

Full Length Research

A survey of livestock theft at Mogonono village in Kweneng District of Botswana

Boitumelo Ben¹, John Cassius Moreki^{2*}, Wame Boitumelo¹, Kebadire Tlotleng¹ and Keeletsang Lesaba³

¹Department of Animal Science and Production, Botswana University of Agriculture and Natural Resources, Private Bag 0027, Gaborone, Botswana.

²Department of Corporate Services, Ministry of Agricultural Development and Food Security, Private Bag 003, Gaborone, Botswana.

³Department of Waste Management and Pollution Control, Ministry of Environment, Natural Resources Conservation and Tourism Private, Bag 131, Francistown, Botswana.

*Corresponding author. Email: jcmoreki@gmail.com

Copyright © 2018 Ben et al. This article remains permanently open access under the terms of the <u>Creative Commons Attribution License 4.0</u>, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Received 23rd May, 2018; Accepted 22nd June, 2018

ABSTRACT: The objective of this study was to determine the causes of livestock theft, its prevalence and impact on livelihoods of people of Mogonono village in Kweneng District. Data were collected using a structured questionnaire which was administered to 30 randomly selected farmers (respondents) and the Botswana Police Service. Data were analyzed using Statistical Package of Social Science (SPSS), version 16.0 (2015). Results showed that all respondents experienced livestock theft and 80% of them said it was high. Furthermore, 50% of the respondents stated that cattle were prone to theft than other livestock species. Fifty percent of the respondents said they lost 5 to 15 herds of cattle and goats each in the past five years while 60% stated that stock theft was high in summer compared to other seasons. The age group of 20 to 30 years was mostly involved in livestock theft. About 47% of the respondents used a combination of ear tags and ear notching for animal identification followed by ear notching alone, branding and bolus (36.7%). Two thirds of the respondents identified their animals at 2 to 3 months of age. Additionally, 70% of the respondents ensured safety of their animals by confining them at night, herding and using animal identification followed by confinement at night only (40%) and herding only (7%). Fifty percent of the respondents indicated that livestock theft affected their livelihoods owing to loss of earnings. Thirty-seven percent of the respondents attributed stock theft to high unemployment rate and readily available markets for stolen livestock followed by high unemployment rates only (30%) and unemployment, absence of police in the area and readily available market for stolen livestock (23%). Overall, the respondents were not satisfied with the way government agencies handle livestock theft cases. Eighty-four percent of the respondents mentioned that sentences given to criminals were not harsh to deter them from stealing again. The current results indicate that livestock theft is high in Mogonono village, thus calling for the need to develop strategies to combat this crime.

Keywords: Animal identification, herders, livestock theft, Mogonono,

INTRODUCTION

Livestock contributes significantly to the lives of people living in the rural areas of the developing countries (Cornelis et al., 2001), the majority of whom are poor and earn the highest proportion of their incomes from livestock, either directly or indirectly (Delgado et al., 1999). About 70% of people in Southern African Development Community (SADC) depend on agriculture for food, income and employment (SADC, 2005). AU-IBAR (2015) states that Africa' livestock sub-sector contributes 30 to 80% of the agricultural gross domestic product (GDP), and is well placed to deliver both the agricultural led growth and the socio-economic transformation as envisioned in the Malabo Declaration on Accelerated Africa Agriculture Growth and Transformation for shared prosperity and improved livelihoods. In Botswana, agriculture contributes about 2.2% to the Gross Domestic Product (GDP) (Statistics Botswana, 2016a) and the contribution of livestock to the agriculture's share of GDP is estimated to be $\geq 80\%$.

Of all agricultural thefts, livestock theft is making agriculture a risky venture (Bunei, 2016). Stock theft is one of the important challenges that resource-poor farmers face, as it has the potential to cripple their sustainable livelihoods (Greyling, 2008). Also, livestock theft poses a serious threat to food security and biosecurity (Zwane et al., 2013). Furthermore, Scholtz and Bester (2010) reported that livestock theft and mortalities have a negative impact on sustainable rural livelihoods of livestock farmers. As is the case in neighbouring countries such as Lesotho, Namibia and South Africa, livestock theft has become a national crisis in Botswana. Geldenhuys (2006) reported that livestock theft is an escalating, intimidating and destructive reality in South Africa, facing, or affecting, all sectors of the farming community, from the commercial farmer, to the stud breeder, to emerging farmers, who own only a few herds of cattle. The levels of stock theft, predation and animal health are the main issues hampering agriculture from its potential to grow jobs, and alleviate poverty in South Africa (Butler, 2012).

Livestock theft cases have been reported in many parts of Southern Africa and large numbers of livestock are involved which can cripple the livestock industry if not addressed. Maluleke (2014) stated that livestock theft crime is not new in South African communities, and that it is as old as farming, itself. It is estimated (Greyling, 2008) that close to 700,000 animals (cattle, sheep and goats) were stolen in South Africa from 2003 to 2006. The Red Meat Producer's Organisation in South Africa reported that livestock theft has resulted in annual losses of more than R300 million per year and caused damage to animals in losses of R800 million per year. New South Wales Farmers Association (2003) in England indicated that over USD1.5 million worth of stock are reported stolen annually. This indicates that livestock theft is a global challenge.

Livestock theft is one of the serious challenges faced by the farming communities in the SADC region (Figure 1), affecting not only household asset base but also the seasonal land preparation practices (SADC, 2010). Increased stock theft in Lesotho is attributable to the vulnerability of livestock farmers coupled with the return of retrenched migrant workers from South Africa (Dzimba and Matooane, 2005). Malekano (2000) reported poverty to be the prime cause of livestock theft in Malawi. The study by Mosalagae and Mogotsi (2013) in Gantsi and Kgalagadi districts of Botswana identified the five most important constraints in livestock production to be drought, predation, inadequate drinking water for livestock, limited grazing land, loss of livestock due to road accidents and theft.

The high value placed on livestock, especially cattle and small stock (sheep and goats) gives rise to increased livestock theft. Livestock theft is an escalating challenge faced by farmers, especially in areas along the boarders and those in the periphery of towns and cities of Botswana. It mostly occurs in the rural areas adjacent to urban areas where markets are available. In many cases, because of the livestock theft, the livestock owners lack financial means to make a rapid recovery and subsequently the sustainability of their farming practices is threatened (Scholtz and Bester, 2009). Therefore, this study was undertaken to determine the causes of livestock theft, its prevalence and impact on livelihoods of people of Mogonono village in Kweneng District.

MATERIALS AND METHODS

Study area

The study was conducted in Mogonono village located about 15 km north-west of Molepolole in Kweneng district at 24.38° S and 25.47° E latitude and longitude respectively. In 2011, the population of Mogonono village was estimated to be 349 (Botswana Population and Housing Census, 2012).

Sample design

A list of farmers was obtained from Government Agriculture Office in the village from which 30 respondents were randomly selected and interviewed using a questionnaire. Secondary sources of data were also consulted.

Data collection

Data were collected using a structured questionnaire which was administered to 30 respondents in Mogonono village between January and February 2016. The questionnaire was in two parts. The first part was based on the respondents' demographic characteristics such as sex, age, and occupation and education level, whereas the second part covered livestock theft related issues. The indicators of the independent variable were listed and questions formulated according to these indicators.

Data analysis

Data were loaded in Microsoft Excel and descriptive statistics were computed and analysed using Statistical



Figure 1. SADC Region. Source: SADC (2005).

Package of Social Sciences (SPSS), version 16.0 (2015). Tables and figures were used to summarize the obtained results.

RESULTS AND DISCUSSION

Demographic characteristics of the respondents

The demographic characteristics of the respondents are given in Table 1. Fifty-seven percent of the respondents were males while the remainder were females. All the respondents were Botswana citizens. The majority (43%) of the respondents had junior secondary education followed by primary education (30%), senior secondary education (20%) and tertiary (7%). Furthermore, 37% of the respondents were aged >45 years followed by 25 to 35 years (30%) and 35 to 45 years (30%) and 20 to 25 years (3%), indicating that most of the respondents were adults. Fifty-seven percent of the respondents were single while the remainder were married (Table 1). About 67% of the respondents mentioned that they were unemployed while the remainder were employed. This indicates that unemployment is high in the village.

Livestock rearing and ownership

All the respondents reared livestock and 37% of them reared cattle and goats followed by cattle, goats and chickens (Table 2). Again, the respondents were subsistence farmers which implies that they cultivated crops and kept livestock mainly for family use. Sixty percent of the respondents mentioned that they kept livestock as a source of income and wealth while the remainder kept livestock for food (meat and milk). This finding is consistent with Maluleke et al. (2016) who observed that livestock are regarded by the rural communities as "living wealth" and are often their sole source of income and sustenance. The authors opined that when livestock are stolen many households and subsistence farmers lose their livelihoods.

Occurrence of livestock theft

All the respondents in this study indicated that they experienced stock theft. Eighty percent of the respondents rated stock theft to be high while the remainder said it was average (Table 3). Furthermore, 50% of the respondents stated that cattle were prone to theft followed by goats

Category	Frequency (n=30)	Percentage
Gender		
Male	17	56.67
Female	13	43.33
Education level		
Tertiary education	2	6.67
Senior secondary education	6	20.00
Primary education	9	30.00
Junior secondary education	13	43.33
Age		
20 to 25 years	1	3.33
26 to 35 years	9	30.00
36 to 46years	9	30.00
>46 years	11	36.67
Marital status		
Married	13	43.33
Single	17	56.67
Occupation		
Employed	20	66.67
Unemployed	10	33.33

Table 1. Demographic characteristics of the respondents in the study area.

Table 2. Livestock species reared in study area.

Category	Frequency (n=30)	Percentage
Types of livestock reared		
Cattle	2	7.0
Cattle and goats	11	37.0
Cattle, goats and chickens	6	20.0
Cattle, goats, donkeys	4	13.0
Cattle, goats, chicken and donkeys	7	23.0
Reasons for rearing livestock		
Source of income and wealth	18	60.0
Food for the family	12	40.0

(26.7%) and both cattle and goats (23.3%) (Table 3). Kwazulu-Natal Department of Community Service and Liaison (2008) in South Africa also reported that cattle were prone to theft followed by goats and sheep. The respondents mentioned that weaner calves and kids (36.7%) were mostly stolen followed by weaner calves only (33.3%) and kids only (30%). The young animals are prone to theft because they are easy to catch, may not be identified (ear notched and branded) by the time they are stolen and are easy to transport than adult animals. As they are still growing the coat colour of young animals changes over time making it difficult for their owners to identify them. In agreement with the current result, Botswana Police Service (2007) explained that the culprits steal calves but kill the cows first to destroy evidence. However, the current results are inconsistent with Abbas et al. (2014) in Punjab Province of Pakistan who stated that adult animals are preferred because they can walk quickly and are quiet compared to the younger ones.

About 50% of the respondents mentioned that they lost 5 to 15 herds of cattle, 33% lost less than 5 herds of cattle in the past five years due to stock theft while the remainder

Table 3. Stock theft occurrence in the study area.

Category	Frequency (n=30)	Percentage
Experience stock theft		
Yes	30	100.0
No	0	0.0
Rate of stock theft		
High	24	80.0
Average	6	20.0
Livestock prone to theft		
Cattle	15	50.0
Goats	8	26.7
Cattle and goats	7	23.3
Groups of animals mostly stolen		
Weaner calves	10	33.3
Kids/ weaner calves	9	30.0
Weaner calves and kids	11	36.7
Cattle lost in the past five years		
Less than 5 animals	10	33.3
5-15 animals	12	40.0
None	8	26.7
Goats lost in the past five years		
Less than 5 animals	4	13.0
5-15 animals	15	53.0
More than 15	4	17.0
None	6	20.0
Report incidents of stock theft		
Yes	13	43.0
No	17	50.7
Reasons for not reporting stock theft		
Absence of police officers in the area	26	86.7
Realize late that animals are missing	4	13.3
Season stock theft cases are high		
Summer	20	66.7
Winter	4	13.3
Spring	6	20.0

said they did not lose any cattle. Similarly, 57% of farmers said that they lost 5 to 15 goats, more than 15 goats (17%), less than 5 goats (13%) while 20% said they did not experience any loss due to livestock theft (Table 3). The current result shows that all the respondents experienced livestock theft, indicating that this crime is common in the study area.

The majority (56.7%) of the respondents said they did not report livestock theft to the police and local authorities while the remainder did. The reasons advanced for not reporting livestock theft include the absence of police in the area and failure of farmers to notice missing animals in time. Previous study by Abbas et al. (2014) in Punjab Province of Pakistan also reported that only a portion of victims reported livestock theft incident to the police. According to Table 3, livestock theft cases were higher in summer (66.7%) and lowest in winter (13%). The high prevalence of livestock theft in summer is attributable

Category	Frequency (n=30)	Percentage
Age group of people involved in stock theft		
20-25 years	8	26.67
26-30 years	11	36.67
31-35 years	4	13.33
36-40 years	1	3.33
>40 years	6	20.00
Ways to handle stock theft cases		
No bail out for suspects until cases are closed	17	56.67
Cases should be solved or tried quickly	13	43.33
Opinions on sentences given		
Sentences should be reviewed and increased	29	98.67
Sentences are fine as there are now	1	3.33

Table 4. Age of stock theft perpetrators and views on how stock theft cases are handled.

to animals being left to roam about, animals being in good body condition thus attracting thieves and farmers' attention being diverted to arable farming, especially after it has rained. It is a common practice for farmers to return to the villages immediately after the harvest season leaving the care of livestock to herders who need close supervision from time to time. The presence of farmers at farm fields (locally known as masimo) during the cropping season seems to contribute to a decline in livestock theft. Similarly, Abbas et al. (2014) in Pakistan reported a high frequency of livestock theft cases in summer and monsoon seasons and from indoor locations. On the contrary, Müller (2016) reported that livestock theft in Kwa Sani area of the Kwazulu-Natal Province of South Africa tends to happen during the winter months and over December. In addition, livestock that graze overnight in the veldt were more at risk of theft than those that were confined at night.

Handling of livestock theft cases

The age group of people involved mostly in livestock theft was 26 to 30 years (37%) followed by 20 to 25 years (27%), more than 40 years (20%) and 31 to 35 years (13%) (Table 4). According to the Revised National Youth Policy 2010, persons aged 15 to 35 years in Botswana are referred to as youth. This implies that 80% of the people involved in livestock theft are youth probably due to lack of employment opportunities. Similarly, Crime Statistics Report 2015 showed that the majority of the accused persons across Botswana were concentrated within the youth population aged 20 to 39 and that participation in crime declines with increase in age, perhaps reflecting the myriad of challenges affecting the youth which lead them to participate in criminal activities (Statistics Botswana, 2016b). Contrary to these results, Müller (2016) reported that farmers in the age group 30 to 39 years represented 4.1% of the livestock theft incidence while 31.1% of farmers in the age group 40 to 49 years and 47.8% of farmers 50 to 59 years were victims of livestock theft. In this study, 57% of the respondents said they were unaware of crime and were not able to identify perpetrators, whereas the remainder said they were aware of the perpetrators but could not reveal their identities for fear of victimisation. In a related study, Obioha and Thakhisi (2013) in Lesotho reported that 54% of respondents knew perpetrators to the crime. Hübschle (2010) observed that the victim communities are generally reluctant to pursue syndicates as this gives rise to violent confrontations and deaths.

Ninety percent of the respondents said they were not satisfied with how livestock theft cases were handled by those dispensing justice while the remainder were satisfied (Table 4). About 58% of the respondents said culprits should be denied bail until they were prosecuted, whereas 42% said crime perpetrators should be quickly prosecuted to deny them time to destroy the evidence that may be used against them. Pitse (2015) reported that in most cases suspects continue to commit the same offence while on bail perhaps due to light sentences given by courts of law. In addition, 97% of the respondents in this study said sentences should be reviewed to make them harsher in order to serve as deterrents to crime perpetrators while the remainder was satisfied with sentences or fines. Similarly, Abbas et al. (2014) reported that 81% of the victims of livestock theft advocated for harsher sentences for convicted criminals.

Animal safety and identification

All the respondents in the current study had their animals identified. Table 5 shows that 46.7% of the respondents' ear tagged, ear notched, branded and used bolus as forms

Category	Frequency (n=30)	Percentage
Method of animal identification		
Ear-notching, ear tagging, branding and bolus	14	46.67
Ear tagging, branding and bolus	5	16.67
Ear notching, branding and bolus	11	36.67
Age animals are identified		
1 month	1	3.33
1-2 months	4	13.33
2-3 months	23	76.67
>3 months	2	6.67
Safety of your livestock		
Confinement	6	20.00
Herding	2	6.67
Confining, herding and identification	21	70.00
Herding and identification	1	3.33

Table 5. Methods of identifying and safety assurance of livestock in the study area.

of identification followed by ear tagging, branding and bolus (36.7%), and ear notching, branding and bolus (16.7%). In Botswana, bolus which is no longer used was used in cattle only until it was replaced by electronic ear tags in August 2014. These results indicate that livestock in the current study were identified. All the respondents mentioned that animal identification plays an important role in reducing stock theft. Evans and van Eenennaam (2005) stated that conventional methods such as brandmarking and ear-tagging alone are not reliable or individual-specific because they can be tampered with. In this study, two thirds of the respondents identified their animals at 2 to 3 months of age in accordance with recommendations of the Department of Veterinary Services (DVS). The Livestock Identification and Traceability System (LITS) of Botswana under the Ministry of Agricultural Development and Food Security states that animals should be identified at two months of age.

Ninety-seven percent of the respondents said that they did not keep livestock records. This is a challenge for the Ministry of Agricultural Development and Food Security extension services and Botswana Police Service to address urgently as it contributes to loss of court cases. Ibikunle (1981) highlighted that records are useful tools for assessing the efficiency of management and planning changes that will enable improved performance. In addition, Solomon et al. (2013) stated that livestock records can be done easily if animals have some form of identification, thus animal recording and identification are inseparable. About 70% of the respondents in the present study said they ensured safety of their animals by confining them at night, herding and using animal identification methods followed by confinement (40%), herding (7%) and herding and identification (3%) (Table 5). Previous study of Lombard and Niekerk (2016) reported that the most preferred methods to control livestock theft in South Africa are corralling of livestock (47%), using livestock guards (13%), guard dogs (13%), stock theft collars (10%) and cameras (8%).

Socio-economic effects of livestock theft

Fifty percent of the respondents indicated that livestock theft affected livelihoods of households owing to loss of earnings. Furthermore, 40% of the respondents mentioned that the education of their children is detrimentally affected due to financial losses, whereas the remainder said livestock theft causes conflicts in the communities leading to peace being threatened. The current results are consistent with Abbas et al. (2014) who reported the effects of livestock theft on households to include loss of household wealth, and an enforced cut back in own consumption and in the sale of animal products. In addition, Khoabane and Black (2012) mentioned that livestock theft reduces the ability of household heads to invest in the human capital development of their children and also results in deterioration of the household's nutritional status and increased health expenses.

Some causes of livestock theft

The respondents identified causes of livestock theft to be high unemployment rate and readily available market for stolen livestock, especially butcheries (37%) followed by high unemployment rate (30%), and the absence of police in the area (23%). In agreement with the current results, Malekano (2000) found joblessness and unemployment to be the root causes of cattle-theft among the youth in Malawi. Stock theft police officers at Mogonono village Table 6. Respondents' perceptions towards stock theft in the study area.

Category	Frequency (n=30)	Percentages
Government is doing enough		
Agree	6	20.0
Disagree	23	76.7
Strongly disagree	1	3.3
Government ways to reduce stock theft should be reviewed		
Agree	8	26.7
Strongly agree	22	73.3
Farmers involvement in fighting stock theft is not adequate		
Agree	8	26.7
Strongly agree	5	16.7
Disagree	14	46.7
Strongly disagree	3	10.0
Police officers are doing enough		
Agree	8	26.7
Disagree	21	70.0
Strongly disagree	1	3.3
Police officers are not doing enough		
Agree	14	46.7
Strongly agree	9	30.0
Strongly disagree	7	23.3
Police officers should be allocated resources		
Agree	8	26.7
Strongly agree	22	73.3
Courts have helped in fighting stock theft		
Agree	3	10.0
Strongly agree	3	10.0
Disagree	7	23.3
Strongly disagree	17	56.7

identified the causes of livestock theft to be unemployment (especially among youth), farmers' delays in reporting stock theft/crime and availability of unutilised spaces that are used to slaughter animals. Bacus (2008) reported the contributing factors to stock theft in South Africa to be unattended grazing, the practice of keeping unmarked livestock and poor documentation of livestock movements. Müller (2016) reported that where police and security organisations patrolled regularly stock theft incidence is lower.

Respondents' perceptions on livestock theft

Overall the respondents were not happy with the way livestock theft cases were handled by the police. Eighty

percent of the respondents said the government was not doing enough to address livestock theft (Table 6) and suggested that government should review Stock Theft Act to make sentences harsher in order to deter criminals. All the respondents agreed (73.3% strongly agreeing) that the government ways of reducing livestock theft should be reviewed. The respondents mentioned that the involvement of farmers in fighting livestock theft was limited as some farmers do not report livestock theft in time and leave the care of their animals to herders (Table 6).

About 73% of the respondents mentioned that Police Officers are not doing enough to tackle livestock theft because it is always difficult for them to trace back their animals. Additionally, farmers mentioned that Police Officers attend to livestock theft cases late. However, 36% of the respondents mentioned that Police Officers were

Category	Frequency (n=30)	Percentages
Courts are effective		
Agree	5	16.7
Strongly agree	1	3.3
Disagree	9	30.0
Strongly disagree	15	50.0
Courts are not effective		
Agree	5	16.7
Strongly agree	17	56.7
Disagree	5	16.7
Strongly disagree	3	10.0
Is punishment given adequate?		
Agree	3	10.0
Strongly agree	2	6.7
Disagree	16	53.3
Strongly disagree	9	30.0
Is punishment given inadequate?		
Agree	7	23.3
Strongly agree	18	60.0
Disagree	3	10.0
Strongly disagree	2	6.7
Is justice always served?		
Agree	4	13.3
Strongly agree	1	3.3
Disagree	4	13.3
Strongly disagree	21	70.0

doing enough but were constrained by inadequacy of transport. All the respondents agreed that it is important that livestock theft police officers are allocated adequate resources to enable them to carry out their duties effectively.

Three quarters of the respondents said they believed the courts were not effective in dealing with livestock theft as court cases/trials took long to conclude while the culprits are out on bail and stealing (Table 6). Livestock theft police officers mentioned that due to delayed prosecution some animals die in holding kraals (livestock enclosures) mainly due to drought, thus destroying evidence. Furthermore, 84% of the respondents mentioned that sentences given to criminals were light resulting in the same people repeating the same offence while the remainder said punishment meted out against criminals was adequate since some criminals come back from prison as changed individuals. According to Stock Theft Police, offenders are given sentences looking at the number of times they have been involved in stock theft. The present study found that first offenders were sentenced to 5 years, second offenders (7 years), third offenders (10 years) and fourth offenders (>10 years). In cases where a butchery owner is involved in livestock theft they are charged P1000 which is too little to deter them from buying stolen livestock. The purchase of meat from thieves by butcheries puts the health of consumers at risk as the meat is processed under unhygienic conditions. According to Dzimba and Matooane (2005), stolen livestock is sold at very low prices without the necessary documentation for immediate use in social events such as weddings, funerals, as well as, to the butcheries. Eighty-three percent of the respondents in this study agreed that justice was not always served because even though someone is guilty they can still win the case since most of the time evidence is difficult to find.

Conclusion

It could be concluded that livestock theft is high in Mogonono village due to high unemployment rates particularly among youths, availability of unutilized open spaces and readily available market for stolen livestock due to the village's proximity to large centres such as Molepolole and Gaborone.

Recommendations

- 1. The number of prosecutors and magistrates that handle livestock theft cases should be increased to speed up prosecution time.
- 2. The Stock Theft Act should be reviewed by involving all stakeholders with a view to making sentences harsher.
- Unemployed youth should be encouraged to utilize programmes such as Livestock Management and Infrastructure Development (LIMID), Youth Development Fund and Poverty Eradication and Integrated Support Programme for Arable Agricultural Development (ISPAAD) to start businesses rather than to engage in crime.
- 4. The Ministry of Agricultural Development and Food Security extension services should intensify farmer education on record keeping and its importance. This can be achieved by regularly conducting workshops and seminars.
- 5. Close collaboration between the Ministry of Agricultural Development and Food Security and Ministry of Defense, Justice and Security needs to be strengthened in order to combat livestock theft.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

ACKNOWLEDGEMENT

The authors wish to thank the respondents for willingly sharing their knowledge and experiences of livestock theft.

REFERENCES

- Abbas, T., Muhammad, Y., Raza, S., Nasir A., & Höreth-Böntgen, D.W. (2014). Some facts and issues related to livestock theft in Punjab Province of Pakistan - Findings of series of cases. *Berliner und Münchener Tierärztlivhe Wochenschrift*, 127, 10-13.
- AU-IBAR (2015). The Livestock Development Strategy for Africa 2015-2035. Nairobi, Kenya.
- Bacus, Y. E. (2008). Stock theft in Kwazulu-Natal (KZN), South Africa. 1-29. Available at: http://www.kzncomsafety.gov.za/Portals/0/Documents/Resear ch/STOCK%20120PDF
- Botswana Police Service (2007). Crime prevention guidelines for livestock farmers. Crime Prevention Coordinating Unit. Criminal Investigations Department. Gaborone. Available at http://www.bps.co.bw. Accessed 06/10/15.
- Botswana Population and Housing Census (2012). Alphabetical index of villages. Available at

http://www.cso.gov.bw/templates/cso/file/File/2011%20Cens us%20_Alphabetical%20Index%20_Population%of%20village s.pdf. Accessed 04/11/15

Bunei, E. K. (2016). Keynote address: Stock theft in Africa: Current challenges and future direction. Available at http://www.rpo.co.za/wpcontent/uploads/2016/04/Bunei_Stock-theft-in-

Africa_20170925.pdf. Accessed 24/02/18.

- Butler, L. E. (2012). Stock theft is 'crippling SA'. The Herald (Online). Accessed 03/09/15 at www.researchgate.net/publication/273294878_Assessment_ of_Policing_and_Prevention_Strategies_of_Stock_Theft_in_S outh_Africa_A_Case_Study_of_Giyani_Policing_Area_Repub lic_of_South_Africa.
- Cornelis, H., van Veen, T. S., Brandenburg, B., Gauthier, J., Le Gall, F., Mearns, R., & Simeon, M. (2001). Livestock Development: Implications for Rural Poverty, the Environment and Global Food Security: Directions in Development. The World Bank, Washington, D.C.
- Delgado, C., Rosegrant, M., Steinfeld, H., Ehui, S., & Courbois, C. (1999). Livestock to 2020: The Next Food Revolution. Food, Agriculture and the Environment Discussion Paper, 28, International Food Policy Research Institute, Washington, D.C.
- Dzimba, J., & Matooane, M. (2005). Stock theft and human security: case study of Lesotho. *Institute for Security Studies Monographs*, 2005(113), 85.
- Evans, J., & van Eenennaam, A. (2005). Livestock identification. University of California Cooperation Extensive, California. Pp. 1-6.
- Geldenhuys, K. (2010). Stock theft and what owners can do to protect their stock. Servamus - Community-Based Safety & Security Magazine, November. Pp. 38-41.
- Greyling, B. J. (2008). DNA technology for resource-poor farmers. Agrinews November 2008, 4-5.
- Hübschle, A. (2010). Organised crime in Southern Africa First Annual Review. The Organised Crime and Money Laundering Programme (OCML) at the Institute for Security Studies (ISS): Pretoria. Accessed 14/09/15 athttp://www.issafrica.org/publications/organised-crimesouthern-africa-first-annual-review.
- Ibikunle, J. O. (1981). The importance of proper record keeping in agricultural enterprises: A case study of some units of the Kwara State Agricultural Development Corporation. Paper presented at the 5th Seminar of the Agricultural and Rural Management Training Institute (ARMTI) Ilorin, 23rd - 25th April 1981. Available at http://www.ijsre.com/Vol.,%206_2_-Dudafa.pdf. Accessed 19/05/16.
- Khoabane, S., & Black, P. (2012). On the economic effects of livestock theft in Lesotho: An asset-based approach. South Africa. *Journal of Development and Agricultural Economics*, 4 (5), 142-146.
- Kwazulu-Natal Department of Community Service and Liaison (2008). Stock theft in Kwazulu-Natal. Available at http://www.kzncomsafety.gov.za/LinkClick.aspx?link=Docume nts%2FResearch%2FSTOCK+THEFT+1+PDF.pdf&tabid=22 8&mid=619. Accessed 24/02/18.
- Lombard, W. A., & Van Niekerk, H. N. (2016). Livestock theft. *Stock Farm*, 6(1), 10-11.
- Malekano, L. B. (2000). The social-economic impact of stocktheft and disease in the Lower Shire Districts of Malawi. University of Malawi. Available at http://community.eldis.org/.59ee3fb9/Stock-theft%20and% 20disease.doc. Accessed 08/09/15.

Maluleke, W. (2014). Perspectives on stock theft prevention in

the Giyani policing area of Limpopo Province. Available at http://encore.tut.ac.za/iii/cpro/DigitalItemViewPage.external;js essionid=89CBEFC6D40628227718ACBF8972ADAB/lang=e ng&sp=1001402&sp=T&sp=1&suite=def. Accessed08/09/15.

- Maluleke, W., Mokwena, R. J., & Motsepa, L. L. (2016). Rural farmers' perspectives on stock theft: Police crime. *South African Journal of Agricultural Extension*, 44(2), 256-274.
- Mosalagae, D., & Mogotsi, K. (2013). Caught in a sandstorm: an assessment of pressures on communal pastoral livelihoods in the Kalahari Desert of Botswana. *Pastoralism: Research, Policy and Practice, 3*(1), 18.
- Müller, G. S. (2016). Magnitude of livestock theft in Kwa Sani and factors that could influence it. Master of Disaster Management. Disaster Management Training and Education Centre for Africa, University of the Free State. Available at https://www.ufs.ac.za/docs/librariesprovider22/disaster-management-training-and-education-centre-for-africa-(dimtec)-documents/students-documents/g-muller-1997669955-tesis.pdf?sfvrsn=85b0a821_2. Accessed 24/02/18.
- New South Wales Farmers Association (2003). Greater awareness of rural crime. Available at http://www.nswfarmers.org.au/newsroom/news_release_archi ve/template33. Accessed 03/10/15.
- Obioha, E. E., & Thakhisi, R. E. (2013). Exploring the burden of property related crimes among the People of Lesotho: A case study of Roma Valley Communities of Lesotho. Tshwane University of Technology. South Africa. Available at https://www.researchgate.net/publication/261362531_Explori ng_the_Burden_of_Property_Related_Crimes_among_the_B asotho_People_of_Lesotho_A_Case_Study_of_Roma_Valley _Communities_of_Lesotho. Accessed 21/04/2016.
- Pitse, R. (2015). Stock theft getting out of hand. Available at www.sundaystandard.info/stock-theft-getting-out-of-hand. Accessed 21/04/2016.
- Revised National Youth Policy (2010). Revised National Youth Policy. Available at http://www.youthpolicy.org/national/Botswana_2010_National _Youth_Policy.pdf. Accessed 24/02/18.
- Scholtz, M. M., & Bester, J. (2009). Off-take and production statistics in the different South African cattle sectors: Results of a structured survey. *South African Journal of Animal Science*, 1(19), 23.
- Scholtz, M.M., & J. Bester, J. (2010). The effect of stock theft and mortalities on the livestock industry in South Africa. South African Society for Animal Science. Available at http://www.sasas.co.za/effect-stock-theft-and-mortalitieslivestock-industry-south-africa. Accessed 24/02/18.

- Solomon, A., Kassahun. A., Alemu, Y., Girma. A., Sileshi. Z., & Adane, H. (2013). Records and record keeping. Sheep and goat production handbook for Ethiopia. Available at http://www.esgpip.org/handbook/Handbook_PDF/Chapter%2 013_%20Records%20and%20record%20keeping.pdf. Accessed 19/05/16.
- Southern African Development Community (SADC) (2005). SADC Major achievements and challenges: 25 Years of Regional Cooperation and Integration. Available at http://www.sadc.int/files/7713/5826/4978/Achievements_book let.pdf.
- Southern African Development Community (SADC) (2010). Regional Agricultural Policy, Country Summary Agricultural Policy: Review Reports. Available at http://www.sadc.int/files/7113/5293/3509/Regional_Agricultur al_Policy_Rewiew_Reports_2011.pdf. Accessed 02/11/15.
- Statistical Package of Social Sciences (SPSS), version 16.0 (2015). UNICOM Systems, Inc.
- Statistics Botswana (2016a). Gross Domestic Product. Third Quarter 2016.
- Statistics Botswana (2016b). Crime Statistics Report 2015. Available at

https://www.statsbots.org.bw/sites/default/files/publications/Cr ime%20Statistics%20Report%202015.pdf.

Zwane, A. A., van Marle-Köster, E., Greyling, B. J., & Mapholi, N. (2013). A review: forensic DNA technology to meet the stock theft challenges in South Africa. *Applied Animal Husbandry* and Rural Development, 6(1), 36-47.