

Control of The Black Leg Disease Using Indigenous Knowledge Systems: A Case of Bubi District, in Matabeleland South Province, Zimbabwe

Boat Sibanda^{1*} and Christopher Ndlovu²

¹Department of Animal Science and Rangeland Management, Lupane State University, Box AC 255, Ascot, Bulawayo

²Department of Educational Foundations, Lupane State University, Box Ac 255, Ascot Bulawayo

*Corresponding Author: Boat Sibanda, Department of Animal Science and Rangeland Management, Lupane State University, Box AC 255, Ascot, Bulawayo.

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Abstract

Sometimes called Quarter Evil, Black leg disease (Umkhono) is a deadly animal disease that normally attacks animals (cattle) in the age of \pm 6 months to 3 years. The mostly affected animals are those which are well fed with good muscling. The disease is caused by a bacterium of species *Clostridium chauvoei* type D. Most notable symptoms are limping from one leg, either hind or quarter, being off feed and swelling of the affected area. While there are several conventional drugs that could be administered to such animals, these conventional methods have proven to be prohibitive in terms of costs to the small holder farmers. The use of indigenous methods has proven to be not only effective but also affordable to many small holder farmers. Some of the common indigenous intervention strategies include the use of the tree called Umvagazi (*Pterocarpus angolensis*), where the affected animal is made to walk over the rod of the tree, use of hot water and hot plates. Small holder farmers who use these methods have given it an effective control rate of \pm 85%. It was noted that these indigenous knowledge systems are just a privy to only a few farmers while the majority of farmers are not aware of them. In a randomly selected study, only 33% smallholder farmers of Bubi district area indicated having knowledge of Indigenous Knowledge Systems (IKS) on the control of the Black leg disease. It is in this light that this paper argues that such Indigenous Knowledge Systems (IKS) should be made available to all people through the traditional communications and the Agritex officers so that small holder farmers would share their various farming experiences and learnings to ensure fruitful farming undertakings, in this district and outside this district

Keywords: Smallholder farmers; Indigenous Knowledge Systems (IKS)

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Introduction

Cattle are of paramount importance in communal areas of Zimbabwe. They provide not only the essential animal protein but also play a vital role in the provision of manure, as well as draught power. To the communal farmer they are a form of investment and a status symbol. Local traditional knowledge views owners of large numbers of cattle as very important and dignified people in a society. Greg (1973) alludes that cattle in the smallholder set up are a reason for making a living. Most rural smallholder farmers use livestock for other social functions including appeasement of spirits and Lobola. Therefore cattle are associated with spiritual value in the Indigenous Knowledge (IKS) paradigm.

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Study Site

The area studied is located in region 4 of natural farming regions of Zimbabwe. The district receives erratic rainfall of 600 mm per annum with an average temperature of 27° Celsius. The area has scanty grazing making livestock production a challenge. The climatic conditions of this area favour outbreak of various animal diseases such as Anthrax, Black leg and Tick-Borne diseases

Cattle production in the smallholder sector is affected by a number of factors. The factors affecting cattle production include poor nutrition, poverty, internal and external parasites, pathogenic and deficiency diseases (Hypocalcaemia and Osteophagia). Other than causing low productivity, these myriad of problems lead to poor reproductive efficiency as well. As a result the sustainability of cattle production becomes a serious challenge in the smallholder farming sector. In the long term, the costs incurred in treatment and prevention of diseases and parasites become very high, more so if synthetic drugs are used. Sibanda (2007) argues that use of synthetic medication can gobble up to 30% of the total production costs. Consequently the smallholder cattle producers are resorting to Indigenous Knowledge Systems (IKS) to control cattle diseases.

Definition of Key Terms

Indigenous Knowledge Systems

The research identified an array of exciting definitions of indigenous knowledge, including those used in Agrawal (1995), Flavier (1995), Grenier (1997), Ntuli (2005), Nel (2005) and the World Bank (2003). Most of these definitions reflect the purposes and contexts of the scholarship that underpins particular publications. However, in this study, we found Flavier's definition to be the most suitable. Flavier describes indigenous knowledge systems as:

“..The information base for a society, which facilitates communication and decision making. Indigenous information systems are dynamic, and are continually influenced by internal creativity and experimentation as well as by contact with external systems.” It can be said that Indigenous Knowledge Systems (IKS) is the cultural capital of the society. The Indigenous Knowledge Systems (IKS) is hinged on the philosophy of “Ubuntu” which advocates for the sharing of ideas and resources for the purposes of collectivism and the continuity of the society. This knowledge systems is tapped from the community by the community, and for the community and is therefore believed to be effective. Mckolde (1996) notes that such methods have been developed through trial and error over a number of generations. This is in agreement with Mwale., *et al.* (2006) when they pinpoint that the Indigenous Knowledge Systems (IKS) are less formalized and not universally recognized but have been used by locals over a number of generations.

Methodology

A qualitative survey making use of 30 small holder farmers drawn from 3 wards in Bubi district was used. The 3 wards used were Mahlabathini (ward 11), Nduna (Ward 10) and Fincham (Ward 12). The participants were selected using the snowball sampling technique since few farmers were aware of the Indigenous Knowledge Systems (IKS). Structured interviews were administered to all the 30 participants. The Statistical package for Social Sciences (SPSS) was used to compute for frequencies and correlations between the parameters measured.

Findings and Discussion

House hold demography

The participants were made up of 20% females and 80% of the males. The average age of the participants was 52 years. Of the participants selected 78% of males widely use Indigenous Knowledge Systems (IKS) while 3% of the female respondents revealed ignorance of IKS. This suggested that most of the livestock keepers are predominantly male farmers. Most of the participants interviewed have formal education, with 75% having attended secondary education while 22% attained college education. 80% of the participants attained a farmer training experience in various organizations including vocational training centres, and through Non-Governmental Organizations and parastatal.

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Livestock Production

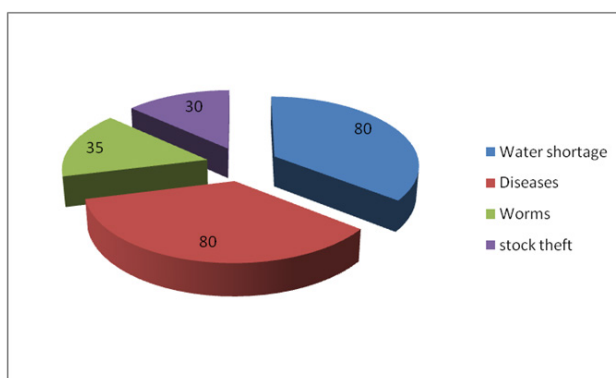
Farmers at Bubi district keep a wide range of livestock including cattle (100%), donkeys (40%), goats (100%), sheep (75%) and fowls (33%).

Livestock keeping methods

Method	Cattle	Goats
Rangeland	80%	60%
Supplementary feeding only	2%	7%
Rangeland and supplementary	40%	21%
Tethering	0%	20%

Major problems experienced in cattle production

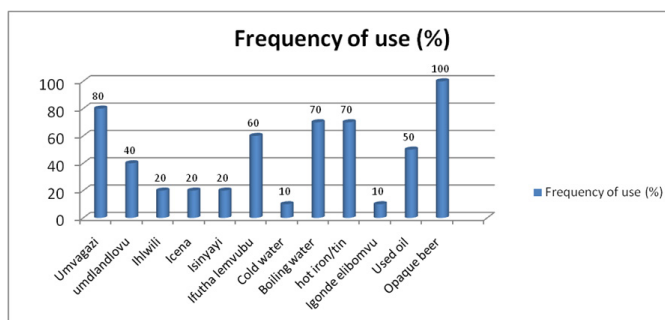
The Bubi district small holder farmers indicated water shortage, diseases, worms, and stock theft as the major challenges they experience in their cattle production adventure. These challenges are summarized on the following pie-chart.



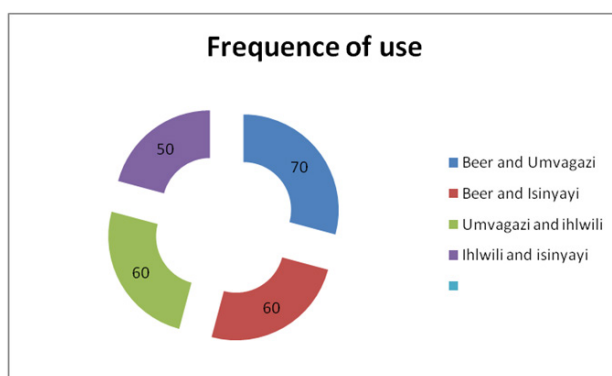
Of the diseases mentioned tick bornes diseases constitutes 60%, bacterial diseases 72% and tapeworm and flukes 40%. Most animals contract the diseases and paraistes during the rainy season, except for tapeworms which were generally a problem to sheep through out the year. It was noted that black leg disease is prevalent mostly in young animals of between 3-6 months. 80% of the participants indicated that cattle aged 6 months are mostly affected while 20% indicated that 3-6 months cattle are mostly vulnerable.

Two systems of prevention and control of blackleg disease are used. These are conventional and indigenous systems. A number of indigenous methods are used as indicated by the chart below.

Indigenous methods used in control and prevention of black leg



Combination use of traditional methods



Key: Umvagazi- *Pterocarpus angolensis*, Ihlwili - *Pterocarpus macrocarpus*, Isinyayi – Kitchen soot

Most trees/shrubs are used in various ways in the control of Black leg disease, some of them are the following:

Shrub Use	Manner in which they are Used
Umvagazi (<i>Pterocarpus angolensis</i>)	Cattle are made to walk over the rod at the kraal entrance
Icena (<i>Nacaduba berenice</i>)	Leaves and bark are grounded and mixed with water, Cattle then drink the concoction.
Igonde Elibomvu (<i>Brachystegia spiciformis</i>)	Leaves, barks and roots grounded and mixed with Water. Cattle drink the concoction.
Umdlandlovu (<i>Pterocarpus rotundifolius</i>)	Leaves grounded and mixed with water. Cattle then drink the concoction.
Ihlwili (<i>Pterocarpus macrocarpus</i>)	Barks and leaves grounded and mixed with water. Cattle then drink the concoction.
Isinyayi (Kitchen soot)	Soot mixed with water (5g/10L) and cattle drink the concoction.
Ifutha lemvubu (<i>Hippopotamus lard</i>)	Lard burnt in the kraal over night
Traditional beer (scud brew)	Cattle drink 2 liters of opaque beer

Hot iron and cold water methods are commonly used where either cold water is poured over the affected area or hot iron is briefly placed on the affected area. These traditional methods work perfectly well.

Effectiveness of Indigenous Knowledge Systems (IKS)

The majority small holder (80%) of farmers indicated that the Indigenous Knowledge Systems (IKS) are 90% effective. Of the 80% participants, 75% prioritized the use of beer and beer and Umvagazi tree (*Pterocarpus angolensis*). Among the other indigenous knowledge methods, as these are readily available and easy to conduct. 78% cases of affected animals treated using these methods have been successful.

Challenges in the use of IKS in control of Black leg

The major challenges that were cited by the participants include the following:

1. Dosages are not prescribed making it difficult to effectively use the indigenous knowledge methods
2. Timing of carrying the treatment for effective use, not enough details available on this aspect.
3. Difficult to verify what really works in these treatments (like in the case of beer and walking over the log in case of Umvagazi (*Pterocarpus angolensis*)).

As a result the methods remain inconclusive and based more on beliefs and chance. There is need for more research to examine the active ingredients in the curative action of these materials.

Documentation and circulation of Indigenous Knowledge Systems (IKS) information

80% of the participants feel that all the indigenous methods used in the treatment of Black leg should be documented and circulated using all conventional methods including open access (OA). All royalties should be paid timeously and fairly so as not to disadvantage the indigenous people. These participants felt that the documentation and transmission of this information might lead to the expiry of the information and other complications to the society.

Some farmers (20%) are not happy with the documentation of the IKS as they fear that this might anger the ancestral spirits who are believed to be the sources of this knowledge base.

The smallholder participants feel that the traditional leadership structures should be used in the circulation of the indigenous knowledge treatment methods. The Agriculture Technical Officers (ATO) should be used to compliment the traditional structures and engaged in training use of indigenous knowledge systems for treatment and prevention of animal diseases.

Conclusion

The study revealed that 80% of the smallholder farmers use Indigenous Knowledge Systems (IKS) in blackleg treatment. The method was considered to be 85% effective. The major advantages cited for this method were that; it is affordable to the smallholder farmers, it uses local materials for the treatment, no formal training is required for its use and smallholder farmers have been using it over generation and now know the dosages from past experiences. Ethno-veterinary medicines are less expensive as compared to conventional drugs, hence affordable for low resource poor farmers.

It was noted that these indigenous knowledge systems are just a privy of only a few farmers and others are not aware of them. This study then recommends that documentation and circulation of IKS methods should be encouraged so that the Bubi district community and other rural communities benefit immensely from this rich source of knowledge. A further exploration of the challenges in administration of IKS methods for Blackleg disease should be carried out so that maximum benefits are obtained from IKS methods.

Recommendations

Basing on the findings the paper strongly recommends the holding of workshops to define and clarify the use of Indigenous Knowledge Systems (IKS) as to dispel the myths and fears that are associated with it. Clarification should be made on the difference between IKS and spiritualism or divinations. Attempts to scientifically validate use of IKS for control and treatment of disease have been done by a number of researchers (Gratani, *et al.* 2011). The arguments raised by the researchers are that it is disrespectful to scientifically compare use of IKS method with conventional ones (Gratani, *et al.* 2011). Instead, IKS scientist have advocated for empowering the adoption of IKS over classical methods. Based on the socialization theory, there is need for collaborative validation process to facilitate uptake of IKS into the main stream scientific research to increase its uptake and usage. However a laboratory validation process on the use of a Dwarf plant for treatment of Shingles was carried out in Namibia. It was observed that the plant contained abundant trace elements (zinc, selenium, and copper which complemented in the healing process (Nakapipi, *et al.* 2010). Further studies should be made to reduce the challenges associated with the use of Indigenous Knowledge Systems (IKS) in the treatment of animal diseases especially in terms of administration of the correct dosages. Wherever possible smallholder farmers are encouraged to use both the conventional and Indigenous Knowledge Systems (IKS) methods in the treatment of the blackleg disease.

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