Characteristics of small-scale sheep production systems in some communal areas of the Eastern Cape Province, South Africa

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The objective of this study was to examine the characteristics of small-scale livestock production systems in some communal areas of the Eastern Cape Province, South Africa. The parameters surveyed include sex, age, educational and marital status of the farmers, types of livestock raised and production system practiced. The study revealed that mixed crop-livestock production systems were dominant in the study area. Majority of the respondents (72.4%) were male and approximately 59% of the older male farmers were more than 70 years old with the highest mean flock size of 86. A total of 62% of these farmers had basic education and a mean family size of 5.9±3.0. Most of the sheep farmers (70.9%) bought their foundation stock, but 6.5% of them obtained theirs through bride price (lobola).

Generally, livestock species owned by the respondents were sheep (71.8%), poultry (12.9%), cattle (7.7%), goats (4.4%), dogs (1.3%), pigs (0.6%) and others (1.3%). Family labour is mostly used for animal management and herding, being done by men (65%) and boys (30%), respectively. The natural veld provides highest feed resource base for the animals and almost all the respondents provide night shelter for their sheep, in the kraal that is adjacent to the main family house. The prevalence of gall sickness was ranked the highest (22.1%) among the diseases and parasites affecting sheep. While 80% of the respondents treated their animals with stock remedies, a very low proportion of them (3.4%) adopts an integrated approach of using commercial drugs and local herbs or call animal health technicians to treat sick animals.

Key words: Gall-sickness, herd size, characteristics, sheep farming.

INTRODUCTION

Livestock farming is one of the most viable agricultural activities in South Africa where approximately 69% of the agricultural land are being used for extensive grazing on natural veld (Department of Agriculture, Forestry and Fisheries (DAFF) (2012), Fayemi and Muchenje, 2014). The Eastern Cape Province (ECP) consists of rural areas with more than 80% of its population involved in livestock integrated production systems (Braker et al., 2002; Perret
Livestock farming in communal grazing areas of the ECP of South Africa is mostly subsistence in nature and characterised by low inputs. In the communal areas of the ECP, it is fully integrated mixed units consisting of cattle, sheep and goats. Farmers generate income from the sale of livestock and their by-products: wool, meat and dung for fuel or manure, thus contributing to farm household livelihood, poverty alleviation and food security (Miao et al., 2005; FAO, 2009; Yitayew et al., 2013). Crop-livestock integration is a means of risk avoidance during crop failure and cultural functions during festivals (Kosgey et al., 2008).

Despite the importance of livestock husbandry, both at household and national economic levels, production and productivity within the sheep sub-sector has been quite low in the Eastern Cape Province (Bembridge, 1989), and in other countries in Africa (Gizaw et al., 2010; Mengesha and Tsega, 2012). Communal sheep farming reflects a high level of mortality, a low reproduction rate, a low weaning percentage and low turnover (Bembridge, 1989). The major problems of low livestock productivity in the communal areas include housing, health and inadequate feed and nutrition (Kusina and Kusina, 1999). However, according to Ajala (2004) and Ben and Smith (2008), the high incidence of diseases is another major constraint associated with small ruminant production. The objective of the study was to establish the characteristics of small-scale sheep production systems in the rural areas of the Eastern Cape.

MATERIALS AND METHODS

Description of study areas

The study was conducted in two villages of the Engcobo Local Municipality under the Chris Hani District Municipality of the Eastern Cape. The two villages (Tora and Ntibane) are situated within 28°9’22”E and 31°53’44”S 70 km East of Ngcobo and 28°04’35”E and 31°39’53”S 50 km North. The mean annual rainfall for Tora and Ntibane was ±620 mm and ±750 mm, respectively. The vegetation on the plain is described as Mthatha, a moist grass growing along mountain slopes of the Drakensberg foothill grassland (Mucina and Runderford, 2005). The most common grass species are Themeda triandra (Iqunde), Sporobolus africanus (Msuka), Eragrostis plana (Umthishi) and Digitaria eriantha (Injica).

Data collection and analysis

The farmers were selected based on their interest in sheep farming and willingness to be interviewed. The questionnaires were pre-tested and modified prior to its actual administration. This was done with the assistance of an Animal Scientist from Dohne Agricultural Development Institute and Extension Officers as enumerators. Samples were collected from 29 households consisting of 21 males and 8 females from the two villages. Variables investigated included demographic characteristics of sheep owners, sheep distribution by households, management practices, problems associated with current management systems and disease—profiles. Simple descriptive statistics (percentages, frequency and mean) was used to analyse data.

RESULTS AND DISCUSSION

Socio-economic characteristics of respondents

A summary of characteristics of household heads in the study areas is shown in Table 1. It was observed that the majority (72.4%) of sheep farming households were headed by married persons. A further analysis of gender and marital status of the sample showed that 60% of the male farmers and 12.4% of the female respondents were married. The household heads of most respondents were predominantly males (72.4%). Few cases of female-headed households were found with 5.2% of them being single mothers and 10.3%, as widows. The results on the dominance of male farmers in livestock activities may be due to the privilege accorded them as heads of families and cultural values that make farmland easily accessible to them. Sometimes, the transfer of animals by virtue of inheritance to the male heads of the households from the parents contributed to the male-dominant livestock ownership in the study area. These findings are in agreement with previous studies where livestock farming was found to be a male dominated business (Garoma, 2006; Kunene and Fossey 2006; Taye, 2006; Mapiliyao et al., 2012). The lower proportion of female farmers could be attributed to their inability to get their own farmland as head of a family if they are not married. This is in contrast with a survey by Anaeto et al. (2009) on sheep farming, where the majority of the farmers were females (70%). In another survey, Modise (2004) showed that more women (84%) participated in poultry farming than men. It was noted that in certain households when the husband passed away, women cannot take ownership of the sheep. The reasons could be due to social and cultural factors as well as a lack of capital.

The mean age of interviewees was 66±15.1 years (range from 33 to 89 years). The majority (76%) of respondents were within the age bracket 51 to 89 years (Table 1). A possible reason for this may be that farming is mostly considered as an alternative for people retiring from their jobs, or cultural issue. This implies that young and active people migrate to urban areas to seek better opportunities and do not consider farming as a potential business while some are involved in other farming enterprises such as crop production. Dercon and Krishman (1996) reported that age can affect the rate of household adoption of innovations, that in-turn affects household productivity and livelihood strategies. In the population surveyed, about 24% of household heads were in the active and productive age range of 18 to 65 years. According to BPS (2000), productive age was considered to be to those 15 to 64 years of age. In addition, unproductive labour was assigned to those younger than 15 or those older than 64 years of age.
Livestock species and gender role in the study area

The production system in the study area is characterised by mixed crop-livestock production. Almost all respondents in the study area reared indigenous breeds of livestock. In Table 2, the distribution of livestock species composed of cattle (7.7%), sheep (71.8%), goat (4.4%), chicken (12.9%), pigs (0.6%), dogs (1.3%) and other livestock species (1.3%). Very few of respondents had crosses (Bonsmara, Dohne Merino, Boer Goat, and Large White) and exotic bred animals (Brahman). Most of the farmers kept indigenous animals because they are well adapted to the local environment. The study revealed that sheep are the most important species of livestock in the study area. Studies conducted by Karimuribo et al. (2011) in Tanzania and Ayalew et al. (2013) in Ethiopia had similar findings to the current study. The total flock size (sheep) in the investigated households was 2291 head, which consisted of 110 rams, 1289 ewes, 265 castrated animals and 627 lambs (Figure 2). The mean flock size observed during the study was 79±53.9 sheep per household. Female animals made up the largest proportion (56.3%) of the flock followed by lambs, castrates and rams (27.4, 11.5 and 4.8%) respectively. This finding is in agreement with results of other studies in South Africa (Musemwa et al., 2008). Majority (47.2%) of roles in the study area were mainly done by men followed by people, boys and women who were hired 26.7, 18.2 and 7.9% respectively (Table 3). Although the roles are shared amongst gender, women have fewer roles to play in sheep husbandry as compared to men and boys. Men, women and children (family) perform a large number of tasks related to animal husbandry, with some degree of variation in involvement from household to household. These tasks include feeding of animals, herding, tail docking, castration, milking, cleaning of kraals, ear-notchings, draught power, transportation, vaccination, purchasing and sale of live animals and animal products through formal and informal marketing channels. Contrary to our findings, Belay et al. (2011) reported that less than 34% of labour used for animal management in Ethiopia was hired labour.

The results of the survey indicated that all of the respondents provided housing to their sheep, most preferred stone (89.7%) and some processed wood (10.3%). Natural veld (82.8%), natural veld + supplement with commercial diet (10.3%) and natural veld + brewer’s grain (6.9%) were mainly used as this may be due to the fact that natural veld remains the cheapest and most accessible feed source.

Flock size and classes

Figure 3 illustrates that about 70.9% of the respondents bought their foundation stock;, some inherited them (22.6%) and others obtained theirs from “Lobola” (6.5%). Similar findings have also been reported in Southern Kalahari where the majority of Karakul sheep farmers

(BPS, 2000). Increasing the involvement of active and productive age can have a direct bearing on increased agricultural productivity and production, and hence for improving household livelihood and reducing poverty in rural areas. Such findings have also been reported by Senthilkumar et al. (2005) where nearly half (48%) of urban dairy farmers belonged to the older age group (>65 years). Contrary to our findings, Pushpa (2006) reported that 50% of livestock owners in rural and peri-urban livestock production systems belonged to middle age group. The majority (72.4%) of the respondents had smaller household sizes of 1 to 5 members followed by 6 to 10 and more than ten, 17.2 and 10.3%, respectively. The mean family size was 5.9 members per household with a standard deviation of 3.0. The figure obtained in this survey was higher than the provincial and national average family size of 3.9 and 3.6 respectively (Statistics South Africa, 2011). Contrary to our findings, FAO (2010) reported that the average family size in Vietnam was between 4.0 and 5.2. In general difference in family size may be attributed to the low level of awareness in family planning in the rural areas. It was also found that the majority (62%) of small-scale farmers in Engcobo local municipality acquired at least basic school education (Figure 1). This can be used as an opportunity for improvement of sheep production by extension services through training of farmers and provision of extension materials such as leaflets and hand-outs, which can be used to transfer knowledge to the farmers to easily adopt new technology. Similar findings were reported by Karimuribo et al. (2011).

Table 1. Socio-economic characteristics of the livestock farmers in Engcobo Local Municipality.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age (years)</th>
<th>Household size</th>
<th>Marital status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>Category</td>
</tr>
<tr>
<td>Male</td>
<td>21</td>
<td>72</td>
<td>31-50</td>
</tr>
<tr>
<td>Female</td>
<td>8</td>
<td>28</td>
<td>51-70</td>
</tr>
<tr>
<td></td>
<td>71-90</td>
<td>59</td>
<td>&gt;11</td>
</tr>
</tbody>
</table>

Number of male = 72; Number of female = 28.
Table 2. Livestock composition and breeds owned by farmers within the Engcobo local municipality.

<table>
<thead>
<tr>
<th>Livestock type</th>
<th>Breeds owned</th>
<th>Proportion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>N, BR, I, B</td>
<td>240 (7.7)</td>
</tr>
<tr>
<td>Sheep</td>
<td>I, M, DM</td>
<td>2291 (71.8)</td>
</tr>
<tr>
<td>Goats</td>
<td>BG, I</td>
<td>140 (4.4)</td>
</tr>
<tr>
<td>Chicken</td>
<td>I</td>
<td>413 (12.9)</td>
</tr>
<tr>
<td>Pig</td>
<td>LW, I</td>
<td>22 (0.6)</td>
</tr>
<tr>
<td>Dogs</td>
<td>I</td>
<td>40 (1.3)</td>
</tr>
<tr>
<td>Others</td>
<td>I</td>
<td>43 (1.3)</td>
</tr>
</tbody>
</table>

B= Bonsmara, BR= Brahman, BG= Boar Goat, DM= Dohne Merino, I= Indigenous, LW= Large White, M= Merino and N= Nguni
Table 3. Farmers’ response regarding housing materials and involvement in routine and occasional management practices at the Engcobo local Municipality.

<table>
<thead>
<tr>
<th></th>
<th>Routine feeding practices</th>
<th>Housing materials</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NV (%)</td>
<td>NV+CFS (%)</td>
</tr>
<tr>
<td></td>
<td>82.8</td>
<td>10.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activities</th>
<th>Men</th>
<th>Women</th>
<th>Boys</th>
<th>Hired Labour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herding (%)</td>
<td>22.89</td>
<td>8.33</td>
<td>28.13</td>
<td>-</td>
</tr>
<tr>
<td>Selling (%)</td>
<td>25.30</td>
<td>66.67</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tail docking (%)</td>
<td>10.84</td>
<td>-</td>
<td>34.37</td>
<td>19.15</td>
</tr>
<tr>
<td>Castration (%)</td>
<td>25.30</td>
<td>-</td>
<td>-</td>
<td>57.45</td>
</tr>
<tr>
<td>Ear-notching (%)</td>
<td>25.30</td>
<td>-</td>
<td>15.63</td>
<td>6.38</td>
</tr>
<tr>
<td>Vaccination (%)</td>
<td>13.25</td>
<td>25.00</td>
<td>21.88</td>
<td>17.02</td>
</tr>
</tbody>
</table>

*NV: Natural Veld; CFS: Commercial Feed Supplement and BG: Brewers Grains.

Figure 2. Sources of parental stock of the animals raised within the Engcobo local municipality.
obtained their parental stock from sale (Nsoso and Madimabe, 2003).

Findings further indicated that most (66.1%) of the farmers depend on social grants, support from other family members and employment as source of income (Figure 4). Farming (35.6) was another source of income mentioned in the study areas (Figure 4). The findings from this study show that small-scale farming is not the only source of income in the two villages. It also shows that small-scale sheep farmers do engage in other activities, especially pension, social grants, crop farming (maize) keeping other livestock species such as poultry, goats and cattle. Such findings have also been reported by Mapiliyao et al. (2012), Kunene and Fossey (2006) and in other countries in Africa (Costales et al., 2007; Kariga et al., 2010; Karimuribo et al., 2011). Different animal health problems were reported and the majority of health-related concerns were associated with gall-sickness (22.1%), sheep scab (17.6%) and internal parasites (14.7%) were observed to be the most common diseases in the flocks followed by malkop (13.2%), pulp kidney (10.3%), blue tongue (8.8%), mouth disease (5.9%), foot rot (4.4%) and diarrhea (2.9%). Although there is no evidence due to lack of resources, scab and internal parasites infestation are also prevalent and commonly reported by Mapiliyao et al. (2012). The high prevalence of internal and external parasites could be attributed to an uncontrolled communal grazing management system where flock from different households graze together and mate irrespective of their health status.

**Conclusion**

The study has shown that the most of the respondents involved in livestock production in the study area were males, above 70 years of age. The average family size was 5.9 members per household. The majority of the respondents in the study area had basic education. Of the livestock species owned by the respondents, sheep constituted the major species because it is easy to manage as compared to cattle. Pension and social grants were a major source of income. Farming labour dominated by men was the major source of labour used for sheep management. It is concluded that farmers’
socio-economic characteristics should be considered as a key factor when planning strategies for sustainable sheep production in communal areas. It would be advisable to consider these socio-economic characteristics prior to introducing an intervention.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES


Statistical-Information/Livestock)