Management practices and constraints of beef cattle production in communal areas of Mpumalanga Province, South Africa

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ABSTRACT

A survey study was conducted to determine the management practices and constraints faced by beef cattle producers in 200 households in communal areas of Chief Albert Luthuli Municipality in Mpumalanga province. In this context, the results indicated that while 91.5% of farmers practiced continuous breeding in heifers at younger than two years of age, a higher number approximately 68.5% of farmers relied upon neighbours for breeding bulls. Also, calving percentage was between 50% and 70% as reported by 43.5% of farmers whereas 54.5% of farmers reported 50% to 60% weaning percentage. However, 77.5% of the farmers weaned their calves at five to seven months. 100% of farmers freely grazed their beef cattle on the mountainside and over 93.5% of farmers used veld as a source of feed with 82% of farmers supplementing their beef cattle depending on the season. Overall, the main constraints reported by the respondents were disease (26%) and malnutrition (18%) during dry season. In conclusion, the study finds that regular and proper medication in addition to supplementing feeds can assist by reducing mortality rates and enhancing productivity.

Key words: Beef cattle, Communal areas, Constraints, Management, Production.

INTRODUCTION

In South Africa, cattle production is the most important livestock sub-sector as it contributes about 25–30 per cent to the total agricultural output per annum (Schultz et al., 2013). In this context, cattle production has increased by 37,000 heads from 13.5 million in 2004 to 13.87 million in 2011 as reported by the Department of Agriculture, Fisheries and Forestry (DAFF, 2010). Categorizing the total cattle production into groups, DAFF (2010) observed that beef cattle subsector contributed about 80% of the total cattle heads while the remaining 20% is for dairy cattle. In the same study, DAFF (2010) also reported that out of 14.1 million beef cattle available in South Africa, 60% is owned by commercial farmers and 40% by emerging and communal farmers. This might imply that beef cattle is produced throughout South Africa, by all categories of farmers with Mpumalanga province commanding the greatest share of beef cattle production in South Africa among all the nine provinces as it accounted for 23% of the beef produced in 2011 (DAFF, 2012). For instance, in Mpumalanga Province, Gert Sibande district has played an important role in the export of beef as it commanded the highest market shares during the periods 2002 to 2004, 2006, 2008 and 2009 (DAFF, 2012). However, this contribution is from commercial farmers only and the same cannot be said about the smallholder beef cattle farmers and hence making their contribution to market share questionable. Perhaps, the reason for this lack of contribution to market share from the smallholder beef cattle farmers could be attributed to poor management systems, production constraints and therefore low productivity. Limited information exists on management practices and constraints faced by smallholder beef cattle farmers in communal areas of Mpumalanga province. It is envisaged that knowledge of the management practices and the constraints faced by smallholder beef cattle farmers in communal areas of Mpumalanga province will help to improve and accelerate the productivity of their cattle’s thereby enhancing their livelihood. Therefore, this study was conducted to determine the management practices and the constraints faced by smallholder beef cattle farmers in communal areas of Mpumalanga province.

MATERIALS AND METHODS

A survey was conducted in four rural communities of Chief Albert Luthuli municipality in Mpumalanga Province, South Africa. It has a sub-tropical climate with hot summers and mild to cold winters while average daily temperature in summer is 24°C and 14.8°C in winter (Mpumalanga DACE, 2003). Furthermore, their average rainfall is 767 mm per annum, with approximately 10 times more rainfall in summer than in winter. However, the rainfall increases from West to East at 600 mm to 1600 mm more annually (Mpumalanga DALA, 2006). The main economic

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activities in the district are crop, mining and livestock production.

A total of 200 smallholder farmers who were willing to participate were involved in the study, 50 from each of the selected communities of Elukwatini, Tjakastaad, Mooiplaas and Dundonald. They were briefed on the objectives and nature of the study and they were interviewed using a semi-structured questionnaire and participants were selected based on the beef cattle availability.

Data were collected on breeding management, production management, feeding and marketing management practices as well as constraints and possible solutions to the identified constraints. Data obtained from the questionnaire were coded and summarized prior to analysis and was later imported into Statistics Package of Social Science (2015) for further analyses. Graphs and tables were also used to summarize the results.

RESULTS AND DISCUSSION

Figure 1 shows the results of the present study on breeding management practices implemented by smallholder beef cattle farmers in communal areas of Chief Albert Luthuli Municipality. In terms of breeding systems, 91.5% of the farmers reported practicing continuous breeding, while 5% considered seasonal breeding for production purposes and only 2.5% reported not breeding at all but only buy calves from auction for fattening purposes. 12% of the respondents reported selecting breeding bulls from their own herds, while 68.5% relied upon neighbours for their bulls.

With continuous breeding being the predominant practice among the respondents, the majority (90%) reported mating heifers at younger than two years, while the remaining 10% farmers bred after two years (Figure 2). As a result, 43.5% of the farmers reported calving percentages between 50% and 70% and 34% achieved calving percentages of more than 80%. It was also found that 77.5% of the farmers weaned their calves at five to seven months while 18% kept to a seven to nine month weaning interval. The majority (54.5%) reported 50% to 60% weaning and 16% of farmers achieved weaning percentages of more than 60%. Due to calves being weaned at an early age, most of the respondents (36%) reported mortality at weaning, while 20% and 16.5% of farmers experienced mortality at breeding and birth respectively.

Table 1 shows the result on feeding and marketing management practices implemented by the farmers. All of the farmers (100%) freely grazed their beef cattle on the mountainside. 93.5% of farmers said they use the veld as a source of feed, while only 2.5% use planted pasture and 4% bring in feed. However, 82.5% of farmers reported supplementing their beef cattle depending on the season and only 17.5% said they do not provide supplementary feed. Most of the farmers (56.5%) reported selling their beef in cases of emergency, with 39.5% saying private sales were the quickest under these circumstances and 33.5% saying auctions worked best.

The results recorded in terms of constraints are summarized in Table 2. The main constraints reported by the respondents were disease (26%) and malnutrition (18%) during the dry season. Feed shortages (10% of the farmers) and 9.5% named drought during the winter months as a constraint. Others are unfenced grazing camps (11%), theft (9%) and water shortages (2%) in grazing areas.

The present study indicated that the majority of the respondents did not own breeding bulls and relied on their neighbours for bulls for mating purposes. This was expected in light of the poor farming management practices observed in the study area. Farmers were reluctant to purchase bulls for mating purposes due to the fear of venereal disease and that untested breeding bulls could result in high mortality in cows and calves. Munyai (2012) also found that farmers in Mudulini village in Limpopo did not buy their own breeding bulls and depended on the bulls of neighbours for breeding. However, Siegmund-Schultze et al. (2012) reported that some farmers in Okamboro in Namibia owned breeding bulls and replaced them when they were old to prevent mating with their own daughters. Mating age appears to be the most critical factor affecting beef cattle production in the communal areas in Chief Albert Luthuli Municipality. The majority of farmers reported mating their heifers at younger than two years of age, with fewer farmers practicing mating after two years. This could be explained by the uncontrolled breeding and long calving intervals observed in the study area. Some farmers reported that heifers or cows conceived but later died from dystocia as a result of the poor nutritional quality of the grazing. Some also reported a long calving interval due to a low bull:cow ratio and poor nutrition. In a study by Nqeno...
Fig 2: Production management practices used by farmers in the study area

Table 1: Feeding and marketing management practices used by farmers in the study area

<table>
<thead>
<tr>
<th>Variable</th>
<th>Range</th>
<th>No. of respondents (n)</th>
<th>Frequency(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeding system</td>
<td>Free grazing</td>
<td>200</td>
<td>100.0</td>
</tr>
<tr>
<td>Feed source</td>
<td>Veld</td>
<td>187</td>
<td>93.5</td>
</tr>
<tr>
<td></td>
<td>Pasture</td>
<td>5</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>Bought in feed</td>
<td>8</td>
<td>4.0</td>
</tr>
<tr>
<td>Supplementation</td>
<td>Yes</td>
<td>165</td>
<td>82.5</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>35</td>
<td>17.5</td>
</tr>
<tr>
<td>Supplementation period</td>
<td>Rainy season</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>Winter</td>
<td>111</td>
<td>55.5</td>
</tr>
<tr>
<td></td>
<td>Drought</td>
<td>7</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>All year round</td>
<td>44</td>
<td>22.0</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>37</td>
<td>18.5</td>
</tr>
<tr>
<td>Selling time</td>
<td>Rainy season</td>
<td>6</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>Winter</td>
<td>5</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>Dry season</td>
<td>8</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>All year around</td>
<td>22</td>
<td>11.0</td>
</tr>
<tr>
<td></td>
<td>Emergency</td>
<td>113</td>
<td>56.5</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>46</td>
<td>23.0</td>
</tr>
<tr>
<td>Selling channels</td>
<td>Auction</td>
<td>67</td>
<td>33.5</td>
</tr>
<tr>
<td></td>
<td>Abattoirs</td>
<td>5</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>Butcheries</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Private sales</td>
<td>79</td>
<td>39.5</td>
</tr>
<tr>
<td></td>
<td>Emergency</td>
<td>46</td>
<td>23.0</td>
</tr>
</tbody>
</table>

et al. (2011) it was found that late bulling resulted in the birth of calves during the winter months when the nutritional status of the rangeland is at its poorest condition. Tavirimirwa et al. (2013) as cited by Mashoko et al. (2007) had similarly observed mating at 28 to 36 months on communal farms, while Gusha et al. (2014) reported heifer mating ages of between 18 and 27 months in Zimbabwe. Contrary to these findings, Tada et al. (2013) found that most heifers in the Eastern Cape had a calf before reaching four years of age.
Due to the uncontrolled mating prevalent in the study area, the majority of the farmers reported a calving percentage between 50% and 70%, which is unexpectedly high in light of the low bull:cow ratio and poor feeding before the breeding season due to overgrazing and overstocking in the grazing areas. Siegmund-Schultze et al. (2012) also found a 60% calving rate in Okamboro in Namibia, while Sibanda (2014) reported a 56% calving percentage in four communal districts in Zimbabwe as compared to the national average of 46%. Early weaning was the most common practice reported by the majority of farmers in the present study, with most making use of weaning rings to prevent ongoing suckling. Some farmers did however report instances of mortality at weaning, the primary reason being that calves were born during the dry season when the nutritional status of the rangeland was at its poorest condition and cows struggled to get sufficient feed to maintain their calves. In addition, loss of weight and milk production in the cows would negatively affect the growth of the calves and hence resulting in various diseases. In Matobo in Zimbabwe, Sibanda (2014) also found high mortality rates in animals between the ages of six months and two and half years. However, Scholtz and Bester (2010) reported a lower mortality rate of 30.3% in communal livestock farming. As observed by Nowers et al. (2011), the mortality rate in a herd was a direct reflection of management inefficiency and had a significant impact on the profitability of beef cattle farming.

Free grazing on the mountainside was the main form of grazing practiced throughout the year by the respondents. This was attributable to the lack of fencing in the communal rangeland areas in Chief Albert Luthuli Municipality which meant that grazing was not managed or rotated. The negative outcome of such grazing patterns was overgrazing and poor performance in the cattle. Similar results were reported by Munyai (2012) who found that grazing land was unmanageable and shrinking due to the high demand for residential sites because of the population explosion in Vhembe district, Limpopo Province. Contrary to the present study, Katiyatiya et al. (2014) found that cattle were grazed in camps populated by canopy shade trees in four villages in the Eastern Cape. As one would expect in such communal areas, most of the farmers in the present study said that they used the veld as the main source of feed for their herds, while some reported using planted pasture or bringing in feed. This is attributable to the fact that the veld is the cheapest and most freely available source of feed in communal areas, but such free grazing can however lead to deterioration of the veld due to overgrazing, injudicious grazing and poor land use management including the underestimation of long-term veld grazing capacity. Bayene et al. (2014) similarly observed that natural veld grazing is a cheap source of livestock feed in communal areas of South Africa, and Mutibvu et al. (2012) found that natural veld was the major source of feed for livestock in Gokwe in the southern region of Zimbabwe. On the other hand, Valbuena et al. (2012) found that crop residues were the most important source of livestock feed across mixed smallholder systems in sub-tropical Africa and Asia.

On the other hand, due to poor veld management, most of the farmers had to supplement their cattle during the nutritionally deficient dry season although the input cost was high. Similar findings were also reported by De Lange (2011) who emphasised that supplementation of grazing animals was critical to successful livestock production under South African conditions. De Lange (2011) also noted that while cattle gained mass during the four to six summer months, 20% to 30% of the maximum summer mass was lost during winter. These findings are different from the findings of Tavirimirwa et al. (2013) who found that communal cattle in Zimbabwe were rarely supplemented, and that low intake of poor quality feed limited livestock productivity. Thus, as suggested by Masikati (2010), farmers should be encouraged to use cheap technologies for supplementary cattle feeding during the dry season, such as urea treatment of crop residue which can increase crude protein content from 3% to 14%.

Private sales to neighbors appeared to be the preferred option for quick and simple selling. Since cattle purchases in the communal areas were generally for the purpose of socio-cultural events, people had no choice but to pay whatever the selling farmers asked, no matter how expensive. Similar results have been reported elsewhere, where Sikhweni and Hassan (2014) found that 60% of farmers sold their cattle to local people. Contrary to these findings however, Thomas et al. (2014) reported that most farmers in the rural constituency of Katima Mulilo in the
Zambezi region sold their cattle to abattoirs rather than on the open market.

Diseases and feed shortages in winter as a result of continuous grazing and seasonal variations in the study area were found to result in malnutrition and consequently high mortality rates, low productivity and marketing challenges due to poor body condition. This finding was expected in light of the fact that the communal areas in Chief Albert Luthuli Municipality fall in South Africa’s sourveld area and are located at high altitude in areas with high rainfall. This means that palatable, high quality grazing was available in the summer months but this decline in the dry winter months, resulting in crude protein levels of less than 7% in winter grazing (De Lange, 2011). Amimo et al. (2011), Bidi et al. (2015), Mngomezulu (2010), Sibanda (2014) and Tavirimirwa et al. (2013) also reported cases of crude protein dropping below 5% in various communal areas.

Cattle theft was a common challenge reported by farmers in the present study. This was attributable to the lack of fencing around grazing camps and the fact that those cattle often walk unsupervised to graze far from homesteads, increasing the risk of their being stolen or impounded or getting lost. Sikhweni and Hassan (2014) also noted loss of cattle due to theft, and Mngomezulu (2010) found cattle theft to be a major challenge in KwaMasele village in the Eastern Cape.

CONCLUSION

It is therefore, concluded that government should implement a skills development and training programme among beef cattle farmers in communal areas of Mpumalanga municipality in order to improve their knowledge and understanding of modern farming technologies and practices in addition to promoting good health and feed management. Also, provision of infrastructural support should be encouraged to enhance the farmer’s access to beef cattle markets that will boost their income from sales.

REFERENCES


