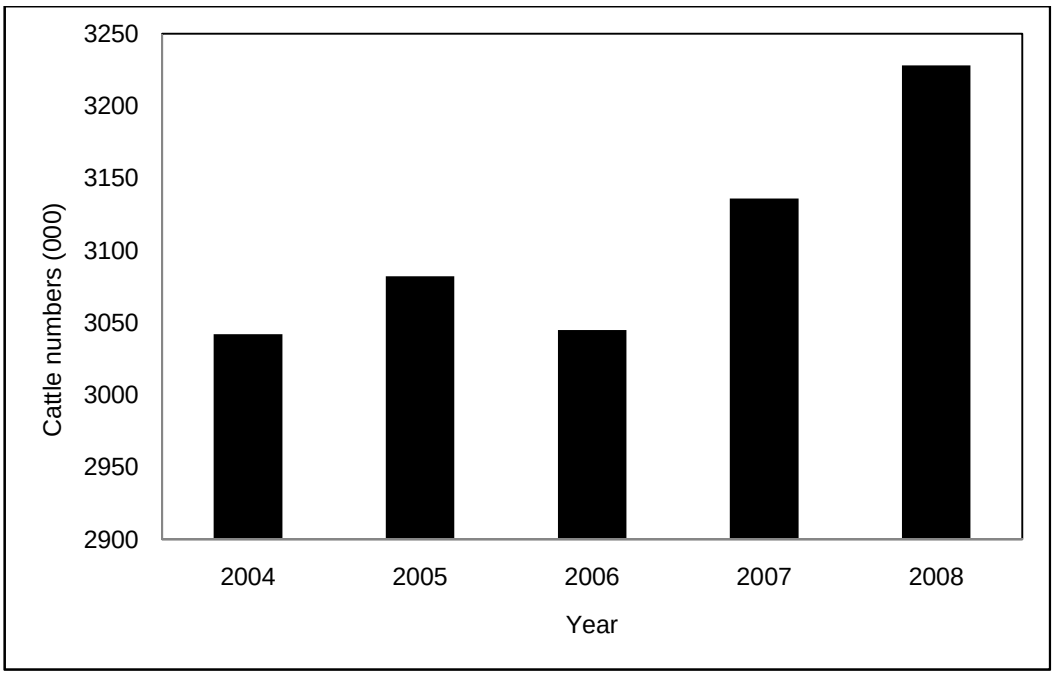

Figure 6. Eastern Cape Province Cattle Population (2004-2008)

Source: Department of Agriculture (2009)

Sheep farming is more concentrated in the arid regions of the country. Sheep flocks in the Eastern, Western and Northern Cape Provinces are much larger than those in the other provinces. The animals are kept mainly for wool and

mutton production. Figure 7. illustrates estimated figures for sheep in the Eastern Cape Province taken in August from 2004 to 2008 (Department of Agriculture, 2009). There was a sharp decrease in 2006 as a result of a disruption in the sheep scab campaign in 2005 and decreased vaccination against sheep scab during 2006 (Department of Agriculture, 2006).

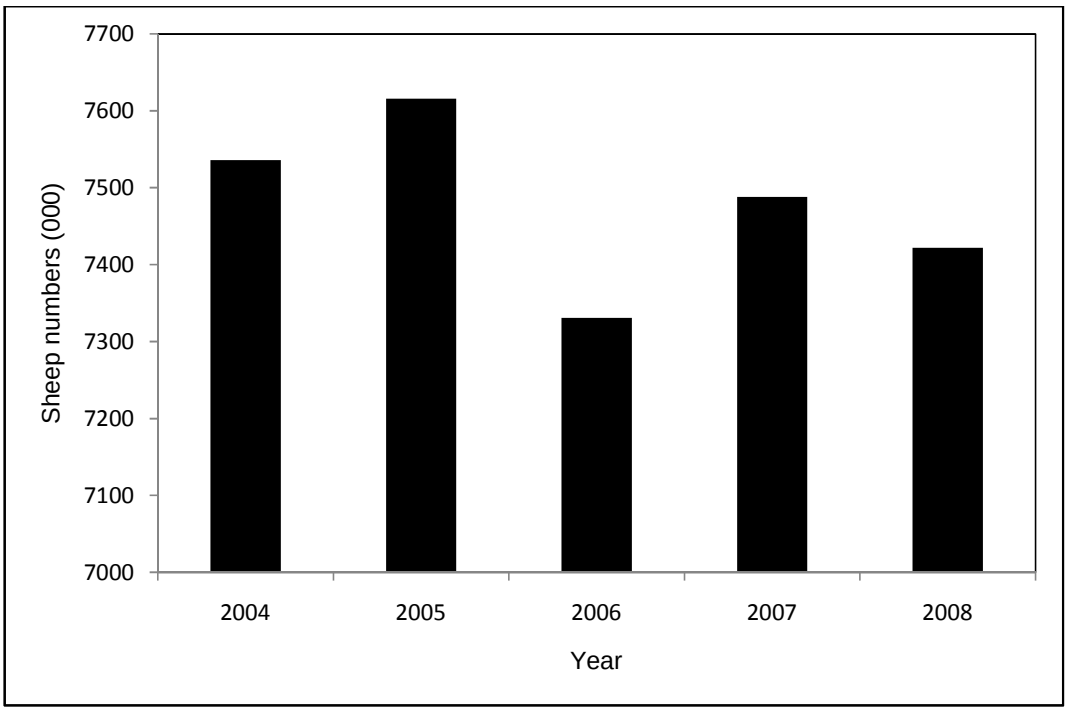

Figure 7. Eastern Cape Province Sheep Population (2004-2008)

Source: Department of Agriculture (2009)

Goats were mainly raised in the Eastern Cape, Limpopo, KwaZulu-Natal and North West Provinces. There was an increase of 13,8% in the number of goats, from 6,266 million in August 2007 to 7,130 million in August 2008.

Angora goats were kept mainly for mohair production whilst Boer goats were kept for meat production. Figure 8. illustrates the estimates of goat numbers in the Eastern Cape Province (Department of Agriculture, 2009).

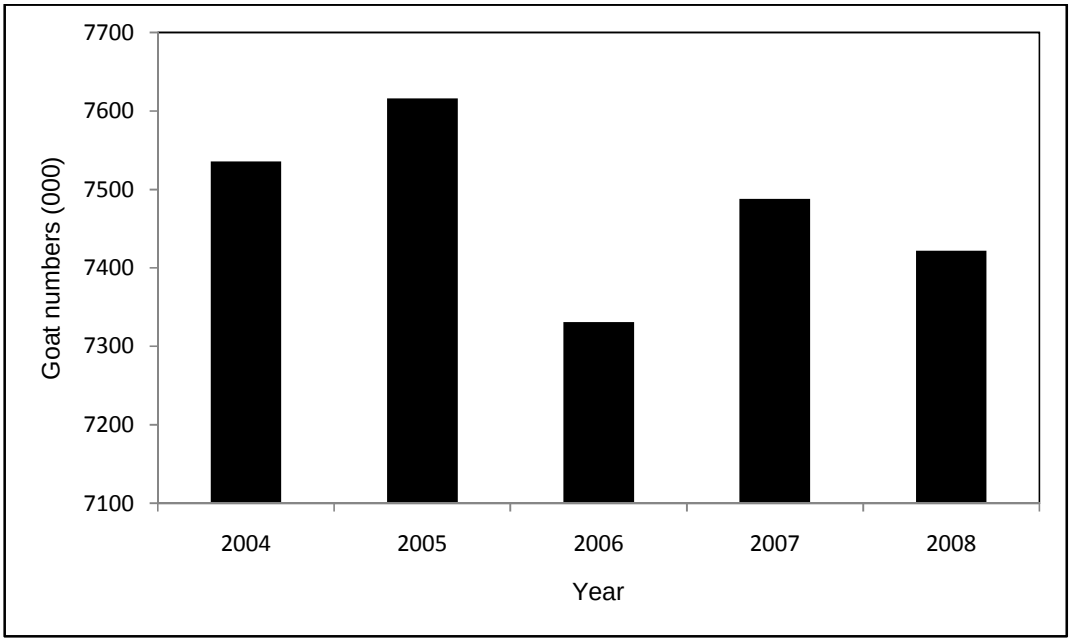

Figure 8. Eastern Cape Province Goat Population (2004-2008)

Source: Department of Agriculture (2009)

The Eastern Cape Province has larger numbers of livestock in relation to other provinces. The disruptions in the vaccination and testing programmes in 2006, as a result of disease outbreaks affected service delivery resulting in decreased livestock populations. Another situation that exacerbated the problem was the shortage of staff. The section that follows describes the veterinary history of the Eastern Cape Province.

The Eastern Cape Province Veterinary Services Directorate

The role of the Veterinary Services Directorate in the Department of Agriculture is to control animal diseases in animals of economic importance, that is, domestic animals and game or wild animals kept for human consumption, and the animals with diseases that can be transmitted to humans (L. Mrwebi, personal communication, August 11, 2008). This section outlines the structure and activities of each of the role players in the Directorate of Veterinary Services in the Eastern Cape Province.

Each province in South Africa had a provincial office and sub-offices for the Department of Agriculture in the main towns and cities. In the Eastern Cape Province, the provincial office was in Bisho and towns such as Alice, Fort Beaufort, East London, King Williams Town, Middledrift and Queenstown had sub-offices. These offices had specialised officers who dealt with all forms of agriculture including livestock, crop and citrus production. The sub-offices reported to the provincial office. The role players included the state veterinarian, AHTs, community animal health worker (CAHW), the farming committees and livestock farmers. The organisational structure of the Directorate is outlined in Figure 9.

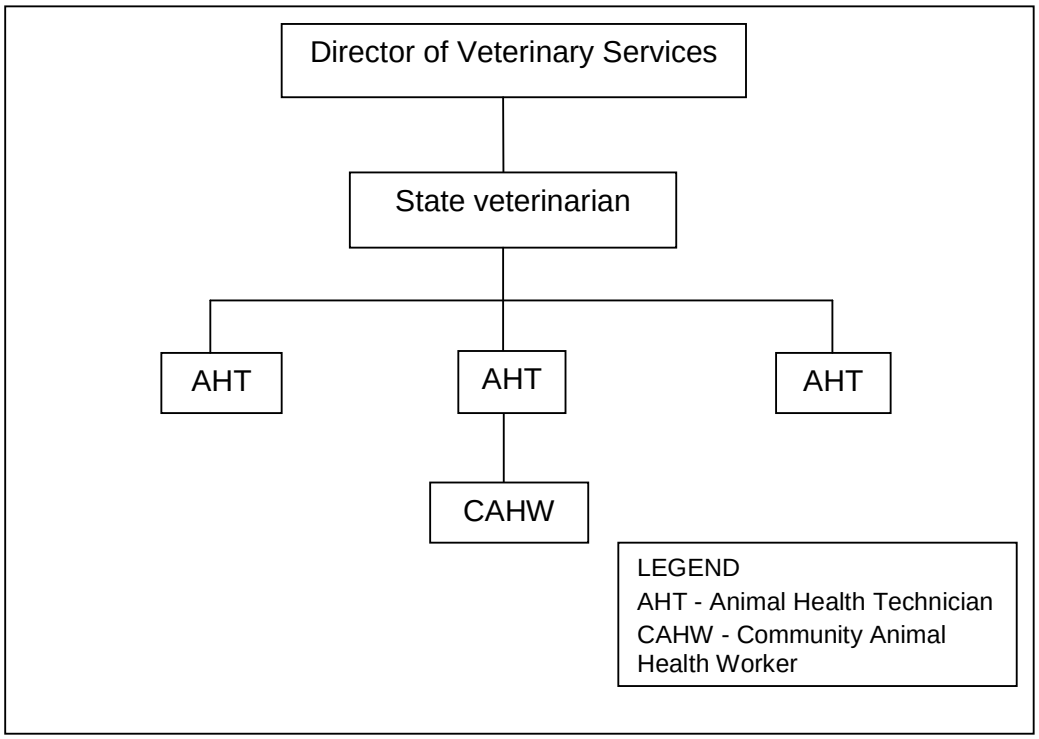

Figure 9. Organisational Structure of the Eastern Cape Directorate of Veterinary Services in 2008

Source: (L. Mrwebi, personal communication, August 11, 2008)

One state veterinarian served Nkonkobe and Nxuba Local Municipalities. The state veterinarian was based in Fort Beaufort which was the main office for both Municipalities. His roles included administration work, lecturing and veterinary issues. Administrative work involved reading notices, information updates on disease, schedules for meetings and planning the itinerary for AHTs. He received and interpreted laboratory results for tests performed, then informed the AHTs what to do with the livestock. The lecturing responsibilities included training the AHTs. The training which the AHTs

received was either generic or specific. Generic training was training in skills development such as computer training. Specific training was training in a specialised field which was veterinary related (M. Marufu, personal communication, June 12, 2009).

The Eastern Cape Province had 389 AHTs who were equitably distributed throughout the Province. They were stationed in various municipal wards. Each office in the municipal wards had AHTs who were responsible for specific areas (C. Mnqeta, personal communication, August 11, 2008). The AHT visited the area under his/her jurisdiction and assisted livestock owners with diseased or injured livestock. In severe cases where a veterinarian was needed, the state veterinarian offered assistance. The figures of animals that had been assisted were collected in the various districts and collated at the provincial level.

Table. 2. presents the figures for the diseases that were tested for and vaccinated against. The figures are for the Eastern Cape Province and date back to 2001. Between 2001 and 2003, there were no records for blanthrax (blackquarter and anthrax) and sheep scab. In the 2004/2005 period, the numbers for Tuberculosis, brucellosis and sheep scab decreased. This could be attributed to the limited mileage allowed with state vehicles which limited travel and service delivery. Then in the 2005/2006 period, all figures except for that of blanthrax increased. Figures dropped again for all diseases in the

2006/2007 period. This was attributed to transport limitations and inadequate provision of sufficient equipment.

Table 2. Number of Eastern Cape Livestock Vaccinated and Tested for Diseases (2001-2008)

Year	Blanthrax	Tuberculosis	Brucellosis	Sheep scab
2001/2002			569	
2002/2003		89000		
2003/2004	1403000	108113	90853	3854455
2004/2005	1645496	55687	61454	3252418
2005/2006	1596785	105279	72330	4529687
2006/2007	1237089	77615	43760	4374076
2007/2008	1738788	75893	48107	4197313

Source: Department of Agriculture (2002; 2003; 2004; 2005; 2006; 2007; 2008)

Nkonkobe and Nxuba Local Municipalities had 19 AHTs working in different towns and villages within the municipalities in 2008-2009. Of the total number of AHTs, eight were males and eleven were females. There were six AHTs in Alice, six in Middledrift, Adelaide had one, Seymour/Balfour had four, Fort Beaufort had one and one was the control AHT. Each AHT served a ward which averaged five villages and some AHTs also served emerging farmers in

addition. “The 19 AHTs are not enough. Ideally, there would be one technician per ward” (M. Marufu, personal communication, June 12, 2009).

The services offered to stock owners in 2008-2009 included the vaccination of cattle against anthrax and blackquarter; testing for brucellosis; dipping cattle; vaccination of dogs and cats against rabies; treating sheep for sheep scab and vaccinating poultry against Newcastle disease. These services were provided for free throughout the Province, with special emphasis on the resource poor farmers (“Controlled and notifiable diseases”, 2000). The state veterinarian provided services were charged, but highly subsidised for communal farmers (S. Hashe, personal communication, August 13, 2008). There was no charge for mileage, however, drugs and procedures were charged for. The procedures included surgery, castration and identification and treatment of disease which the AHT could not deal with. The state veterinarian stated, for example, that he charged for the cost of the penicillin plus a 15% mark-up of the price of penicillin. A similar charging system was used for all drugs. For procedures, the state had standard rates set (M. Marufu, personal communication, June 12, 2009). When there were disease outbreaks, the Department vaccinated the livestock in the affected area and informed livestock farmers in surrounding areas. The AHTs undertook awareness campaigns before the actual provision of the service to educate the livestock farmers on the benefits of treating the livestock and how it would

be performed. The campaigns were complemented with information days (A. Mtini, personal communication, September 1, 2008).

There were 86 cattle dipping tanks in the Nkonkobe and Nxuba Local Municipalities in 2009 (M. Marufu, personal communication, June 12, 2009). In 2008/2009, the state provided Triatix 500 TR for dipping cattle. It was Amitraz based and in powder form. This dip was to be used within eight hours of mixing (A. Mtini, personal communication, September 1, 2008). Either the AHT or the CAHW managed the dipping tank and had to be present on the dipping day. The CAHW was a community member who played a supportive role to the AHT. The CAHW recorded the number of cattle dipped and reported problems of acquiring the dip as well as animal health problems. He/she had no basic training but earned a salary as he/she was an employee of the Department of Agriculture. If the AHT of that area was not actively involved in a community, the CAHW played a large role (M. Marufu, personal communication, June 12, 2009).

The Eastern Cape Veterinary Services Directorate provided services to mainly communal and emerging farmers. The role players each had their own duties which were coordinated with the programme and one other. The provision of services varied within the Province as a result of sub-offices operating differently. Therefore staffing and organisation as well as farmers' needs differed across the Province.

Conclusion

The Veterinary Services Directorate managed to become well established after a complex history shaped through political and economic changes. This changed the structure of the organisation, focus areas and therefore the type of services offered to stock farmers. The Department of Agriculture initially dealt with mainly research on disease (type and causation, treatment) and livestock management practices. The mission of the 20th Century Department of Agriculture changed over the years in an attempt to provide services to all stakeholders for improved agricultural production and livelihood in the Eastern Cape Province. Therefore, the Department of Agriculture as an institutional structure was reproduced over time as a result of changes in the social, economic and political structures.

The location of the Department of Agriculture's offices in most cities and villages in the Eastern Cape made services more widespread, improving availability and hence efficiency. However there was a lack of trained personnel, particularly veterinarians. This was a trend of which no successful solution has been obtained to attract suitable personnel. Most Veterinary Services Directorates throughout the country experienced this problem due to insufficient veterinarians qualifying. This resulted in poor state services and an inability to meet demand effectively. The livestock owners were thus

forced to make the most out of the available resources which include the AHTs and ethnoveterinary medicine.

The Department of Agriculture was studied to better understand how this political structure operated so as to relate it to the animal healthcare practices of Hertzog farmers. It also helps to determine the type of knowledge stock farmers acquired from the Department. It was thus necessary for livestock farmers to make use of the state veterinary services for the stock owners' benefit. The stock farmers, as the agents, drew upon the Department which is a structure in order to assist them in their animal healthcare practices. The next chapter presents the information collected from the respondents in the study. The respondents provided information on livestock management, livestock marketing, common diseases, ethnoveterinary medicine and state veterinary services.

CHAPTER IV

THE STATE, STOCK FARMERS AND ANIMAL HEALTHCARE PRACTICES IN HERTZOG

Introduction

This chapter deals with the presentation of the data collected. The data presentation includes the demographic structure of the farmers, marketing channels, livestock management practices, state services, and disease prevention and treatment methods. These themes were developed in line with the objectives of the study. The data gathered address how state services were disseminated and when and why the stock farmers used ethnoveterinary medicines and practices. That is, how the state as a political structure interacted with stock farmers and how these interactions reproduced the political structure.

The findings of this study explain how the rural stock farmers of Hertzog managed their livestock and their various approaches to disease. The next section outlines the demographic structure of the respondents. It presents the age, sex and race of the stock farmers interviewed in this study. This is useful in understanding how the knowledge on animal healthcare developed. The

section also includes a brief background of where the stock farmers originated from and their livelihoods.

Background and Livelihoods of Stock Farmer Respondents

A total of thirty respondents who were either stock owners or herders were interviewed. Eight of the respondents interviewed were females and twenty-two were males. Their ages ranged between 23 and 87 years (Figure 10.). Twenty four respondents were 50 years of age and above. The sample comprised of both coloured and amaXhosa farmers. There were eight coloured and 22 Xhosa respondents. All the coloured people interviewed stayed in Tamboekiesvlei whilst the amaXhosa stayed in both Hertzog and Tamboekiesvlei villages. The research therefore gives a good indication of different practices amongst the coloured people and the Xhosa-speakers in the study area.

More than half (60%) of the respondents were born in the area and grew up involved in agricultural practices. Forty percent of those interviewed thus came from outside the village. When the Ciskei government took over this area, the Xhosa speaking people moved in. Those that were born elsewhere such as in Seymour and Balfour, relocated to the area in search of jobs or to take over the farms of their deceased relatives. This was because people generally invested in livestock later in life when they were more settled in the

village and could look after the livestock. For example, there was a case of a female former educator who lived in Seymour but relocated to Hertzog to raise her late parents' livestock (N. Memani, personal communication, June 8, 2009). Four of the respondents previously worked on white farms growing vegetables or herding livestock. All the respondents grew up in families that raised livestock, thus they had some prior knowledge and experience in livestock management.

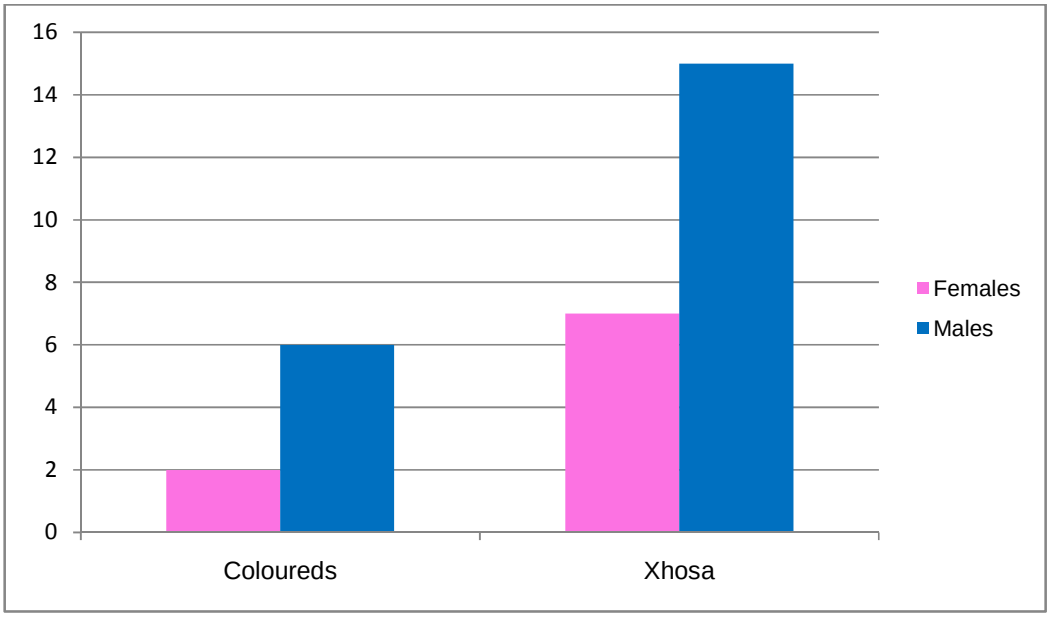

Figure 10. Race and Gender of Stock Farming Respondents

Hertzog, Eastern Cape Province (2008-2009)

The stock farming respondents owned cattle, goats and sheep (see Table 3.).

Table 3. Stock Farmer personal details and, type and number of livestock, Hertzog, Eastern Cape Province (2008 -2009)

Sex	Age	Race	Status	Type of livestock		
				Cattle	Goats	Sheep
Female	53	Coloured	Owner	20	40	25
Female	49	Coloured	Owner	16		
Female	85	Xhosa	Owner	5	√	
Female	76	Xhosa	Owner	48	65	
Female	87	Xhosa	Owner		3	
Female	44	Xhosa	Owner	7		
Female	57	Xhosa	Owner	7		
Female	60	Xhosa	Owner	7		
Female	57	Xhosa	Owner		10	
Male	60	Coloured	Owner	√	√	√
Male	60	Xhosa	Owner			65
Male	80	Coloured	Owner	6		16
Male	81	Coloured	Owner	53	11	11
Male	23	Xhosa	Herder	3		
Male	61	Xhosa	Owner	7	5	
Male	66	Xhosa	Owner	5	8	
Male	52	Xhosa	Owner	8		
Male	63	Coloured	Herder	1	12	2
Male	80	Xhosa	Owner	24	3	
Male	67	Xhosa	Owner	4		
Male	78	Coloured	Owner	30		
Male	47	Xhosa	Owner			
Male	55	Xhosa	Owner	16	10	
Male	84	Xhosa	Owner	10		
Male	47	Xhosa	Owner	3		
Male	82	Xhosa	Owner	8	5	
Male	81	Xhosa	Owner	15	31	
Male	44	Xhosa	Herder	16	10	
Male	32	Coloured	Herder			

* Some respondents were unwilling to divulge the number of livestock they had but would mention the types, hence the tick (√) marks.

All the respondents except for three owned cattle. Two of the respondents who did not own cattle, owned goats only and one owned sheep only. Some respondents were not willing to divulge the number of livestock they had and just mentioned what type of livestock they had. Some respondents also raised pigs, donkeys, cats, dogs and poultry.

Those interviewed included an educator who was the wife of the former headmaster of the local school. She was amongst the most highly educated of the local community. Some of those interviewed had little formal education, and did not speak English. In the area, the coloured farmers tended to own more livestock. An 81-year old coloured man was the largest stock owner with 53 cattle. For the coloured farmers, the average was 18 whilst for amaXhosa, it was 11. Therefore the coloured people owned more cattle, on average, than the amaXhosa. However, it was difficult to ascertain if the numbers given were the actual numbers because some respondents gave the numbers for the livestock belonging to the whole family. The ambiguity was not clarified because the cattle were usually out in the veld and even though most stock owners had stock cards, they were not up to date. The number of livestock also varied over the time of the interviews due to reduction through death and sale, and increasing numbers as a result of calving.

The sample comprised of people whose livelihood was at least partly based on livestock agriculture. All respondents owned livestock and some grew

maize and vegetables and had other sources of income. The other sources of income included spaza shops, old age pensions, disability grants or part-time employment. Two of the respondents received disability grants and twelve received old age pensions. Three respondents owned spaza shops whilst one male respondent had a part-time job. There was a lot of competition among shop owners because there were many spaza shops and few customers, hence the owners did not make much profit from the business. Two respondents who raised livestock on behalf of another family member who worked elsewhere received money from them.

Relatively few respondents, that is, eight grew maize but a larger number (16) grew vegetables. The reason for little crop farming was that the rainwater was insufficient and that crops got stolen (A. Pringle, personal communication, March 24, 2009). Some respondents also mentioned that the tap water killed the plants. The most commonly grown vegetables included spinach, onions and butternuts. These vegetables were grown for personal consumption but two respondents stated that they occasionally marketed vegetables either locally or in Fort Beaufort.

Marketing Channels of Livestock

The farmers sold their livestock through different channels and for various reasons. The cattle were often sold in times of need. This may be when

there was a funeral, to pay fees or when there was a crisis in food supply or household income. Cattle were also sold when they were getting old. The smaller livestock were sold due to old age or demand. Four respondents who owned sheep sold wool to BKB which is based in Port Elizabeth. A Wool Growers' Association existed in Hertzog and had 13 members as at October 2008. Three respondents said they sold their cattle to people who came into the village. The goats were mainly sold to people who came to individual owners in the village. The buyers used the goats for events such sacrifices and at circumcision ceremonies.

Sheard Auctioneers ran an auction in Seymour as well as in Balfour. The majority of the respondents sold their cattle at the stock sale in Seymour, and came mainly from Seymour, Hertzog, Tamboekiesvlei and surrounding areas. Generally between 100 and 200 cattle were sold. The auction had been underway in Seymour for about four years (since 2005) and there are currently seven a year. Stock sales were held in November, December and January and thereafter every two months, that is, March, May, July and September. The representative of Sheard Auctioneers was a local white farmer who had a substantial cattle farming operation south of Fort Beaufort and a good knowledge of livestock management and marketing. He explained that fewer sales were held in winter because of the poor quality of the livestock as a result of sparse vegetation. He added that the cattle in the

Seymour area were of better quality compared to cattle from other rural areas with largely African communities in which the Auctioneers operated.

Most owners only sold a few cattle each. When the cattle were brought to the selling area, they were each weighed on a scale that the auctioneers brought. After being weighed, the cattle were allocated a number for identification purposes. At the stock sale in May 2009, a total of 112 cattle were at the auction. The AHT for Seymour was present for some time during the stock sale. The five main buyers (two black and three white men) placed their bids and the auctioneer represented the farmers and liaised with both sides to mutually decide on a selling price. When the cattle were sold, they were given a new painted brand based on the buyer's chosen brand. The calves fetched prices between R1 800 and R2 200 each whilst the cows and bulls were sold for about R3 000 each. "The smaller calves are better (fetch a higher price) because they can be fattened and made best quality beef" (F. Vernon, personal communication, May 21, 2009). The purchased cattle were sent to the abattoir if they were fat or taken to the feedlots for fattening and then sent to the abattoir.

The respondents in Hertzog generally survived on state grants and the sale of livestock and vegetables. The majority of respondents had families to provide for. There was usually little money available for purchasing fodder, salt licks

and veterinary medicines. The next section describes the pastures and herding strategies that the stock farmers adopted.

Pastures and Herding Strategies

Adequate grazing is important for animal health, hence the respondents were questioned on their herding strategies. This section outlines where the livestock grazed and the nature of the fodder. The area was largely grassland close to the villages and had more shrubs in the valleys and slopes further away. Both Tamboekiesvlei and Hertzog were surrounded by areas of commonage. In both villages the commonages were divided into fenced grazing camps. The size of the camps was difficult to determine because the camps were no longer demarcated by fences. None of the respondents said that they went out with their livestock every day. Some were no longer fenced because the wires were stolen. This resulted in the theft of livestock. The cattle grazed in different places (due to the absence of fenced camps). People cut the wires used to fence the camps hence the cattle moved out of the camps and further away where they were more at risk of theft (V. Mzele, personal communication, June 10, 2009). N. Kade (personal communication, June 10, 2009) stated that she had never lost cattle to death from disease, but had lost many to theft.

Most livestock were fed very little fodder and were dependent on grazing in the veld that surrounded the homes. The respondents complained that grazing was inadequate especially in the winter. However, there were no major losses of livestock during the winter. One male respondent stated that the grass was usually enough, but in winter when it dried up, it was insufficient (P. Fani, personal communication, June 10, 2009). A female respondent stated that the veld (in Tamboekiesvlei) was not good enough. Her cattle grazed on the other side of the road where the grass was better (E. Jewell, personal communication, November 18, 2008).

Four of the respondents who formerly worked for white farmers knew about fodder resources and salt licks but these were not used. One young coloured herder who grew up on a farm suggested the use of camps to combat problems of overgrazing and ticks. He explained that the rotation of camps would allow for burning of some camps from time to time thereby eradicating ticks. He also stated that overgrazing was a problem in the area which could be solved through the use of camps (K. Groepe, personal communication, April 29, 2009).

The cattle were taken out to the veld and brought back to the homestead when they were needed for dipping or vaccination. The respondents who milked their cows regularly brought them back on a daily basis. Generally one young male herder was sent out to collect the livestock for a few families. The

cattle were not herded in the veld most of the time and therefore regulated their own intake. The smaller stock which included the goats and sheep, were brought back to the kraal on a daily basis. The smaller stock were generally kept closer to the village than the cattle because they were more at risk of theft. Eight respondents mentioned that they had herders who were hired or were younger members of their family. Some farmers occasionally employed herders to assist them. One female coloured cattle owner with sixteen cattle stated that her young herder was paid a monthly salary of R300.

The next section describes the most common diseases in the area. It also provides an account of what the respondents believed were the causes and diagnoses of the diseases.

Livestock Diseases: Frequency, Causes and Diagnoses

The most common disease in cattle in the area was called *inyongo*. This was translated as gallsickness and the coloured respondents called it the gall disease. There was a problem in that gallsickness was identified as a tick borne disease but *inyongo* sometimes referred to a wider range of diseases. Other common diseases included lumpyskin, redwater and heartwater.

Generally respondents associated gallsickness with the eating of fresh green grass, that is, it was a seasonal disease more common in the summer

months. However, the change from green to dry grass (winter) was also believed to cause gallsickness. An 82-year old respondent believed that the change from green to dry grass and vice versa caused gallsickness (P. Fani, personal communication, June 10, 2009). A former headmaster also believed that the eating of fresh green grass caused gallsickness (A. Nkayi, personal communication, June 10, 2009). Another cause of gallsickness mentioned was spiders in the grass. Only one respondent who was an elderly female acknowledged that ticks also caused gallsickness (N. Makhapela, personal communication, April 29, 2009).

A lady who co owned cattle with her brother said the change from winter to summer caused *inyongo*. She disagreed that it was caused by ticks even though the AHT had told her that gallsickness was a tick borne disease. She stated that:

> They get the disease on their way to the dip. The calf did not have ticks but came back from the dip with them. They say that disease related to *inyongo* that's called heartwater is caused by ticks, it's not that. It's the change from dry to green grass. The stools are stiff and the cattle get heartwater. (V. Mzele, personal communication, June 10, 2009)

An 80-year old coloured respondent who used ethnoveterinary medicines stated that there were two different kinds of gallsickness which were 'normal'

gallsickness and black gallsickness. 'Normal' gallsickness was diagnosed after a postmortem through symptoms of a dry and hard stomach. When ill from gallsickness, the cattle did not urinate. Black gallsickness was diagnosed through symptoms first of shortage and slowness of breath, and then of dizziness, red eyes, foaming mouth, and stooping head and ears with the livestock kicking (E. du Preez, personal communication, November 18, 2008). A young Xhosa cattle herder identified *inyongo* through dizziness and loss of appetite (M. Rangana, personal communication, March 24, 2009).

Redwater was another common disease which was identified through various symptoms. One respondent stated that if the disease was redwater, the livestock struggled to stand up (E. Jewell, personal communication, November 18, 2008). The youngest respondent, who was a herder, stated that he identified redwater from blood that was very red when the postmortem was undertaken (M. Rangana, personal communication, March 24, 2009). Two respondents perceived drought to be the cause of redwater. None of the respondents associated redwater with ticks.

A disease which the respondents called "TB" was said to be another major cause of death. One respondent called it sponge sickness. The farmers did not know the cause and had not yet found out from the AHT what it was. Diagnosis was through the observation of coughing of the animals and the loss of appetite (A. Pringle, personal communication, November 11, 2008).

One elderly Xhosa stock owner stated that the Tuberculosis-like disease resulted in the rotting of the cattle's internal organs (M. Kotsela, personal communication, May 12, 2009).

A 53-year old coloured female stock farmer stated that:

> When the postmortem is performed, the livestock with the TB-like disease would have rotten lungs, heart and liver and a yellow abscess inside which smells. The livestock would eat and drink well but still get ill. The disease is detected when it's too late to save the livestock. The mystery disease is known as sponge sickness. It is a TB-like disease that affects sheep and goats. (A. Pringle, personal communication, November 11, 2008)

In sheep, the Tuberculosis–like disease made the sheep cough and when the postmortem was undertaken, the lungs were rotten. The internal organs attached themselves to the rib cage. Another unknown disease presented itself as lumps on the cow's udder. The cow however continued to produce milk (E. du Preez, personal communication, April 29, 2009). There was also a disease known as the three-day (driedag) sickness which occurred in summer. Cattle got stiff, lied down and did not eat or drink. It took two to three days for the livestock to recover, hence the name (E. du Preez, personal communication, November 18, 2009). In goats, one female stock owner mentioned that the common parasites were *intshulube* and the common

disease was gallsickness (E. Zenani, personal communication, April 28, 2009).

Another common disease was lumpyskin disease which became common in 2007 and recurred yearly from then on. In 2007, there was an outbreak of lumpyskin disease involving about 40% of the cattle. Most of the respondents had lost some cattle to the disease in 2007. The AHT believed that the state was likely to budget for lumpyskin disease in 2009 because of the yearly recurrence rather than the usual five year cycle. However, the state did not provide vaccines for lumpyskin disease in 2008. Lumpyskin disease was in the state's vaccination programme for summer (October/November, 2008) (A. Mtini, personal communication, November 19, 2008). The respondents did not know the cause of lumpyskin disease.

The livestock that were ill were kept in the kraal and monitored. The respondents said that if they did not identify and failed to treat the ill livestock, they contacted the AHT. The AHT for Hertzog/Tamboekiesvlei felt that local knowledge of diseases was restricted. She agreed that the common diseases in summer were heartwater and redwater. She also emphasised a range of other diseases such as joint ill, foot rot and screw worm occurred occasionally. None of the respondents knew the cause of lumpyskin disease although there had been outbreaks and loss of livestock in 2007 and 2008. If the livestock died, postmortems were performed to determine the cause of

death. The respondents mainly looked at the lungs and the gallbladder. One coloured female farmer said that when she carried out postmortems, she looked at the gall, for plastics in the stomach and yellow bile. She identified gallsickness during the postmortem from a swollen gall bladder and yellow bile spread around the internal organs as a result of a burst gall bladder (E. Jewell, personal communication, November 18, 2008). The next section explains how respondents prevented and treated diseases. It includes information on both the conventional and ethnoveterinary medicines used.

Livestock Farmers' Methods of Disease Prevention and Treatment

In addition to the direct veterinary provision and advice, the respondents used a variety of strategies to prevent and treat livestock diseases. Most respondents learnt about diseases and treatments from their parents because they grew up assisting in raising the livestock. The main disease prevention and control method was dipping. All the respondents participated in the dipping programme, however, the regularity differed. The methods of disease prevention and control depended on the respondents' beliefs and perceptions about disease causation as well as financial stability. Therefore, both conventional and ethnoveterinary medicines were used. The conventional veterinary medicines that the stock farmers used are outlined in the next section.

Conventional Veterinary Medicines

The main conventional medicines used for all diseases were Hi-tet 120, Terramycin and penicillin, which are all antibiotics. Hi-tet 120 is an antibiotic used for the treatment of tick-borne gallsickness heartwater, foot rot, navel-ill, joint-ill, and pneumonia in livestock (www.vetproductsonline.co.za). Terramycin is also an antibiotic which is meant to be used to treat or prevent infections that are proven or strongly suspected to be caused by bacteria (http://www.rxlist.com/terramycin-drug.htm). Most farmers used these medications in any incidence of disease regardless of whether the disease was known or not.

One elderly male farmer with a calf that was unable to get up and had a swollen upper leg gave it Hi-tet 120. He did this after the AHT had advised him to do so over the telephone. The AHT had however advised the farmer that it would have been best to use penicillin. Given that the farmer did not have penicillin, he used Hi-tet 120. The calf was mistakenly injected twice with two 10 millilitre doses and died the following day (K. Rangana, personal communication, June 8, 2009). A female farmer who owned goats only said she used Hi-tet 120 for any case of disease (M. Mrwetyana, personal communication, May 12, 2009). The state veterinarian advised that the use of penicillin and Hi-tet 120 for all cases was not advisable. The reason was that the bacteria might have needed a drug more powerful than penicillin or Hi-tet

120 to kill it. There were also problems with incorrect diagnosis (M. Marufu, personal communication, June 12, 2009).

The main influence on the choice of medicine used was the availability of money. When the respondents had money from their pensions, spaza shops, stock sales or other sources, they bought the commercially purchased medication (K. Groepe, personal communication, April 29, 2009). In some cases, sacrifices of other household goods had to be made in order to buy commercial medicines. When the respondents were not able to make sacrifices to buy commercial medicine, they relied on ethnoveterinary medicine (N. Makhapela, personal communication, April 29, 2009). An elderly Xhosa lady stated that Valbazen was affordable (E. Zenani, personal communication, March 28, 2009). Valbazen is an oral dewormer for cattle, sheep and goats (http://www.pfizer.co.za).

The majority of respondents suggested that they preferred to buy medicines because they were more effective and less time consuming than ethnoveterinary medicine. "I do not use traditional medicines because it is time consuming to collect the ingredients and cook" (C. Mgwali, personal communication, October 29, 2008). He then said he preferred conventional medicines because they work quickly. However, thirteen of the respondents argued that the conventional medicines were expensive or unaffordable. They contended that transport costs to Fort Beaufort and Adelaide increased

the cost of accessing the medication. Fort Beaufort was the closest centre from which the farmers had access to chemists and corporatives that sold veterinary products. All the farmers bought their medications from the chemist, Umtiza Farmers' Corp or Von der Decken, a hardware shop, in Fort Beaufort. In addition to the cost of medication, there were transport costs, R30 to Fort Beaufort and back, via public transport. Some respondents said they have had to travel to Adelaide in search of medicines that were not available in Fort Beaufort. Only two respondents stated that the medicines were affordable. The respondents who did not express an opinion on the affordability of conventional medicines were mainly those who were raising livestock on behalf of relatives who were employed elsewhere and provided money for the purchase of medication. The stock farmers stated that they would have liked the state to provide the conventional medicines because they could not afford to buy them. Table 4. outlines the prices of the common medications in 2009.

Table 4. Prices of conventional medicines for livestock,Hertzog(2009)

Medication	Size	Price	Seller
Hi-tet 120	500ml	R 199.90	Von der Decken
Penicillin	100ml	R 129.95	Chemist
Dazzle	500ml	R 114.90	Von der Decken
Terramycin LA	20ml	R 68.90	Von der Decken
Terramycin LA	100ml	R 223.90	Von der Decken
Deadline	200ml	R 155.90	Von der Decken
Detomax	50ml	R 329.90	Von der Decken

Source: Store salesmen, personal communication, September 08, 2009

Umtiza Farmers' Corp was a private company which was part of a chain of veterinary stores. The Fort Beaufort branch was opened in 2004 and employed five people who included the manager, an assistant manager, a stock controller and two floor staff. All the staff members were in contact with the customers. The manager stated that the employees informed the customers on how to handle and administer the medicines. The customers included both communal and commercial farmers from areas surrounding Fort Beaufort, including Seymour. The most commonly sold medicines were Hi-tet 120, injections, spray dips and de-worming medicine. The main suppliers of veterinary products were Afrivet and Pfizer. About half the customers explained the symptoms and the other half identified the disease when they came to purchase medicines. Unlike the branches in Alice and Adelaide, the Fort Beaufort Umtiza branch did not liaise with the Department of Agriculture staff from Fort Beaufort. The next section describes the dipping practices that the stock farmers engaged in.

Dipping

There was one dipping tank in Hertzog for both Hertzog and Tamboekiesvlei villages (Figure 11.). The dipping tank was located next to the Kat River. The dipping committee was a group of five cattle farmers from both Hertzog and Tamboekiesvlei that the community of cattle farmers elected at a special

Figure 11. Cattle entering the dipping tank in Hertzog (2008)

meeting that the AHT chaired. The chairperson[7] of the dipping committee was responsible for collecting the dip from the Mpofu Training Centre, but occasionally, the AHT delivered two buckets of Triatix 500 TR to the chairperson's place of residence. The treasurer was the most active member of the committee was an 81-year old coloured man who was the largest cattle owner with 53 head. He was strongly committed to managing the dipping programme. The treasurer was more active than the chairperson because of the chairperson's work commitments. In order for effective dipping, upkeep

[7] The chairperson was a 60-year old Xhosa man who worked part-time for World Vision.

and cleaning of the dipping tank was essential. For some of the period during which the study was undertaken (2008-2009), the treasurer was able to use his own vehicle for collecting a pump from the Mpofu Training Centre to clean out the water from the dipping tank.

The dipping committee organised people to take their cattle to the dipping tank and communicated with the community when dipping was cancelled. Dipping was usually cancelled when there was bad weather. The cattle were supposed to be dipped fortnightly in winter and weekly in summer. However, when the temperatures dropped or it was cloudy, the farmers did not dip their cattle because they believed that if they dipped the cattle in such weather, the cattle felt cold. A female stock owner stated that the cattle owners in the villages did not dip the cattle in rainy weather because they believed the animals would get cold (A. Pringle, personal communication, November 18, 2008). E. Jewell (personal communication, November 18, 2008) stated that the stock owners did not dip the cattle in rainy weather because the dip washed off and the cattle got cold. There seemed to be a general understanding and agreement in the villages that dipping was postponed in rainy or cold weather. In one summer period in 2008 of three weeks, cattle were not dipped at all because of weather conditions.

The AHT advised the farmers to dip their cattle at the same time of day so that the efficiency of the dip did not wear off. If there were long delays

between the herds going through the dip, the powder sank. On the 21st of October 2008, 263 cattle were dipped in the morning whilst the AHT was present. The AHT recorded the owners of the cattle and number of livestock each brought for dipping. However, some farmers brought their cattle later, after she had left, and used the same dip, thus their livestock were not recorded. The AHT therefore had only a partial record of the number of cattle dipped. All of the livestock farmers interviewed dipped their cattle but some stated that they did not dip their cattle when they were free of ticks. This suggested that some did not connect ticks as vectors of particular diseases.

The previously used dip was organo-phosphate based and in liquid form. The liquid dip was phased out because the ticks had become resistant to it. The state currently supplied Triatix 500 TR which was in powder form. Most farmers believed that the Triatix 500 TR dip was not as effective as the previously used liquid one. This was the result of the Amitraz based dip not smelling as strongly as the previously used one (E. Zenani, personal communication, March 28, 2009). However, the respondents still took their cattle for dipping. N. Makhapela (personal communication, April 24, 2009) said she did not see any difference after dipping so she used Deadline, a spray dip, and resolved to end up not dipping at the dipping tank.

One elderly male herder believed that if the cattle were dipped less often, the ticks would die (N. Prince, personal communication, April 30, 2009). This was

because he believed that the ticks became resistant to the dip if dipping was performed too often. A male Xhosa farmer stated that the ticks did not die or fall off after dipping (D. Mange, personal communication, May 12, 2009). However, one respondent contended that “the dip is ok but works slowly” (M. Mzukisi, personal communication, June 8, 2009). Another respondent who said the dip worked said there were not many ticks (on his cattle) because he dipped every fortnight (S. Silini, personal communication, June 10, 2009).

There were organisational problems related to collecting the pump for the dipping tank. The pump was kept at the Mpofu Training Centre which was about five kilometres from the study area. The farmers had previously agreed to pay a monthly fee of R5 (five rand) to the treasurer of the dipping committee and this was used for fuel to transport the pump back and forth. However, farmers did not pay the fees, hence no one was willing to collect the pump. There were problems in relation to cleaning the dipping tank. The tank was supposed to be cleaned before every third dipping. However, most farmers did not assist in cleaning. Usually, about five farmers went to clean the dipping tank. At a meeting held with the AHT on 9 June 2009, the farmers present agreed that the monthly subscriptions be raised to R10 each. The farmers were unable to decide how the farmers who did not pay were to be dealt with.

There also seemed to be minor racial tensions in the management of the dip. One coloured man complained that most of the amaXhosa did not assist in cleaning the tank. A Xhosa man felt that the coloureds wanted to exploit the amaXhosa because the coloured farmers asked them to help clean the dip. The amaXhosa were sensitive about this because they felt they were treated as labourers. Therefore, even where there was a well organised committee and assistance from the AHT, the cattle were not dipped according to the Department's recommended frequency.

In addition to the dip tank for cattle there was a separate tank for goats along the route to Fairbairn. None of the respondents who owned goats used the goat dipping tank. Most farmers felt that it was too far away and they used a spray dip instead, which they purchased themselves. For example, a 63-year old goat herder from Tamboekiesvlei dipped his goats using Deadline every four months (N. Prince, personal communication, April 30, 2009). The next section outlines the ethnoveterinary medicines that the respondents used to prevent and treat diseases.

Ethnoveterinary Medicine

Twenty-one of the stock farmers interviewed used ethnoveterinary medicines. They said the ethnoveterinary medicines were effective but worked slowly. Three said they did not know which plants to use or how to prepare the medications. Five said they did not use ethnoveterinary medicines at all.

None of the respondents preferred the ethnoveterinary medicine to the conventional medicine. Ethnoveterinary medicine was used only in times of financial distress. Xhosa people called the traditional remedies the *amayeza esiXhosa* and the coloured people, bosmedisyne. Both the coloureds and amaXhosa used ethnoveterinary medicines. Although there was some shared knowledge amongst the amaXhosa and coloured people, they also used different remedies for some diseases. Both the male and female respondents had knowledge on traditional remedies and remedies using commercial products. This section describes the remedies used including the ingredients, preparation and administration methods.

Aloe (*ikhala*) and *ubuhlungu*/slangbosie were the most well known plants used in preparing remedies. Seventeen of the respondents confirmed the use of these plants in preparing remedies. The main use was for gallsickness or *inyongo*. The farmers learnt about the medicine from their parents and other community members. A few parents had also taught their children about the preparation and administration of traditional remedies. An elderly Xhosa man learnt the commercial medicines from a white lady whom he worked for, and the ethnoveterinary medicines from his father. He had taught his son to prepare and use the ethnoveterinary remedies (M. Kotsela, personal communication, May 12, 2009). "I grew up on the farm and learnt all I know including traditional remedies from my father who was also a farmer" (J. Loots, personal communication, May 14, 2009).

A number of remedies were said to treat gallsickness. Most remedies for gallsickness had aloe as a primary ingredient. One 60-year old coloured farmer said he used a mixture of *slangbosie*, aloe, *balsam koppifer* root and *nkwenkwebos* for gallsickness (L. Pringle, personal communication, September 2, 2008). Another elderly man used Epsom salts mixed with gall powder. This mixture was measured four fingers from the 750 millilitres bottle's base, which would be about 250 millilitres. The mixture was diluted in about 500 millilitres of water and then administered to the livestock. For gallsickness, he also used a mixture of *ubuhlungu* and aloe, which was boiled and it always healed the diseased livestock. He mixed a small piece of *ubuhlungu* with dried, crushed aloe (M. Kotsela, personal communication, May 12, 2009).

In some cases the administration of the medicines was designed to make the animal vomit or to purge. An 80-year old coloured male farmer was very knowledgeable in ethnoveterinary medicine. For gallsickness, he used nkwenkwebos, gallbosie, nieshout (sneezewood) and perepram. These plants were boiled in about three litres of water then administered in a litre bottle to big cattle. The remedy was green in colour and bitter. Aloe was added to the mixture. The diseased cow was dosed once in the morning, afternoon and night until it was healed. The remedy was also used to treat the three-day sickness. For black gallsickness, he used a mixture of vinegar and brown sugar. These ingredients were mixed with water, shaken well then

administered to the livestock. He believed that when dosing, plastic was used because glass broke or split in the mouth and cut the livestock inside. He stated that the medicine loosened the stomach of the livestock (E. du Preez, personal communication, November 18, 2009).

A coloured farmer who owned 30 cattle mixed dry aloe and a packet of Epsom salts. The mixture was boiled in water and then about 300 millilitres was administered to each animal to treat gallsickness. Another remedy he used for gallsickness was a mixture of *slangbosie,* also known as *gallbosie*, which was mixed with Epsom salts and prepared like the previous remedy. The koppifer plant was often added to the mixture (J. Loots, personal communication, May 14, 2009). An elderly Xhosa stock owner stated that if the gallsickness was "too much", she mixed *umxhube*, aloe, *ubuhlungu* and *umkwenkwe* (which she got from eTwatwa) and boiled it. She then gave a half litre bottle to the affected livestock in the morning and half in the evening (N. Makhapela, personal communication, April 29, 2009). An elderly Xhosa man used aloe to treat *inyongo* and said that it was effective (K. Rangana, personal communication, March 24, 2009). These responses suggest that a variety of remedies were believed to work. Aloe was generally viewed as having a purgative effect. Some respondents mixed plants with other generally available materials.

For redwater, one respondent used a mixture of Jeyes fluid, half a cup of brown sugar, half a cup of vinegar and a dessert spoon of dry yeast. For retained placenta, the mixture comprised of egg, vinegar, two spoonfuls of ash and a bit of water. Kerol and salt were fed to cattle in winter when the veld was dry (L. Pringle, personal communication, September 2, 2008). The AHT added that the kerol and salt mixture worked as a calcium supplement. Therefore, although the respondents did not use fodder or salt licks, a few mentioned some homemade supplements (A. Mtini, personal communication, September 2, 2008).

Although most respondents stated that there was no traditional remedy for lumpyskin disease, one coloured lady stated that people used dry yeast and brown sugar in warm water (E. Jewell, personal communication, November 18, 2008). For a disease called *idhiya*, one male respondent said he and his uncle used *umkwenkwe* bark mixed with aloe. The mixture was boiled and administered in one dose in a 750 millilitre bottle when cool. The cattle healed in three days (M. Makhapela, personal communication, May 19, 2009).

A variety of farmers knew some remedies but there were few specialists who were acknowledged to have a deeper knowledge and who assisted others. The 80-year old coloured man was very knowledgeable in traditional remedies and a number of respondents acknowledged him. He was the only respondent who spoke of poisonous plants and their treatment. Purple

cornus crystals were used to treat tulp poisoning. Tulp is a poisonous plant. To deworm pigs, he added sulphur and rolling seed oil to the food (E. du Preez, personal communication, November 11, 2008).

A female farmer stated that she dosed cattle that swallowed plastic with Paarl Perlé wine. The wine was believed to melt the plastic making it easier to expel. The dosage was half a bottle for large cattle and a cupful for a calf. An exact timeframe for the recovery was unknown because the cattle spent the day in the veld. She also added that the old people from the community mostly used Coca-Cola to treat ingestion of plastics but she believed it did not help. She learnt the remedy from an old Xhosa man from the Transkei who was employed on the farms in Hertzog in the 1990s (E. Jewell, personal communication, May 12, 2009).

The male coloured farmer who owned 30 cattle stated that for a retained placenta, he used peach leaves. The leaves were boiled in water and then the mixture was strained and the cow was dosed 750 millilitres orally. Dry foam from the sea was used to treat eye problems. A bit of powder was scratched off from the block of dry foam and rubbed into the eye. When the cattle had *vreikies,* a hard growth on the skin, the white juice from a cactus plant was rubbed onto the growth and the growth disappeared (J. Loots, personal communication, May 14, 2009).

An elderly Xhosa man contended that for a cow that had given birth, an oral remedy that consisted of *umle*, blue soap and *intololwane* was administered. He added that:

> When the cattle get a calf, in the house, rondavel, just make the roof with a grass, where they make a fire, the grass up, you take that grass there and take *intololwane* and put together and soak then give the cattle to drink and the afterbirth will come out. This will clean the womb, but the white man put the pills inside. (A. Qolo, personal communication, June 12, 2009)

This meant that grass from above the fireplace was mixed with *intololwane*, soaked in water then dosed to the cow. The conventional method was to use afterbirth pessaries which are pills placed in the cow's womb.

The mixture of aloe and *ubuhlungu* was used for dosing sheep and goats to get rid of the worms. The worms were later excreted and were dead. A boiled mixture of aloe ferox, *ubuhlungu* and the bark of *umthathe* or sneezewood (Ptaeroxylon obliquum) were used to heal sick cattle. The mixture healed the cattle within two days. A middle aged farmer used a mixture of *ubuhlungu* and salt to treat cattle of all diseases. When a calf drank a lot of milk and had bloody diarrhoea, a lady gave it a fine plant (name unknown) which was boiled. The calf was dosed with a nip or half a bottle

depending on its size and got healed in one day (N. Makhapela, personal communication, April 29, 2009). A coloured lady used old car oil mixed with a little bit of Dazzle dip. This was also good for ticks (A. Pringle, personal communication, September 2, 2008).

Another elderly Xhosa farmer who owned cattle, Angora goats and sheep had vast knowledge on ethnoveterinary medicine. To repair broken cattle bones or limbs the remedy used was *umathunga*. The *umathunga* was mixed with water and was administered orally. For gallsickness, he boiled pieces of aloe ferox mixed with *ubuhlungu,* i*ntlungunyembe* (Acokanthera venenata) and the bark of an olive tree which is known in Xhosa as *umnquma* (olea europaea) (http://databases.mrc.ac.za/Tramed3/Plant.jsp). When the mixture was cooled, it was administered orally. For redwater, vinegar was mixed with Epsom salts, Izifo zonke, *intlungunyembe* (also known as Bushman's poison) (Acokanthera venenata) and *ubuhlungu* (Bizimana, 1994). The mixture was boiled and one litre was administered orally when it had cooled. Brown sugar was at times also added to the mixture. For *umkhondo* which Dold and Cocks (2001) translated as paratyphoid*, intololwane* which is commonly known as kidney-leaved crane's-bill (Pelargonium reniforme) was crushed and then soaked in cold water. The mixture was injected into cattle, goats or sheep. For boils on cattle, he rubbed on *umhlontlo* (Euphorbia ingens) and the boil eventually fell off. He also used the mixture of Dazzle dip and used car oil to kill ticks (Figure 12.) (A. Qolo, personal communication, June 11, 2009).

Figure 12. Woman applying a mixture of Dazzle dip and used car oil on Angora goat

A lady used a mixture of dry aloe and *ubuhlungu* and half a teaspoon of salt to prevent disease. Calves were dosed with a nip and grown cattle were administered a 750 millilitre bottle. The livestock were dosed at night when they were all in kraal so that they did not drink water. "When you give them in the morning they go to the veld, drink water and that medicine will not work" (V. Mzele, personal communication, June 10, 2009).

The most commonly occurring disease, that is gallsickness, therefore had various traditional remedies which basically had the same ingredients. The

elderly farmers had more knowledge on ethnoveterinary medicine than the younger farmers. The women, both coloured and Xhosa, had considerable knowledge of ethnoveterinary medicines. However, in general, the coloured stock owners were more open about the use of ethnoveterinary medicine and knew more about it. The next section describes the state's interventions in disease control.

State Intervention in Disease Control

The state and individual stock farmers were jointly responsible for disease control. This section describes the involvement of the Department of Agriculture in providing services and assistance at the local level. The AHTs provided the key services. The next section describes the state's involvement in disease control. This includes the activities of the state veterinarian, AHT, research, educational programmes, dipping and vaccination programmes.

The state veterinarian's main office in Fort Beaufort is about 40 kilometres along a tarred road from the research area. Thus, the Hertzog stock farmers had relative ease of access to the AHT and veterinary services. A new veterinarian was assigned to Nkonkobe and Nxuba Local Municipalities in February 2009 to replace the previous incumbent who moved to Aliwal North. The current state veterinarian qualified in Zimbabwe in 2006 but was previously based in Peddie (M. Marufu, personal communication, June 12, 2009).

The state veterinarian thought that the Department of Agriculture should consider changing the dip because Triatix TR had been used for some time. He stated that he was not aware of any research on tick resistance. There was a strategic planning meeting recently in the Eastern Cape with state veterinarians and the Department of Agriculture's directors. Many people were worried about tick resistance because Amitraz has been used for a while. Research has been proposed in meetings with stakeholders in the Department of Agriculture on the effectiveness of the current dip chemical (M. Marufu, personal communication, June 12, 2009).

The AHT for Hertzog was female and was responsible for Philipton and Fairbairn in addition to Hertzog. She also attended to the needs of some individual farmers such as a cattle farmer with more than 100 head of cattle who resided in eTwatwa. The AHT was young and was recently recruited to state service with a Diploma in Animal Production from Fort Cox Agricultural College. She was still studying for a Diploma in Animal Health. She was employed in October 2007 and initially faced problems as the stock farmers with whom she worked were not cooperative. There had been problems in the relationship between the previous AHT and stock owners. The problems arose from the non-availability of the AHT as well as poor working relations. Over time, the farmers accepted the new AHT.

The AHT stated that the state provided free services which included the dip, consultations with the AHT and vaccinations for controlled diseases. The services charged for included consultations with the state veterinarian and vaccinations for diseases that were not controlled such as lumpyskin. The state veterinarian stated that:

> Payment is always a problem especially for communal farmers. Small scale or emerging farmers usually pay on time because they have streamlined their activities to become more business minded. The communal farmers are just keeping animals just for the sake of it. Most of the time, they (communal farmers) do not appreciate the value of that animal and ultimately they won't appreciate the value of the (state) services if you come and treat, they will just think that government is supposed to do it so most of the times, the more commercial types pay there and then. With the communal farmers some do pay there and then. (M. Marufu, personal communication, June 12, 2009)

The vaccinations of livestock on the part of the state took place annually at specific times of the year as part of a planned programme for the year. Research suggested that the state vaccination programme for anthrax, blackquarter, sheep scab and Tuberculosis testing were widely effective. The vaccination used for anthrax and blackquarter in cattle was blanthrax. This

was a combined blackquarter and anthrax vaccine. One respondent said that the lack of fences and herding, sometimes meant that some cattle were not found for vaccination (V. Mzele, personal communication, June 10, 2009). However, there were sufficient drugs for all the livestock brought in for treatment. There was an effective element in state services in this area as the diseases vaccinated against were not reported to occur. For example, no case of anthrax was mentioned in any of the interviews with the respondents.

The AHT visited the areas under her jurisdiction at least once a week. She usually visited the area on its dipping day or when called to assist in diagnosing disease. She drew up a timetable for dipping and gave copies to the dipping committee members so as to regulate dipping and avoid clashes with holidays and pay days. Cases of disease were reported via the telephone. However, the AHTs' availability depended on the time of the year. When vaccination or testing programmes were underway, the AHT gave first preference to the livestock undergoing vaccination or testing. The vaccination and testing programmes were run in groups. The AHTs grouped together in twos or threes and assisted one another in their respective areas. One farmer stated that he had contacted the state veterinarian to visit and assist him with his ailing livestock but the state veterinarian had not assisted. In response to this, the state veterinarian explained that he was not always available. He stated that "… the staff (AHTs and state veterinarian) will be tied up and they at times have to consider preference and order of need" (M. Marufu, personal

communication, June 12, 2009). However, the stock farmers felt that the state's veterinary staff had to avail themselves more in order for the state to provide efficient services.

The AHT thought that some farmers were able to identify the diseases on their own but were not sure what medication to use and the dosage to administer. The AHT assisted in those aspects. When a non controlled disease was common in the village and the state did not provide treatment for it, she initially gave a general talk on administration of the vaccine at the dipping tank. For example, after the first cases of lumpyskin disease were reported in late 2008, the AHT told the farmers about the vaccine which cost R159.40. The farmers were advised to group together because one bottle was used on 10 cattle. Farmers with less than 10 cattle were advised to group together and divide the cost of the vaccine. Many farmers present at the dipping tank on the 21st of October 2008 lacked syringes or were uncertain about vaccination so she offered to vaccinate. After the first devastating impact of the disease in 2007, it was now (2008-2009) less problematic and knowledge about vaccines was more widespread.

During the period of data collection (November 2008 to June 2009), the cattle were vaccinated against lumpyskin and blanthrax. The AHT carried out these vaccinations (Figure 13.). Lumpyskin had been a problem disease in Hertzog for the past three years (2006-2008) and the AHT hoped that the Department

of Agriculture would provide the vaccine to the farmers for free in 2009. Most respondents bought the lumpyskin vaccine. Those with less than 10 cattle grouped together as the AHT had advised. This helped reduce the costs especially for those with small herds. Most respondents villages took their cattle for anthrax vaccination. The few who did not were later given an alternative date to get their cattle vaccinated. This was communicated at the meeting on 9 June 2009.

Figure 13. Animal Health Technician vaccinating cattle against lumpyskin disease in Hertzog (November, 2008)

Farmers involved in various agricultural practices were trained at the Mpofu Training Centre. However, few farmers from Hertzog/Tamboekiesvlei attended the training sessions. The respondents attributed this to poor

communication of such events and poor applicability of training programmes to their farming practices. The stock farmers said they did not have the resources to put into practice what was taught. Information days were held at least once a year in each community that an AHT served. The information days were held in the community and the researcher attended in October 2008 where about 35 animal owners were present. Representatives of various divisions in the Directorate of Veterinary Services gave talks. A representative of Pfizer Pharmaceutical company explained in detail each of the company's products for different diseases. Other pharmaceutical companies that sell veterinary medicines such as Afrivet also sent representatives to market their products and teach the farmers on the administration of medication. The AHT who organised the information day alternated between inviting either Pfizer or Afrivet to market their products. The farmers preferred Pfizer products, hence the representative from Pfizer visited more often.

The AHT and state veterinarian acknowledged that they knew about the stock farmers' use of ethnoveterinary medicine and spiritual causes of disease. The AHT said some livestock farmers used herbal remedies and believed in witchcraft to be the cause of some diseases (A. Mtini, personal communication, September 01, 2008). The state veterinarian said that those who used treat their livestock using traditional medicine thought that green,

lush vegetation caused the diseases but have since realised that the herbal medicines do not work (S. Hashe, personal communication, August 13, 2008).

The AHT explained that the information day was necessary to help and better understand the management, diseases and problems faced in raising livestock. The animal owners asked questions and received responses from the panel with various speciality knowledge on animal welfare and healthcare. There were presentations on meat safety, controlled diseases, the vaccination programme and Pfizer medications. The farmers asked questions that included issues about milk safety after vaccination or during illness, hoof diseases, Tuberculosis symptoms, mastitis and if Coca-Cola could be used to treat a cow that had eaten plastic. The animal owners present were keen to learn more about animal healthcare. However, it was not known whether they put all that they learnt into practice. For example, the use of Coca-Cola to treat cattle that had eaten plastic continued to be used. The next section concludes the chapter.

Conclusion

The respondents ranged from young to old aged men and women. This, in addition to the racial differences helped provide information on age, racial and gender differences. These differences are further explained in the next chapter. The respondents gained experience and knowledge of raising and

practicing animal healthcare from working on farms, from their parents and through state interventions. The respondents learnt about modern practices such as the use of camps and salt licks whilst working on the white farms. This confirms the CPB framework whereby knowledge is developed through interaction and experiential learning. However, the respondents were unable to practise these methods due to financial constraints. A number of diseases occurred in the area of which some were unknown to the stock farmers.

State interventions in providing dipping and vaccination material were adopted to improve livestock health. The participation of stock farmers was as a result of these agents' knowledge on animal healthcare. The stock farmers reconstructed the political structure that aimed at improving and maintaining animal health. This was done through being involved in state veterinary services and voicing their opinions regarding this. However, state veterinary services were limited to specific diseases due to economic factors limiting the budgetary allocation. Therefore, the stock farmers faced problems in purchasing some of the conventional medicines. The respondents attributed the poor animal healthcare practices to financial difficulties that they faced due to low income. Some respondents hoped that the Department could provide more medicines and the veterinary staff be more available for consultations and assistance.

Most of the stock farmers also used ethnoveterinary medicines to prevent and treat diseases. The state agents knew about the dual animal healthcare practices but disregarded ethnoveterinary medicines. The continued use of ethnoveterinary medicine in Hertzog was to some extent a result of poor state veterinary services. However, some stock farmers continued to use the ethnoveterinary medicines because they had been effective in combating disease and they did not have side effects. *Ubuhlungu* and aloe were commonly used in ethnoveterinary medicines and were readily available around the homesteads in Hertzog. The effectiveness of ethnoveterinary medicines used was however, not scientifically proven. This was one of the reasons that those who had discontinued their use gave. The next chapter provides a discussion of the findings outlined in this chapter.

CHAPTER V

DISCUSSION OF FINDINGS

Introduction

A number of studies had been undertaken on how resource poor communal farmers managed their livestock amidst various constraints. The studies found that resource poor farmers used a variety of methods including ethnoveterinary medicine to prevent, control and treat diseases. The amaXhosa and coloured stock farmers in Hertzog had been involved in raising cattle for a number of years. The stock farmers interacted with institutional and political structures such as the state veterinary and education programmes. Stock farmers attached great value to their livestock. However, the stock farmers faced constraints in terms of finances and knowledge. Prevention and treatment of diseases involved the use of both ethnoveterinary medicine and patented medicines.

This chapter discusses the findings of the study which focused on the state veterinary services and their relation to the animal healthcare practices of communal stock farmers. It explains further the livestock management practices and provides interpretations of these practices. The chapter also includes comparisons of the findings of this research with those from Mbotyi in

Pondoland and other studies. An analysis of the findings in relation to the theoretical framework underpinning this research is also included. The next section describes the socio-economic structure of livestock management.

Socio-economic Structure of Stock Farmers in Hertzog

The Hertzog community was made up of both coloured and amaXhosa people from different backgrounds. The respondents' ages ranged between 23 and 87 years. Both men and women were included in the study, thereby giving a range of viewpoints with respect to both age and gender. Women also owned and managed cattle in particular, even though traditionally Xhosa women did not own cattle independently. Most of the women had inherited cattle from their late husbands and one co-owned them with her brother.

Meetings were often held in Xhosa or English and they were translated into Afrikaans. The chairperson of the dipping committee was an elderly Xhosa man. The treasurer was an 81-year old coloured man and he was the most active in the committee. The chairperson was less active because of other work commitments. There were more amaXhosa than coloured people in the area. None of the respondents felt that there were significant racial tensions in the study area although some issues emerged which were viewed in racial terms. The coloured respondents complained that the Xhosa people did not

assist in cleaning the dipping tank. Minor tensions partially resulted from issues relating to land claims which were underway. The coloured people felt that Tamboekiesvlei belonged to them and that the amaXhosa had to be allocated land in Hertzog. The amaXhosa believed the land in both Hertzog and Tamboekiesvlei belonged to them, excluding the area known as kwaGroepe. The amaXhosa felt that they were treated as the 'other' due to historical factors whereby the white farmers worked closely with the coloured people and allocated them land.

The average number of cattle owned amongst the cattle owners was 14 which was fairly similar to Hesterberg et al.'s (2007) findings on cattle health in KwaZulu-Natal where their average was 12. For the coloured farmers, the average number of cattle was 18 whilst for the amaXhosa, it was 11. Therefore the coloured people owned more cattle, on average, than the amaXhosa. The respondents had more cattle than goats and sheep relative to most rural communities in South Africa. The larger cattle population in Hertzog was as a result of the theft of small livestock discouraging people from raising smaller livestock. Cattle are also more valuable in African society as compared to smaller livestock. Another reason was the greater attention state agents and stock farmers paid to cattle as compared to the smaller livestock. The state vaccination and testing programmes were mainly aimed at cattle. Only sheep scab and rabies which target sheep, and cats and dogs, respectively, were also included in the programme. The good quality of cattle

as compared to other rural areas in the Eastern Cape Province was another reason why stock farmers were more interested in cattle.

The cattle grazed in the veld whilst the smaller livestock such as sheep and goats grazed around the homesteads. Most respondents said the grazing was inadequate and that they could not afford to buy additional fodder for the livestock. In Hertzog, animals were allowed to graze over quite a wide area and they were not herded every day. However, they did not have any alternative to the local pastures. In Mbotyi, some respondents herded their cattle to a neighbouring village where pastures were better.

Research on rural African communities has shown that they depend on a variety of sources of income and that in the Eastern Cape Province, the proportion of income generated from agricultural activities has declined over a long period (Andrew & Fox, 2003). The sources included income from urban and government wages, old age pensions, state grants, stock sales, vegetable sales and from spaza shops. In Hertzog, the income generated from spaza shops was about R1 500 per month in 2009. Hertzog cattle were often sold at the regular stock sales that Sheard Auctioneers held in Seymour. In contrast, there were no regular stock sales in Mbotyi. This illustrated the differences in marketing activities in the two areas. Livestock buyers from outside Hertzog were more common in Hertzog. The external buyers in Hertzog paid between R1 500 and R2 000 for cattle (Beinart, 2009).

The next section examines the Hertzog stock farmers' knowledge on livestock management.

Knowledge on Livestock Management and Disease

The actors' (respondents) knowledge of livestock management was acquired through experience from working on white owned farms, from the respondents' parents as well as through the Department of Agriculture's interventions. The stock farmers had contextual and experiential knowledge acquired through learning from their elders and working on white owned farms (Woodley, 2005). Some respondents worked on farms in postapartheid South Africa and later on started their own stock raising. The scientific methods of livestock management were adopted from the white farmers. However, the respondents engaged few of these practices although they knew these methods would be beneficial to them. This was ascribed to the theft of fences and financial constraints. For example, the respondents mentioned that the theft of fences had led to abandonment of the camp system as well as the loss of livestock. It was thus important for the community to put in security measures such as the Community Policing Forum. The practice of ethnoveterinary medicine was learnt from the respondents' parents. The respondents were taught to identify disease from the symptoms, perform postmortems, and prepare and administer homemade remedies.

The stock farmers identified diseases using symptoms as they had learnt from their elders and the white farmers. The problem with asymptomatic identification of diseases was that various diseases had the same symptoms. Another problem was that the respondents only knew of, and were able to identify, gallsickness, heartwater, redwater, Tuberculosis and lumpyskin which were the most common diseases in the area. The lack of knowledge on other diseases such as bovine ephemeral fever and other methods of diagnosis limited the efficiency of disease identification. Redwater was identified on the basis of red urine in most other areas however, in Hertzog, none of the respondents mentioned it as a symptom.

Gallsickness or *inyongo* was the most common disease in most studies undertaken in the South Africa (Dold & Cocks, 2001; Getchell et al., 2002; Masika et al., 1997a). Therefore, it was not surprising to find that it was also common in Hertzog. Some stock farmers in Hertzog believed that heartwater occurred concurrently with gallsickness in cattle. However, the disease or condition referred to as gallsickness referred to a range of diseases due to the asymptomatic nature of diagnosis and the limited knowledge of different diseases. Different diseases that presented similar symptoms were identified (wrongly) as one of the well known diseases. The symptoms such as failure to develop, jaundice and distension of the gall bladder with bile were general symptoms of disease and did not indicate a specific condition (Getchell et al., 2002).

In Hertzog, worms were not identified as a common parasite, unlike in Mbotyi where this was the case. Only one respondent in Hertzog mentioned the use of Valbazen which is an oral dewormer for cattle, goats and sheep. Worms were more common in Mbotyi because of the different climate and vegetation types in Mbotyi and Hertzog. There is a wider range of shrubs in the latter which may act as natural remedy for worms. Worms were mentioned in Hesterberg et al.'s (2007) study undertaken in the KwaZulu-Natal Province.

The stock farmers did not know or understand the causes of most diseases. For example, the change of seasons was the most commonly perceived cause of gallsickness. This was similar to Masika et al.'s (1997b) findings from the central Eastern Cape Province. The association of gallsickness with the spring and summer seasons was fairly accurate because this was when ticks were more common. The growth of grass during these seasons provided a suitable microhabitat for ticks to survive and multiply. Midges which thrive in the wet season also transmit gallsickness. Therefore the high tick presence and speedy growth of grass led to the perception that eating lush green grass caused gallsickness. A few respondents also believed that eating spiders and insects on the grass caused gallsickness. This finding was similar to those from Mbotyi and Masika et al.'s study (1997b). The respondents did not know the cause of the three-day sickness which is bovine ephemeral fever. Masika et al., (1997a) noted it as one of the diseases which was mistakenly believed to be prevented through dipping.

In Hertzog, spiritual causes were not perceived to cause any disease. In contrast, in Mbotyi, diseases such as gallsickness were classified as 'real' whilst uncommon diseases that affected only one household and unexpectedly killed the livestock were believed to be due to witchcraft. Bewitchment was related to jealousy. The traditionally grounded nature of the Mbotyi community was why spiritual reasons were mentioned as causes of disease. This was also common in other parts of the Eastern Cape Province as the AHT for Healdtown, close to Fort Beaufort, stated that she had dealt with a case whereby the stockowner believed witchcraft was the perceived cause of livestock disease.

Few of the studies examined in the literature review reported on the various knowledge sources that stock farmers had. The Hertzog farmers' knowledge base was developed over time as a result of their farming experience and the Department of Agriculture's interventions to teach stock farmers about raising livestock. This institutional structure implemented various programmes in the past and there have been training centres built for the purpose of educating farmers. An example is the Mpofu Training Centre located close to Hertzog. The retailers of veterinary products also played an important role in transmitting information about treatment in addition to supplying veterinary products. Pharmaceutical companies which were present at the Hertzog information days also disseminated useful information on disease and medications.

The knowledge on livestock management evolved through time in response to social, economic and political change. The research undertaken at Onderstepoort Veterinary Institute and through the Department of Agriculture developed various medicines through the understanding of diseases native to Africa. New medications and practices were implemented in South Africa. When the state provided free medication, most stock owners, to some extent, discontinued the use of ethnoveterinary medicines and adopted the patented medicines. However, the financial constraints that led to fewer provisions from the Department forced the stock farmers to resort back to the use of ethnoveterinary medicine.

There were differences in the type and amount of knowledge based on age, race and gender. In Hertzog, the younger respondents knew little about, and were not interested in, ethnoveterinary medicine. Only one young coloured man aged 32 years had some knowledge and interest in ethnoveterinary medicine. The coloured respondents were more willing to divulge information on ethnoveterinary practices than the amaXhosa. The men tended to know more than the women, even though both men and women knew and used ethnoveterinary medicine.

The next section outlines the types and sources of medications Hertzog stock farmers used to prevent and treat disease in livestock.

The respondents used both patented (conventional) and ethnoveterinary medicine. Conventional medicine was preferred because the respondents said it worked better and was scientifically proven. Seventy percent of the respondents from Hertzog used ethnoveterinary medicine. The findings were almost consistent with those of Masika and Afolayan (2003) where about 75% of resource limited stock farmers use ethnoveterinary medicine to treat their livestock. None of those who used ethnoveterinary medicine relied solely on it. The ethnoveterinary medicine was most often used when the stock owners had no money to buy the patented medicines. Some respondents used the ethnoveterinary medicines for minor ailments then resorted to patented medicines when the disease progressed. This finding was similar to Masika et al.'s (2000) study undertaken in 1996 in the Eastern Cape Province, where the type of ailment determined the choice of medicines. The respondents administered antibiotics such as Terramycin and penicillin for most diseases. This was regardless of whether the disease was known or not.

The female stock farmers also knew about ethnoveterinary medicines and as noted in studies such as McCorkle et al.'s (1996), the women knew more about small livestock and poultry. The younger stock farmers knew less about ethnoveterinary medicines than the older ones. This was similar to findings of a number of studies (Martin et al., 2001; Mathias, 2001; McCorkle

et al., 1996; Masika et al., 2000; Matekaire & Bwakura, 2004; van der Merwe et al., 2001). The younger stock farmers used only conventional medicines.

The patented medicines were most often purchased from Fort Beaufort which was not easily accessible. This was similar to the situation in the East Godavari District in India (Kamal & Kumar, 2004) where the veterinary medicine suppliers were far from the villages. The main retailers were the Fort Beaufort Chemist, Umtiza Farmers' Corp and Von der Decken hardware shop. However, due to the respondents' knowledge of three basic patented medicines, the stock farmers requested those and did not expl ore other options which were more suitable.

In Madikwe, South Africa, the Field Service Units that supplied veterinary medicine employed staff with no knowledge of livestock diseases and on how to handle and store the veterinary medicines properly. The medicines at the Field Service Units were regularly out of supply hence stock farmers had to travel to farmers' cooperatives in larger centres outside the district (Gehring et al., 2002). This was similar to Hertzog where stock farmers had to travel to Adelaide occasionally when medicines were not available from the retailers in Fort Beaufort. The state veterinarian and AHT in both Hertzog and Madikwe were not directly involved in the sale of products.

The coloured farmers in Hertzog knew more about ethnoveterinary medicines than the amaXhosa. The coloured people spoke widely on ethnoveterinary

medicines including the herbal remedies, herding strategies and disease identification. The amaXhosa people stated that they used more conventional veterinary products. The responses from the amaXhosa were as a result of one of the weaknesses of interviews whereby people were not willing to divulge all they knew.

The respondents in Hertzog used ethnoveterinary medicine when they were unable to afford the patented medicines. The livestock were also dosed with ethnoveterinary medicines regularly to prevent disease. This illustrated how the respondents who used ethnoveterinary medicines believed that the medicines worked for minor ailments and alleviated the symptoms whilst they tried to raise money for the patented medicines. This contradicted the findings of Luseba and van der Merwe (2006) that ethnoveterinary medicines were used as a second choice after patented medicines for chronic cases, and when the patented medicines were ineffective. In contrast, stock farmers in India preferred herbal remedies because they had no side effects and it was easier to use the locally available medicines than to travel to state veterinary hospitals. The Indian stock farmers were also pleased with the efficiency of the traditional healers and herbal remedies (Kamal & Kumar, 2004).

In Hertzog, common plants were used in most of the remedies. The plant ingredients for the ethnoveterinary remedies were obtained from the

surrounding veld when needed. Plants such as aloe and *ubuhlungu* were common and grew around the homesteads. None of the respondents cultivated the plants. The household materials used in some remedies included salt and sugar. Therefore, ethnoveterinary medicines probably depended both on inherited knowledge and on trial and error with available materials. Unlike in Barboza et al.'s (2007) study in Brazil, the stock farmers in Hertzog did not mention the use of zootherapeutics in preparing ethnoremedies. Some respondents in Hertzog did not discuss the effect of the medication, that is, how the medication worked.

The effectiveness of ethnoveterinary medicine was not accurately determined. For example, the respondent who mentioned the use of Coca-Cola did not see the plastic being excreted, hence, it was unknown if the wine actually 'melted' the plastic and helped expel it. The belief that the wine remedy worked was based on that the livestock would behave normal after a while. Some respondents said that the ethnoveterinary medicines treated some of the diseases. However, other respondents used conventional medicines in addition to herbal remedies after the herbal remedies failed to treat the livestock disease. No remedies had been developed to treat diseases that had recently occurred in the area, such as the disease similar to Tuberculosis.

The use of aloe in most remedies to treat gallsickness was attributed to its purgative effect on the livestock. Aloe was added as an extra ingredient to all

ethnoveterinary medicines, because it was believed to increase the remedy's strength. Similar to conventional medicines, dosages depended on the age and size of the livestock. Larger livestock received a higher dose than the smaller livestock. This was also similar to findings from other studies (Dilshad et al., 2008; Dold & Cocks, 2001; Koné & Atindehou, 2008; Luseba et al., 2006; Masika et al., 1997, 2000; Njoroge & Bussmann, 2006; van der Merwe et al., 2001).

The next section discusses the state veterinary services provided to stock farmers in Hertzog and relates them to the South African legislation on animal healthcare.

State Veterinary Services offered to Hertzog Stock Farmers

The South African Department of Agriculture has been in existence for a long time and temporal changes in social, economic and political structures has reshaped it. The Eastern Cape Provincial Department of Agriculture provided dipping chemicals, vaccination, testing and consultation services for free. The state veterinary services provided changed yearly due to political and economic changes. The Veterinary Services Directorate as a political structure, changed its vision and focus areas based on changing trends and mainly the budgetary allocation from the Provincial Department of Agriculture's budget.

The AHT for Hertzog assigned the stock farmers dipping days that corresponded with the provincial rules of dipping fortnightly in winter and weekly in summer. However, although all respondents dipped their cattle, they did not always follow this timetable such as when it was raining. The dipping was effective although the belief that dipping should not be done in cold weather and tensions over cleaning of the dip were the main constraints. Some cattle farmers were also reluctant to dip cattle when they did not see ticks on them. They may have been missing ticks and thus deprived their cattle of prophylaxis against ticks. The stock farmers also believed that Triatix 500 TR was less effective than the previously used organophosphate based dip. The inconsistent dipping due to such beliefs and concerns probably limited its effectiveness. There were also longstanding problems with tick resistance to dip. Although the dipping committee in Hertzog faced various challenges, the dipping programme was run quite effectively as compared to Mbotyi where it did not function effectively.

The AHT organised information days in Hertzog and training workshops were held at Mpofu Training Centre. There was active participation during the annual information days. The information days were not sufficient to keep the farmers well informed about livestock management and disease. Few stock farmers attended workshops held at the Mpofu Training Centre. The workshop programmes included piggery. The effectiveness of information delivery was low because of the little relevance of workshops to the farmers'

farming practices and poor communication of meetings to stock farmers in Hertzog. Some respondents had commitments such as business ventures and Community Police Forum meetings to attend.

In Hertzog, there were no cases of blackquarter reported, unlike in Luseba and van der Merwe's (2006) study in Giyani, Limpopo Province where respondents said blackquarter was one of the common diseases. In the Eastern Cape Province, blackquarter was one of the diseases vaccinated against in early summer. Blackquarter was neither a controlled nor a notified disease, hence vaccination against it was not compulsory. In Hertzog, the cattle were vaccinated against blackquarter and anthrax yearly.

The AHT reported cases of controlled diseases when they arose. The AHT gave advice on controlled diseases that occurred in the area as outlined in the Animal Disease Act of 1984. Information on controlled diseases and other diseases common to the area such as lumpyskin was disseminated at the information days, at meetings and during consultations with stock farmers. The stock farmers did not always follow the advice given and would base their actions on their own knowledge. Therefore the stock farmers applied practical consciousness. When lumpyskin disease was observed, the AHT reported the case to the state veterinarian and requested the pharmaceutical companies to stock up on the vaccines. She also advised the stock farmers on how to vaccinate their cattle and offered to do it on their behalf.

At the information day held in Hertzog in 2008, a representative of the Department of Agriculture spoke to the stock farmers about meat safety. She advised that an abattoir was going to be built at the Mpofu Training Centre and that this would satisfy the requirements set in the Meat Safety Act of 2000 (Meat Safety Act, 2000). Although the stock farmers appeared keen on this development, they were unlikely to get involved because in rural areas, slaughtering of livestock is usually performed under customary conditions whereby rituals were undertaken. Another reason was that stock farmers did not want to go through the hassle of transporting and waiting for the authorities to slaughter the livestock.

In accordance with the Animal Identification Act of 2002, most stock farmers had their cattle branded (Animal Identification Act, 2002). Some farmers only branded their cattle when they were taken to the auction. A female farmer was in the process of changing the brand from her late husband's mark to her own but the process was taking considerable time. Most of the stock owners had stock cards but did not make regular use of them. Few stock farmers brought the stock cards during dipping because herders and not the cattle owners took the cattle to the dipping tank.

The AHT inspected livestock at the stock sale in Seymour and during her visits to Hertzog. This was in line with the Veterinary and Para-Veterinary Act of 1982 (Veterinary and Para-Veterinary Act, 1982). However, the shortage of

veterinary staff in the Department of Agriculture reduced the efficiency in service delivery because the vaccination and testing programmes took longer to complete. Hence, the AHTs were unable to cater to all the needs of the stock farmers for which they were responsible. These areas encountered losses of livestock due to absence of consultations and advice. The limitations on mileage with the Fleet Africa vehicles also prevented AHTs from visiting villages that were further off from the main stations. Hertzog, which was located close to the R67 road received regular visits from the AHT. On the other hand, the state veterinarian who was responsible for two Municipalities was rarely available for consultations to Hertzog to farmers.

The stock farmers were keen on consulting the AHT when their livestock were sick from a disease that they did not know. However, the AHT was not always available and the state veterinarian, who served a larger area, was even more difficult to reach. The AHT and state veterinarian noted that their heavy workload prevented them from meeting all the farmers regularly. Skills shortages had long constrained services that the Department of Agriculture provided. This, together with limitations on mileage, resulted in poor service delivery. With one AHT serving about five wards, that was a ratio of about one AHT to 200 livestock farmers in Nkonkobe and Nxuba Local Municipalities (in 2008/2009). A number of stock farmers supported the state veterinary programmes through active participation in vaccination and dipping. The stock farmers tried to make the most of the veterinary services that the

state offered them. The use of state veterinary services enabled the stock farmers to benefit and gain knowledge and reduced the dependency on ethnoveterinary medicine. The political structure was thus drawn upon but enabled and also constrained actions (Brooks et al., 2008).

In South Africa, new interventions were adopted as veterinary services developed and some, such as dipping, were compulsory. The stock farmers began to overlook indigenous practices and eventually the scientific practices overshadowed them. These are the changes in the animal healthcare system over time. The methods of implementing scientific advancements on the people were at times unacceptable to stock farmers. For example, the state agents undermined indigenous knowledge thereby resulting in resistance from stock farmers in more traditionalist societies (Waller & Homewood, 1997; Woodley, 2005). The Department of Agriculture provided services that stock farmers required since 1994. In Hertzog, there was little evidence of resistance to scientific animal healthcare approaches. Rather, there was a lack of education and people did not understand the treatments and drugs fully. In the case of dipping, they circumvented the strict prescriptions of the Department but dipping was no longer compulsory and the Directorate of Veterinary Services did not try to enforce it. The state agents were aware of the use of ethnoveterinary medicine but did not believe that it worked.

The stock farmers in Hertzog interacted with each other, the Directorate of Veterinary Services (political structure) and other state representatives. These interactions with various structures and among agents resulted in the reproduction of the political structure. State economic policies including GEAR and AsgiSA (economic structures) helped shape the terrain for animal healthcare under the direction of the Eastern Cape Province's Directorate of Veterinary Services. Not only did the stock farmers have a say in the type of veterinary services offered but the economic structure determined to what extent these would be met through budgetary allocations, policy and focus areas. Stock farmers hoped the state would do more in terms of the provision of drugs such as the lumpyskin disease vaccine. The conclusion to this chapter is outlined in the next section.

Conclusion

Although the stock farmers were keen on managing their livestock properly and keeping their livestock free from disease, they were unable to do so. Diseases and a lack of adequate knowledge were major constraints to animal healthcare. The stock farmers still used ethnoveterinary medicines even though some modern, that is, conventional medicines were also employed. The differences in knowledge and practices between age, race and gender are better understood from this theoretical perspective.

The Hertzog stock farmers managed to develop their knowledge base on livestock management through experiential learning whilst working on white farms and from their parents. The CPB framework supported the findings on the stock farmers' knowledge on livestock management and animal healthcare. Ethnoveterinary medicines were developed through experimentation and interactions with the environment. However, the state interventions into livestock management which included dipping and vaccination changed the ways in which livestock were managed. The stock farmers adopted the management practices learnt from the institutional structure but because some of the practices were not feasible, some respondents continued to rely on ethnoveterinary medicine. The Department of Agriculture's activities influenced the type of services that it offered to the stock farmers. The next chapter provides a conclusion to the dissertation.

CHAPTER VI

CONCLUSION AND RECOMMENDATIONS

Introduction

The research set out to study the relationships between Hertzog stock farmers and the social, economic and political structures. It also analysed how these factors influenced livestock management especially animal healthcare practices. Through the use of interviews and participant observation techniques, data were gathered on communal stock farmers' livestock management practices. Interviews were also used to collect data on state veterinary services. Structuration theory and the CPB framework underpinned the research.

The study was undertaken in Hertzog which is a village in the Eastern Cape Province of South Africa. The respondents had years of experience in livestock management which had helped them build their knowledge base in respect of livestock management and animal healthcare. Due to financial constraints, the stock farmers used both conventional and ethnoveterinary medicine. However, skills shortages in the Department of Agriculture, in addition to other problems, affected service delivery. The next section summarises the objectives and findings of the study.

Summary of Findings

The research aimed mainly at examining the animal healthcare practices of stock farmers. This was achieved through examining the stock farmer's social structure and knowledge as well as determining the types of medication and what influenced the choice. The stock farmers' knowledge was developed through understanding of the environment, learning from their elders and when working on white owned farms. The farming experience helped to develop the knowledge through the incorporation of scientific methods that the Department of Agriculture encouraged. The types of state veterinary services offered and their influence on the stock farmers' practices were also investigated.

As part of the first objective, the social structure of the respondents included both amaXhosa and coloured people who were old and young men and women. Hence there were a variety of responses based on these age, gender and race differences. The coloured people were descendants of the Khoikhoi, amaXhosa, Dutch, Germans and British who had resided in the area in the past. The community's social structure and involvement of various ages and both sexes of agents in animal healthcare resulted in men and women of all ages being knowledgeable about animal healthcare. Due to more experience in stock farming, the older stock farmers were more knowledgeable.

The study found that the stock farmers in Hertzog had varied levels of knowledge on livestock management. However, they all knew the basic methods of livestock management as a result of experience in having raised livestock. The stock farmers were unable to obtain conventional medicines within the community and had to travel to Fort Beaufort and at times Adelaide. The stock farmers knew some of the diseases and medicines by name but at times sought recommendations from the retailers. Knowledge of medicines and diseases was developed through interaction with the state veterinary staff. Most stock farmers found the conventional medicines expensive and would first try ethnoveterinary medicines. The ingredients for ethnoveterinary medicines were obtained from the surrounding veld. The most commonly used plants which were aloe and *ubuhlungu,* grew wildly amongst the homes. Both men and women knew ethnoveterinary medicines but the coloured people were generally more knowledgeable in this regard.

The conventional practices which needed additional resources which the stock farmers could not afford were often neglected. The state was both a political and institutional structure which expected the stock farmers to use conventional medicines only even though the Department did not provide all the necessary services and medication. Economic structures such as AsgiSA and the changing economic policies defined what services the Department could provide. Political structures defined the missions and focus of the Department thereby influencing the extent of state veterinary service provision. The state veterinary staff was against the use of ethnoveterinary

medicine but expected the stock farmers to use conventional medicines which the stock farmers usually could not afford. The state veterinary staff failed to acknowledge ethnoveterinary medicine as a fairly reliable alternative method to disease control. It would thus be useful for the state to recognise and investigate further into the use of ethnoveterinary medicine as an affordable means of animal healthcare.

The contextual background of the study area (chapter II), provided a history of the area which supported the findings that stock farmers in Hertzog had been involved in stock raising for some years. The CPB framework recognises the development of knowledge as based on history. This is rightly so because stock farmers learnt about livestock management from the white settlers as well as their parents. The changes in time in the area influenced the content of indigenous knowledge. The adoption of conventional methods and medicines led to a loss of indigenous knowledge. Thereby, most of the younger generation in Hertzog knew little of and did not use ethnoveterinary medicine.

The fourth objective of the study was satisfied having found that the institutional structure, that is, the Department of Agriculture, played a role in information dissemination and assisting the stock farmers. The AHT was reliable in performing the vaccination and testing programmes within Hertzog. Dipping was the most common animal healthcare practice. However, there was inconsistency as a result of skills shortages which made either the AHT

or the state veterinarian unavailable at times of the year. The political structures influenced the management of state finances thereby leading to changing systems of state veterinary services. The changes filtered down to the stock farmers who would receive more or less state veterinary services depending on the policies in place.

The wide range of findings obtained in this study added to the existing body of knowledge on animal healthcare in communal villages. The most interesting findings were the respondents' preference of conventional medicines even though these were not well understood and the differences in knowledge and practices between the ages, gender and races. The next section outlines the problems encountered in the research.

Limitations

Due to the rural nature of the study area a number of problems were encountered. The weaknesses included the fact that respondents did not divulge some information. Although it was believed that all cattle owners participated in the dipping programme, the results were slightly biased as the cattle farming respondents were limited to those who participated in the dipping programme. The researcher mainly interacted with the farmers who participated regularly in the dipping programme. Not all respondents provided the number of livestock they owned. Others could also have exaggerated the figures, however, this was one of the limitations which could not be overcome because the researcher did not have direct access to individual stock farmers'

livestock. Another limitation was that it was that some of the indigenous names of the diseases could not be matched with the scientific or common names. The indigenous names matched a number of common names and since the researcher had not been shown most of the actual plants, the researcher could not identify the plants.

Recommendations

The findings of this study conclude that communal stock farmers in Hertzog did not have the necessary knowledge and financial means to practice animal healthcare in such a way as to minimise the avoidable loss of livestock. The loss of indigenous knowledge has resulted in more factual rather than experiential knowledge. It is thus essential for stock farmers to be educated on why they should follow the programme regardless of the weather, so as to increase the effectiveness of dipping. Through an understanding of the institutional knowledge, the stock farmers would better understand and appreciate the dipping exercise.

The Mpofu Training Centre could also hold awareness meetings in the surrounding communities encouraging farmers to attend workshops and informing them on the dates when the workshops were to be held. These meetings could be communicated to the larger farming body through the dipping committee. The Department should continue to strive to fill the vacant posts and attract more skilled veterinary staff to state service. This would help improve service provision.

The absence of a solid waste management system as is common in most rural areas meant that people dumped or burnt the rubbish. Plastic bags were often thrown on the ground or blown away from the rubbish dump. The livestock ingest the plastics and this resulted in fatal consequences in some instances. It was therefore necessary to develop a waste management system in Hertzog.

Further research on animal healthcare issues could be taken to verify the effectiveness of the medicines used. The use of commercial and potentially harmful products such as Coca-Cola and Paarl Perlé wine, respectively need to be investigated. Another research agenda that could be explored is cultural perspectives related to disease and the use or lack thereof of ethnoveterinary medicine.

APPENDIX A

INTERVIEW QUESTIONS FOR EASTERN CAPE PROVINCE'S

DIRECTOR OF VETERINARY SERVICES

1. What is the main role of the Veterinary Services Directorate?
2. What type of livestock do you deal with?
3. Does the Directorate have recent (2007/2008) statistics on livestock owners?
    i.) If so, how often are they updated?
    ii.) What type of data/statistics are they?
4. What services are currently offered to livestock owners?
    i.) How are the services disseminated?
    ii.) Are the services charged? How are the charges determined?
    iii.) What type of education and/or training is offered to livestock owners?
    iv.) How, when and where is the education provision performed?
5. How have the services offered changed since 1994 when veterinary services were decentralised?
6. What are the most common livestock diseases in the Eastern Cape Province?
7. Do you provide medicines to livestock owners?

8. How do you prevent the outbreak and spread of diseases?
9. How are extension officers distributed over the Province?
10. Where are field veterinarians and extension officers trained?
11. What is the communication channel of livestock farmers to Veterinary Services Directorates, and vice versa?
12. How are dipping programmes organised (time, location and how people are informed and gathered)?
13. How are vaccination campaigns organised and held?
14. How do you subsidise and enforce the use of vaccines and dipping?
15. Do you know of any other (traditional) means by which stockowners prevent, control and treat disease?
16. Do you have any recommendations (possible research interests, location)?

APPENDIX B

INTERVIEW QUESTIONS FOR STATE VETERINARIAN

1. What is the role/duty of the state veterinarian?
2. Which areas are you responsible for?
3. What type of information do you have on livestock owners/farmers?
4. What services are offered to farmers? (in terms of dipping, treatment of livestock, visiting farmers to educate them etc.)
    i.) Are the services charged?
    ii.) If so, how much?
5. Do you educate farmers on proper livestock management practices?
    i.) If so, please provide details?
6. What diseases are common in the area?
7. What is the name of the dip?
    i.) Is it available at the local pharmacy/Umtiza?
8. For which diseases are livestock vaccinated?
9. When do the vaccination programmes take place?
10. Is the stock farmers' use of traditional medicines acknowledged when treating livestock?
11. Any recommendations for improvements to dipping and vaccination?

APPENDIX C

INTERVIEW (2) WITH STATE VETERINARIAN

1. When did you take over from Dr. Hashe?
2. Are you also responsible for Nkonkobe and Nxuba Local Municipalities?
3. Describe a typical working day.
4. Who do you report to?
5. How much is charged for the various services offered to communal farmers?
6. Other than animal health technicians, who else do you work with?
7. How many Animal Health Technicians are there in Fort Beaufort?
    i.) Gender? Male…….Female…….
    ii.) How many villages does each of the AHTs serve?
    iii.) What qualifications do they have?
    iv.) Are they given further training?
    v.) Who performs the training? How often?
    vi.) Is the number of AHTs sufficient for effective provision of services?
8. Who monitors/oversees the AHTs work?

9. Dr. Hashe spoke of the reintroduction of stock cards, has this been successfully implemented?
10. Does the Department of Agriculture inform corporatives or the chemist of what medication to buy for resale?
11. Does the Department of Agriculture liaise with the chemists/corps etc. on what medication to stock?
12. How many dipping tanks are there in the areas under your jurisdiction?
13. Approximately how many livestock are there in Nkonkobe Local Municipality?
14. What determines where a dipping tank is built?
15. How would you evaluate the running of the dipping programme?
16. Can any improvements be made to the dipping programme? How?
17. What chemicals are in the dip?
18. How are the vaccination programmes organised?
19. How would you evaluate the vaccination programmes?
20. Is there any ongoing research on tick resistance?
21. Who does research on the geographical spread of different diseases/ resistance of animals to diseases?
22. From the interviews undertaken, most livestock farmers use Hi-tet and penicillin for any livestock disease that they find, is this suitable?
23. Of the farmers that you have met, how would you evaluate their knowledge of livestock diseases (identification), administration and storage of medication?

APPENDIX D

INTERVIEW QUESTIONS FOR STOCK FARMERS

1. What is your name and surname?
2. How old are you?
3. What gender are you?
4. What is your marital status?
5. Where were you born?
6. What is your main source of income?
    i.) What is your gross monthly income?
7. Who currently owns the land you live on?
8. When did discussions on land ownership begin?
    i.) What has been resolved thus far?
    ii.) Who owned land you live on previously? Pre-1994? Post-1994?
    iii.) How will land tenure/ownership assist farming practices?
9. What type of livestock do you keep?
    i.) How many of each type do you have?
10. Where do they graze?
    i.) Are the pastures adequate?
    ii.) Do you practise transhumance?
    iii.) Who herds the livestock?

11. What are the livestock kept for (sale, family consumption)?
    i.) If for sale, what channels are used for sale?
    ii.) How are prices set for each head sold?
12. Do you own a stock card?
13. Do you know the purpose of stock card?
14. What are the common diseases? What causes the diseases?
15. What methods are used to treat the livestock (Traditional/Scientific/Both)?
16. How do you decide on the type of medication to use?
17. How did you get to know about the medicines?
18. Where do you buy the conventional medicines?
19. Where do you collect the ingredients for the traditional medicines?
20. Are the medicines reasonably priced?
21. Who administers the medicines?
22. Do you make use of state veterinary services?
23. How reliable are the state veterinary services?
24. Do you make use of other veterinary services such as the Mpofu Training Centre?
25. Where did you obtain knowledge on livestock management and animal healthcare?

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