Challenges faced by livestock owners in an urban setting: the case of Grahamstown, South Africa

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Abstract

Urban municipal commonages have potential for improving poor urban residents’ livelihoods by providing grazing for livestock, yet the challenges associated with livestock farmers are seldom analyzed. This study’s aim was to examine and characterise challenges faced by livestock owners in an urban setting, using Grahamstown as a case study. A semi-structured questionnaire was administered to 35 livestock farmers in Grahamstown’s high density areas, and key informant interviews with Municipal officials supplemented data collection. It was found that the challenges encountered were multi-dimensional and included theft, dog bites, pollution related deaths of livestock, lack of dipping facilities, communication breakdowns and unequal access to grazing facilities among others. These findings are highly relevant in a management context, as they suggest that the government should take a key role in addressing most of the challenges raised.

Keywords: Urban areas; livestock; challenges; Grahamstown; Municipality.

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1. Introduction

Globally, livestock production contributes significantly to the livelihoods of local communities through the provision of direct and indirect use values (Macleod et al., 2008; Upton, 2012; McClintock et al., 2014). Livestock, especially cattle, offers many benefits to local individuals ranging from meat, hides or skin, milk for household consumption and sale, as well as cultural uses (McClintock et al., 2014). The potential for improving levels of livelihoods and well-being through livestock agriculture is significant (Upton, 2012), but merging evidence, predominantly from rural studies reveal that livestock farmers face multiple challenges (Macleod et al., 2008; Sikhweni & Hassan, 2014). These challenges often include a lack of title deeds to land, insufficient finances and investments, poor veld condition, variable climates, insufficient land size, damaged or inadequate infrastructure, poor management and great competition for scarce resources among other livestock farmers (Berhanu, 2014; McClintock et al., 2014).

The challenges faced by livestock owners are context-specific so they often vary in degree of effect according to where they occur. For example, the socio-economic status of livestock owners and geographical setting may influence the kind of challenges that livestock owners may have to deal with or overcome in production (McClintock et al., 2014). In urban areas in particular, livestock farmers may face resentment from other urban dwellers. In developed countries, like the United States of America, livestock production in urban areas has historically been a debatable topic as it is viewed as a health risk (McClintock et al., 2014). Many individuals raise concerns regarding waste, smell and noise (McClintock et al., 2014). However, in recent times, due to the localisation of food systems, there has been an increase in urban agriculture, thus livestock production is moving back into the urban settings though it is mainly the urban poor who keep livestock as a livelihood strategy (Butler, 2012).

In South Africa, livestock production represents an important livelihood option for many households and its contribution to urban households is increasingly being acknowledged (Schiere & van der Hoek, 2001; Sikhweni & Hassan, 2014). In urban areas of South Africa in particular, local Municipalities are mandated to develop Integrated Development Plans (IDPs) which is an approach for local Municipalities to holistically strategize sustainable development paths for all urban dwellers (Harrison, 2001; Municipality, 2010). According to Ruwanza & Shackleton (2015), IDP’s are an opportunity for identifying mainstream environmental problems to be solved at a local
level involving integration and a multi-dimensional approach. This has allowed for municipalities to define their own development plans and aims. Therefore, IDP's are a new form of governance that considers environmental, economic, and social sustainability while considering the inequality of South Africa's past, at a decentralized level (Ruwanza & Shackleton, 2015). Implicit in IDPs is the importance of alleviating poverty and improving the well-being of urban dwellers, particularly the urban poor through tapping into agricultural development opportunities (Municipality, 2010). However, it can be said that until recently, the main focus of agricultural development initiatives and livestock challenges has been predominantly from a rural perspective. For example, the IDP of the Makana Municipality in Grahamstown, mainly focuses on the challenges faced by commercial farmers around the town, often neglecting that of urban livestock owners (Municipality, 2010).

According to Schiere & van der Hoek (2001), urban livestock keeping is often viewed as problematic, backward, and a sign of poverty, which could partly explain the neglect of urban livestock production. It has been suggested that livestock owners in urban settings may face more challenges than those in rural areas. The Makana Area Based Plan in Grahamstown reveals that land in the Makana area has potential for livestock keeping and herding, however the biodiversity of the thicket is threatened by over-grazing. Given the predicted population growth, rising income and increased urbanization in African countries (Berhanu, 2014), an understanding of livestock production challenges in an urban setting becomes salient and relevant when thinking about livestock development and support. There is therefore a need for research in urban settings that will consider how livestock owners are affected in different ways (Berhanu, 2014).
The main aim of this project was to examine and characterise the challenges faced by livestock owners in an urban setting, using a small South African town, Grahamstown, as a case study. The main questions this paper aims to address are:

1. What are the challenges faced by livestock owners in Grahamstown, from the farmers’ perspective?
2. What are the implications of the findings on integrated development planning in urban areas?

2. Study Area

The study was conducted in Grahamstown which is located in the Eastern Cape Province of South Africa (33°18′36″S 26°31′36″E) (Figure 1). Grahamstown, established in 1812, lies in the Makana Municipality and according to the GeoNames geographical database, it has a population of around 92 000 (Mongabay, 2012). Of this population ~73% are black, ~12% are white, ~14% are coloured and only ~1% are Indian or Asian (StatSA, 2011).

Grahamstown lies in the Sub-tropical coastal climatic zone and has an average annual high temperature of 23.1°C and average annual low temperature of 9.8°C, making the mean 16.4°C. The average annual precipitation is 715 mm and the majority of this rainfall falls between December and March. The vegetation type is predominantly dry Albany Thicket; a largely impenetrable bush which requires opening for domestic livestock access (Palmer 2014). There is also what is described as a succulent woodland formation (Palmer, 2014). Albany Thicket tends to show little annual variation in perennial biomass or cover irrespective of droughts that can last months (Kerley et al., 1995). Unlike many other semi-arid ecosystems, intact Albany Thicket does not tend to support a regular fire regime (Kerley et al., 1995).
Figure 1: Map representing Grahamstown relative to the Eastern Cape Province, South Africa (Google Images, 2015).

The higher income areas of Grahamstown are located towards the left/western side, which have an abundance of grass, thick vegetation and plenty of grazing for opportunistic livestock keepers (Antrobus and Antrobus, 2008). In the middle of Grahamstown is the CBD which can be characterised by concrete sidewalks, roads, buildings and very little vegetation. The majority of the population lives in the lower income area of town towards the eastern side. The land is degraded and eroded and there is a lack of vegetative resources (Antrobus and Antrobus, 2008). The commonage is located on the eastern side of Grahamstown and is used for grazing for a large proportion of livestock keepers, however it does not provide adequate grazing and this contributes towards the grazing of livestock in town.

The Eastern Cape is one of the poorest provinces in the country and only 29 % of the population are employed, while 42 % are unemployed and 29 % are categorised as non-economically active (Irvine, 2012). The high unemployment rate and low participation in the labour force, often result in citizens having to find alternative means of income.
3. Methods

3.1 Data collection

Data for this study were collected between February and August in 2015.

To collect data, a semi-structured interview approach was used to allow for free flowing discussions on the challenges faced by livestock owners. To identify our participants for the questionnaires, we used the snowball approach, which is a non-probability sampling technique in which the existing participant led us to the next respondent (Martín-López et al., 2011). We applied this approach by asking the interviewed livestock owners for a name or address of another livestock owner that we could interview. The snowball approach turned out to be challenging as we struggled to find enough interviewees and many were unwilling to participate.

At the beginning of the second term we approached the Rhodes University Community Engagement office on campus and spoke to the community partner coordinator about our research. We were able to meet some of the community partners. When we returned in third term we decided to take up an offer from one Pre-School teacher who was willing to gather the livestock owners at her pre-school, Little Flower. We conducted a total of 35 interviews: 19 using the snowball approach and 16 at Little Flower Pre-School.

The questionnaire included both open ended and closed ended questions on challenges around access to water, veterinary services (diseases), accidents, effects of pollution (plastics), access to adequate pasture, human-livestock disease and stock loss (due to dog bites and theft). Major themes that emerged during discussions were noted and recorded. The questionnaires that were used, for the interviews, included Likert scale questions which captured the extent of the respondents’ agreement on the challenges faced and how impacts were experienced. The respondents were also asked about their perceptions on the level of support rendered by the local Makana Municipality.

We spoke to existing institutions and officials who have some experience in working with livestock owners in Grahamstown such as Municipal Officials, the Livestock Owners Association and community leaders. These individuals informed us of the Bylaw Draft which was written up
in 2011, which is yet to be implemented. To identify the interviewees we conducted research on the structures of the Municipality, Livestock Owners’ Association and governance structures within the study area. We then arranged interviews through communication with relevant parties and scheduled an appointment to request their participation before the initial interview.

3.2 Data analysis

For the interview data, thematic coding was used to analyse the data. This technique allowed us to pinpoint, examine and record patterns or themes within the data (Ibrahim, 2012). These patterns helped us in describing and categorising the challenges faced by livestock owners. We also used descriptive analysis of our responses to see the frequencies of certain responses and managed to get a sense of the degree or level to which the challenge was being experienced.

The main assumptions of this study were that livestock owners would be willing to engage with the research and supply us with adequate, informative and reliable information. We proceeded with our interviews after the purpose and objectives of the study was explained to each informant in line with the Rhodes University ethical guidelines (Rhodes University, 2014). All interactions, ground-work, surveys, and questionnaires were culturally sensitive and exhibited a high level of professionalism. Participants were informed of the voluntary nature of their participation, their rights to withdraw from the study, confidentiality of responses, data, and findings unless agreed, as well as the availability of the study findings to all necessary stakeholders.
4. Results

4.1 Livestock ownership and reasons for livestock keeping

As can be seen in figure 2, the large majority of livestock owned is cattle (57 %), followed by goats (24 %) and sheep (10 %). Donkeys and pigs make up a very low proportion of the livestock owned throughout our survey. Although this does not give us information on the challenges faced by these owners, it gives background information that may assist in alleviating such challenges.

![Figure 2: Pie chart revealing the proportion and type of livestock owned.](image)
Figure 3 below reveals that just over half of the livestock owners we interviewed kept livestock for cultural reasons, like ceremonies and rights of passage, while 35% kept for the economic benefits for trade of supplied goods and services. When alleviating the challenges to owners it would be logical to first assist those most in need, or most marginalized; with this in mind one should consider alleviating the challenges of the 14% who use livestock for subsistence and their survival, before alleviating the challenges faced by the 86% collectively who use livestock for the luxury of economic and cultural benefit and value.

Figure 3: Pie chart revealing the purposes for keeping livestock.
4.2 Challenges to livestock keeping

Figure 4 illustrates the number of livestock lost and the cause of loss over the past five years. It reveals that theft is by far the most common cause of livestock loss, followed by disease. These two causes of livestock loss appear to be the most common as they have contributed to 75 % of the livestock lost together in the past five years. Car accidents and dog bites are the cause of only 17.5 % of loss, while other (e.g. cattle getting lost) makes up the remaining 7.5 %.

**Figure 4:** Histogram revealing the total number of and reasons for livestock losses in the past five years.
4.3 Assistance required

Out of five means of assistance and aid, as seen in figure 5, livestock owners selected one or many as their preferred choice. That is why the sum of the percentages does not equal 100%. Fencing was selected by 45% of livestock owners, closely followed by health at 40%. This means that 85% of all the livestock owners wanted either fencing, health or both. Land and grazing was selected by below one third (31.43%) of the livestock owners, while only 22.86% wanted loans and ‘livestock owner grants’. 17.14% of livestock owners selected general assistance, which was most commonly education, training and security.

Figure 5: Histogram revealing the percentage of interviewed owners to select various means of assistance and aid.
4.4 Rankings of the challenges faced by livestock owners

The rankings assigned to each of five challenges, was averaged out by dividing the total per challenge, and dividing it by 35 (our number of participants). Figure 6 illustrates these averages graphically. Theft is the most severely rated challenge at almost 6/10. Disease follows at 4.8, followed closely by dog bites at 4.05. Lack of fodder and lack of water are ranked relatively less severe, and are 3.43 and 2.6 respectively. Relatively speaking, theft can be considered twice as severe as lack of water.

Figure 6: Histogram revealing the average ranking of five challenges/threats.
In figure 7, we constructed a scatter plot with all 35 rankings for each challenge, in ascending order to provide an accurate illustration of the distribution of the rankings. We inserted trend lines to obtain the general linear equation for the respective distributions. This was done to isolate the gradients of the trend lines, and essentially use these to extract the variability in the assigned rankings.

![Scatter plot representing the rankings of the challenges in ascending order.](image)

**Figure 7:** Scatter plot representing the rankings of the challenges in ascending order.
Figure 8 shows the gradients of the trend lines in a graph form. This allows us to visualize the relative difference in variability between the rankings of the five challenges. Theft has the steepest gradient and thus the highest variability, followed closely by dog bites. Disease, lack of fodder, and lack of water are similar and thus experienced more evenly throughout our participants.

![Histogram illustrating the gradients of the respective trendlines relative to one another.](image)

**Figure 8:** Histogram illustrating the gradients of the respective trendlines relative to one another.
5. Discussion & Conclusion

5.1 Livestock ownership and reasons for livestock keeping

The total number of livestock owned by the participants was 377 out of the 35 participants, ranging from 105 cows to 2 pigs. Participants owned different types of livestock including cattle, sheep, goats, donkeys and pigs (figure 2). When asked about the reasons behind livestock keeping, 51 % of the livestock owners interviewed said that they kept livestock for cultural purposes, while 35 % cited economic reasons and 14 % kept them for subsistence reasons (figure 3). Economic farming is done in order to gain a profit, thus food is produced using advanced technology and is sold on the market. On the other hand, subsistence farming is done in order to provide enough food for the farmer and his family and is not sold for profit (Nyikai, 2003). According to Ayaga et al. (2005), urban livestock keeping is a strategy that has been adopted to improve food security, by increasing both the access to and availability of food sources. However, contrary to what is common in the literature (e.g. Puttick 2008), our findings show that livestock keeping in Grahamstown is predominantly for cultural reasons rather than economic reasons. Most of the livestock owners said that they kept cattle and goats for cultural events such as celebrating the coming of age of their sons as marked by their return from the mountain after circumcision or the birth of a new member of the family. Livestock owners sell their livestock in situations where it is the only option to get out of economic hardships associated with sickness, deaths, debt or retrenchment from work.

5.2 Challenges faced by livestock farmers

Several constraints were mentioned by the interviewed livestock farmers, as seen in figure 4, including livestock losses due to diseases, theft, car accidents, dog bites, plastic ingestion and water pollution. In this section we pay detailed attention to these constraints and classify them into the different classes: social, environmental and technical.
Social Challenges

Livestock theft

Out of all the participants 72% cited livestock theft as a key challenge. About 102 livestock were reportedly stolen in the past five years, making theft a major challenge to livestock owners (figure 4). The problem of livestock theft is reflected in the following statement by a respondent:

“I’m poor, my neighbour is poor and his neighbour is poor, we all suffer. Just because we suffer people steal from us. Even though you can be my friend, you can still take from me because I have more, and that is the problem” (Interviewee no. 23).

This is similar to the trends seen in most communities that keep livestock (Mashala, 2013). Stock theft manifests in different ways, one being the theft of the whole animal from the grazing area or the home of the livestock owner and most cases being the theft of meat. Some of the affected livestock owners narrated how there have been times when livestock would go missing and upon search, they would find only the head and the hides of the cow and everything else would have been taken by the offender.

Environmental challenges

Risks associated with pollution and disease

The second highest contributor to the loss of livestock highlighted by the interviewed livestock farmers was diseases, mainly from pollution in the form of plastic ingestion and drinking of contaminated water. The interviewed livestock owners narrated how their animals drink from all sources of water, including stagnant and contaminated water. These livestock have also been seen eating rubbish from dumpsters and litter scattered on the ground (photograph 2) which essentially leads to death due to plastic ingestion. This issue broadly speaks to the realities in Grahamstown of a divided city, with differing levels of amenities provision and distribution. During our interviews we observed spillages of sewer water around areas of residence in the Joza area – these open sources of water are often used by livestock which leads to death due to diseases such as E.coli, a bacterium found in contaminated water which causes diarrhoea and infections (Clark,
The same challenge was expressed by rural communities of the North West Province, as plastic ingestion was a major concern (Getchell et al., 2002).

5.3 Assistance required

Resource Challenges

Lack of grazing resources

In general livestock graze in the veld around the Joza area with a few livestock owners taking their livestock to the commonage. The interviewed livestock owners generally had positive perceptions about the quality of the grazing land in summer but not in the winter season. In the winter season, when vegetation dries out and water becomes scarce, livestock owners said they had to find alternative ways to provide for their livestock (figure 5). However, it was mentioned that finding alternatives was not easy for many livestock owners, hence their livestock suffered from malnutrition during winter season. For example one of the participants said that:

“Few farmers can afford to buy lucerne for their livestock but for those who cannot afford watch their livestock lose weight with the hope that they can survive until the next spring” (Interviewee no. 8).
Lack of grazing resources was particularly challenging for farmers who did not have access to or did not want to graze their livestock in the commonage (figure 5). The commonage has provision for winter with fodder that is made available by rotational grazing. Not all livestock owners were in support of taking their livestock to the commonage. The resistance towards taking the livestock to the commonages has been due to the livestock owners’ previous experiences. Livestock owners who initially sent their livestock to the commonage when it was first implemented, incurred losses due to theft. Other livestock owners expressed that there was a lack of honesty and trust among livestock owners that hinders the operations of a commonage as a best practice in Grahamstown.

Livestock owners also felt that the lack of security on the commonages needed to be dealt with first, with the installation of fences around the commonages. However, the municipality only provides technical support to livestock owners in the commonage. This again reveals a lack of communication between both stakeholders because if the livestock owners were aware that the municipality only helped owners who used the commonage then more owners might actually use the commonage to graze their livestock. This is one way that the municipality has contributed to improving the challenges faced by livestock owners, however this is not enough, which links into a more national issue, as the municipality has gained the reputation for having poor service delivery.

**Technical challenges**

Technical support that could be provided by the municipality to the livestock owners could be in the form of dipping facilities, subsidized medicinal costs and regular inspection of the health of the livestock (figure 5). Technical support also links into the need for fencing. According to all the livestock owners interviewed technical support does not exist in Grahamstown. Further, livestock owners also face challenges with regard to grazing and water resources (Rota & Sidahmed, 2012). More fencing with implemented safety measures would thus lead to decreased theft of livestock (figure 5). The farmers said they incurred extra costs for vaccinations and medications for their livestock which could be subsidized by the municipality. Also mentioned was the need for dipping facilities which exist in some districts of the Makana Municipality but not in Grahamstown which means that livestock owners either have to walk more than five kilometres to access dipping
facilities or buy their own chemicals for disease control. When asked what they wished the municipality could do to help them, most livestock owners stated that help with vaccinations would lift off the burden of the costs as most livestock owners were not formally employed and livestock keeping was their only means of securing a livelihood as reflected in the following statement.

“The Municipality does not offer any help, as a livestock owner, I have to pay for all the medication and these are very expensive. I am unemployed and many times I have to decide between feeding my family and keeping my animals alive” (Interviewee no. 33).

There is a need for more technical support from the municipality, as well as integrative management plans that involve the locals in the decision making process, as well as more focus on IDP’s. Inherent in IDPs is the importance of reducing poverty and improving the livelihoods of the urban poor through improved agricultural development opportunities (Municipality, 2010). However, it can be said that until recently, the main focus of agricultural development initiatives and livestock challenges has mainly occurred only from rural perspective. Essentially, IDP’s need to be implemented based on the different requirements of various areas, thus one cannot use a blanket approach as the condition to be addressed because these challenges vary from place to place. For example, the IDP of the Makana Municipality in Grahamstown, mainly focuses on the challenges faced by commercial farmers around the town, often neglecting that of urban livestock owners (Municipality, 2010).

Inadequate communication

Lack of adequate communication between livestock owners and the municipality was also cited as one of the main constraints to proper functioning of livestock production by 17% of the participants. Our surveys showed that there is currently a small group of livestock owners’ representatives that is working with the municipality on producing a formal bylaw document on commonages. This Bylaw is to stipulate their use and conditions that the livestock owners are to subscribe to. The current draft has been in place since 2011 and there has not been any progress in reaching an agreement between livestock owners and the municipality. An example of one of the by-laws is that livestock are not allowed to graze in the actual town of Grahamstown, however, as seen by many Grahamstown residents on a daily basis, this has not been implemented or being
monitored. This is due to many reasons, the main one being the lack of an efficient means of communication.

5.4 Participants’ perceptions on severity of the challenges faced

The severity of five isolate challenges were ranked by livestock owners on a scale of 0 to 10, where 0 is least severe and 10 is severe. It can be seen in figure 6 that theft was perceived as the most severe challenge or threat, followed by diseases and dog bites. Lack of fodder and water were perceived as relatively less severe.

Disease outbreaks were also ranked relatively high which correlates with health assistance required by approximately 40% of participants (figure 6). This suggests livestock disease and the costs associated with vaccines are a major barrier to livestock keeping in Grahamstown. Therefore after analyzing the challenges faced by livestock owners and the severity thereof, we can isolate theft and a lack of fencing, and disease and a lack of medicinal resources as the two emerging challenges in the literature. These two threats to livestock keeping are the highest priority for alleviating and should be the main focus of the municipal staff.

As seen in figure 7, without the trend line equations we can still deduce that there is a difference between the variabilities of the rankings for the different challenges. Theft and dog bites show the most variability in the results which may be due to place-specific experiences within the low income area, Joza, as a whole. For example, theft and dog bites could be experienced more severely on the outskirts of Joza and Grahamstown, whereas they may be far less severe closer to the CBD or suburban areas. It is thus important to note that theft and dog bites are experienced relatively more differently amongst our sample which further leads us to suggest that socio-economic characteristics also vary throughout our sample. Similarly, diseases, lack of fodder, and lack of water have less variability in the assigned rankings by our sample, and the gradients on the respective trend lines for these challenges are relative lower than theft and dog bites. This may be due to the fact that these challenges are beyond the livestock owners control and dependent on external variables (figure 8).
Disease, for example, would be experienced consistently throughout an urban livestock system unless some owners have access to resources, or the economic inequality is so severe that some owners cannot afford vaccines. The relatively higher consistency seen in lack of fodder and water may be because these challenges are very much dependent on seasonal variability and would naturally be experienced evenly by all livestock owners despite possible variation in socio-economic characteristics (figure 7). A suggestion made in the study done by Getchell et al., (2002) was that there is an need to be aware of the stocking rates allowed in the study area in order to understand what the role of overgrazing is which is coupled with climate variability. For this to be possible, the Makana municipality would need to work on the By Law draft which would outline these regulations.

The Municipality may need to institute formal structures that allow for the voices and the opinions of the farmers to be heard. The Livestock Owner’s Association is not formally recognized because it was seen as representing a few livestock owners. It is worth considering how the association may be reinstated. It is also key to invest in capacity building of the livestock owners, so that it would be easier for them for example to be able to spot livestock diseases and be better equipped on how to deal with them. There could also be a livestock watch group that can be organized and funded by the municipality to ensure that the livestock owners work together to deal with the challenge of theft. A more effective way is also to include the findings of the study in local information forums and schools so that the pollution problem can be attended to by all stakeholders. The provision of bins and scheduled litter pick up drives would be key yet there needs to be a sustainable way of ensuring that it continues and this is through education.

It is important to note that challenges like theft, limited resources and lack of support from the municipality are not only experienced in urban settings, these are common in rural settings. The important thing however is the willingness of the stakeholders to engage and find a way forward to solve the challenges and improve livestock keeping.

In conclusion, the main aim of this study was to examine and characterize challenges faced by livestock owners in an urban setting, using Grahamstown as a case study. Upon review of various forms of literature, it was found that individuals involved in livestock farming continue to face multiple challenges that often affect their livelihoods. The results obtained through research have shown that the challenges faced by livestock owners in Grahamstown are multidimensional.
Interviews with key informants in the Makana municipality revealed that there is a bigger problem that needs to be addressed, which relates to the limited communication between officials and livestock owners - a matter that the municipality is aware of but are having difficulty dealing with.

In a bid to overcome this challenge the commonage manager has tried to appoint representatives from different groups of livestock owners who will meet regularly and act as a platform for their affiliated group. Although it can be said that this is a step in the right direction, at the township level, there is still a lack of communication and livestock owners have resorted to focusing on the sole maintenance of their livestock.

After analysing the results it was evident that there are numerous issues surrounding livestock keeping in an urban setting. It was noted that a large proportion of urban livestock owners in Grahamstown (i) kept cattle and (ii) used livestock for economic benefits and for cultural purposes. This highlights the importance of livestock keeping to livestock owners and residents of Grahamstown. When livestock owners were asked about their perceptions of the numerous issues surrounding livestock keeping it was found that theft seemed to be the most recurring problem among livestock owners in Grahamstown.

The issue of theft can be linked to technical, social and economic problems within the area. Theft can further be attributed to the lack of fencing, an issue the majority of livestock owners brought forward. It was also noted that a high number of cattle were subject to dog attacks and bites and often succumbed to their injuries. This again can be linked to a lack of fencing within Joza as many livestock owners felt that if fencing was provided it would drastically reduce the death rate of their cattle and other livestock. Although it may be difficult to completely stop stray dogs from attacking livestock, it has been suggested that more could be done to reduce the death rate through the provision of better and more affordable health care for the animals.

By addressing this matter through municipal aid, in the form of antibiotics or veterinary assistance, deaths attributed to dog bites can be reduced substantially. By expanding the scope of municipal aid, more can be done with regards to deaths associated with disease as well. The lack of support from the municipality was viewed as a contributing factor to the high death rate as numerous livestock owners felt that the local government should put more substantial measures in place to curb the death of their animals. When asked what forms of assistance are most needed the majority
of owners mentioned a lack of fencing in areas where their cattle graze and suggested that it had an effect on the safety of their livestock (dog attacks).

Another form of aid that many livestock owners felt necessary was improved health facilities for their livestock; this was evident due to their limited access to veterinary services due to inaccessibility and economic constraints. Given that the predicted population growth, rising income and increased urbanization in African countries, an understanding of livestock production challenges in an urban setting is relevant when thinking about livestock development and support (Berhanu, 2014). Overall, numerous challenges were highlighted and it can be said that these could be used as a platform for the improvement of urban livestock keeping as well as the livelihoods of livestock owners and the surrounding citizens.
References


