

A Survey of Production Systems, Management and Marketing Strategies for Tswana Goats in Semiarid Areas around Mafikeng, North West Province

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Abstract Goat production in communal areas is faced with numerous challenges which may differ with geographical locations. Marketing of goats in North West province has a potential to help diversify the economy and alleviate poverty in rural communities. Seventy five farmers from three villages were randomly interviewed on the management and marketing of goats. Results showed that 57 percent of farmers sold animals without weighing and were also affected by weak market value of livestock. About 29 percent of farmers mentioned that they encountered abortion due to droughts, mineral deficiencies. Other factors include poor housing, low soil fertility for forage production contributed to poor productivity. In addition major constrain for goat production were stock theft (45%), malnutrition (33%) and diseases (32%). A significant correlation ($P < 0.005$) was observed between grazing system and access to veterinary ($P < 0.005$). There is a need to educate rural farmers on management and marketing of goat. This will make significant contribution in addressing the problem of goat management.

INTRODUCTION

The aims of this study were to characterise the traditional small stock farmers in semi-arid area around Mafikeng North West Province, determine their management, production system and their marketing channels. There are nearly 750 000 goats in the North West Province, representing about 11 percent of the total goat population in South Africa (Masikati 2010). Structured questionnaires were designed to obtain information from respondents on socio- economic profiles, animal productivity, nutrient supplementation practices, disease incidence, goat utilization and marketing strategies.

The main constraint to increasing livestock productivity and output is the lack of adequate supplies of good quality livestock feed in the dry season produced at a competitive cost and without jeopardizing household food security. Together with high incidences of diseases and mortality rates, feed shortages lead to low livestock productivity (Masikati 2010). Unavailability of water is another common constraint. In some areas, water may be available but is of insufficient quality to support healthy growth and performance. Masikati (2010) reported that water constraints were prevalent during the dry

season, where animals had to walk distances of up to 14 km per day to access water. Socio- economic profiles, animal productivity, nutrient supplementation practices, disease incidence, goat utilization and marketing strategies. Gwaze et al. (2011) also found that goats were sold alive and price was not calculated from body mass but only from rough estimate of size and maturity. It was also found that approximately half of the farmers sold or slaughtered goats for ritual purposes, where age and sex were more important than body mass. They only sell goats amongst themselves. There was also a clear indication that incentives for marketing goats were absent.

However, this study will therefore be conducted in order to characterize the economic, social and nutritional importance of existing goat farmers in the Molopo district of North West region of South Africa.

MATERIAL AND METHODS

The survey was conducted in Ramatlabama six hundred, Tsetse and Lokaleng villages in the Molopo district, Mafikeng area of the North West Province of South Africa. In this study, All farmers (75) breeding goats were identified and subjected to the interview using a prepared questionnaire. Upon the selection of the house-

hold, the farmers were notified of the intended survey verbally and interviewed on willing basis. Each household was then visited and the study was explained to the farmers. Local chiefs were also informed about the study. Structured questionnaires were designed to obtain information from respondents on socio-economic profiles, animal productivity, nutrient supplementation practices, disease incidence, goat utilization and marketing strategies. The questionnaires were completed in the presence of the head of the household. Questions were asked in English and translated into Setswana language where respondents had limited knowledge of English. Nominal relationships were analyzed using Pearson's chi-square test. The strength of the association was interpreted using Cramer's V coefficient test.

RESULTS

In this study, 58 percent interviewed farmers were pensioners and only 25 percent were employed. The most owners were males with 57 percent rather than female which are only 43 percent. The study revealed that 25 percent of farmers owned land and 12 percent rented the land. It also revealed that 47 percent of farmers had livestock as their major activity on the farm whereas 16 percent indicated livestock did not considered livestock as their majority. Livestock composition at the 3 study sites were as follows: Goats 13 percent, cattle 9.785, sheep 4.425, chickens 5.22 percent, pigs 0.11 percent and donkey 1.12 percent. About 60 percent of farmers let their goats to browse during the day and in an enclosure at night, while 25 percent were kept in a backyard/ free range both during the day and night and 10 percent were permanently kept on semi-intensive. A significant correlation ($P < 0.005$) was observed between grazing system and access to veterinary ($P < 0.005$) (Table 1).

Table 1: Measures of association between livestock income and supplementation practices, grazing system, access to veterinary services and production system.

	Cramer's V	Significance
Concentrates supplements	0.118	NS
Mineral supplements	0.051	NS
Grazing system	0.048	$P < 0.005$
Access to veterinary	0.037	$P < 0.005$
Goat production system	0.070	NS

Sixty-nine per cent of farmers did not vaccinate their livestock while 31 percent do vaccinate their livestock. Of those who fed supplements, 71 percent fed their goats with crop residues in winter, 29 percent did not, however 51 percent did not use concentrate and 49 percent use it and it indicated that 67 percent of farmers supplements their goat with mineral during dry period of winter. In addition, 83 percent farmers visited in the study indicated that most farmers herded their goats whereas 69 percent practiced free grazing system. 56 percent of farm owner their animals go to water, 41 percent go to water and sometimes water is fetched or provided whereas 3 percent are provided with water. It was found that there was a higher proportion 63 percent of farmers that experienced heart water in their livestock; only fewer about 25 percent did not experience the disease.

The study also found that 74 percent of farmers had access to veterinary services. About 64 percent of owner did not experienced internal parasites in their flock as they regularly deworm their animals twice a year during summer and winter. Only 27 percent had that experience because they only deworm their livestock once a year in summer. 29 percent of farmers mentioned that they encountered abortion during droughts. They associated the abortions with stress from the winter season, citing the reasoning that the grazing was deficient in a number of minerals and other vital elements necessary for the nutritional build-up of animals while 71 percent of the other farmers did not agree to this.

It was found that there was a 75 percent of farmers took measures to control parasites by providing their livestock with gall powder. Only 25 percent did not deworm their goats. According to the study 75 percent of farmers dip their goats to prevent ticks which can transmit the disease. Only 35 percent do not dip their goats. Studied conducted in three villages revealed that most farmer 72 percent did not treat their goat with antibiotic only 28 percent treated their animals with antibiotics. First major constraint to goat production in the study were stock theft which ranked up to 45 percent followed by malnutrition 33 percent and also diseases with 32 percent (Table 2).

Table 2: Frequency distribution percentages of the most important constrains

Constrain to goat production	Ramatlabama 600 in %	Tsetse in %	Lokaleng in %
Disease	37.7	15.0	39.0
Stock theft	37.1	55.0	36.0
Malnutrition	7.1	30.0	22.0

DISCUSSION

The results obtained from three villages (Ramatlabama 600, Tsetse and Lokaleng) revealed that most respondents kept their goats for meat consumption. This statements correlate with the research done by Olantunji-Akioke and Adeyemo (2009) that revealed that in South Africa goat is mainly used for meat consumption.

Gwaze et al. (2011) also found that goats were sold alive and price was not calculated from body mass but only from rough estimate of size and maturity. It was also found that approximately half of the farmers sold or slaughtered goats for ritual purposes, where age and sex were more important than body mass. They only sell goats amongst themselves. There was also a clear indication that incentives for marketing goats were absent. Most farmers between 41-50, 61-70 and more than 70 years are actively involved in the farming. The reason being that, in the past that group of people only went to school until elementary. They depend on livestock for survival. Most livestock owners were males (57%) with the remainder of being females (43%). A positive and significant was observed between grazing system ($P<0.005$) and access to veterinary ($P<0.005$). Additionally, there is lack of productive and reproductive information, which resulting in poor achievement of genotype potential. In terms of health issues disease are evident, such as brucellosis/ abortions. These are limiting factor to production in South Africa (Devendra 2011). Other issue that was raised was problem of stock theft in all three villages. Stock theft is high because most owned farmers were very old and they stole their livestock during the night from the kraal. Some respondent indicate that their livestock were stolen during the day because they don't have money to pay someone to herd their goat during the day. They allowed their goats to browse without supervision and most owners were pensioners so they cannot afford to hire someone to look after their goats. The main challenge smallholders have to face is obtaining feed due to the harsh conditions where the goat production systems are carried out. The qualities of forages were very poor and therefore provide poor nutrition. According to Echavarria-Chairez et al. (2010) certain policies that tend to the ban grazing makes the pastoralist sector more vulnerable. Goat producers are poor and do not have enough re-

sources to solved their challenges, or to apply impact technologies, they need adequate policies and investment by governments and development agencies. One would expect to find high worm burdens in goats on overgrazed communal pastures, leading to severe disease and death. The results obtained on access to veterinary was significantly ($P<0.037$ and with grazing system the results was also significant ($P<0.048$), but goat production system was not significant ($P>0.070$). Therefore, strategies for community-based selection and animal health accompanied by nutritional improvements may have a greater impact on small producers than sophisticated programmers for genetic improvement in rural areas where no production records are kept Moran (2013) and Iñiguez (2011). Gwaze et al. (2011) also found that goats were sold alive and price was not calculated from body mass but only from rough estimate of size and maturity. This also agrees with statement found by Simela et al. (2012) and Manzi et al. (2013) that said that in communal farmers' goats plays an important role in traditional ceremonies. They slaughter their goats during Christmas when their families returns back from work. It was also found that approximately half of the farmers sold or slaughtered goats for ritual purposes, where age and sex were more important than body mass. They only sell goats amongst themselves.

CONCLUSION

There was also a clear indication that incentives for marketing goats were absent. Therefore, participative research and development in these aspects should be carried out to strength the subsistence farmers where goats is considered as poor man's cow. There is indeed a need to improve health care and marketing incentives would need to be introduced in communal areas of South Africa. Farmers should be trained on various aspects of improving goat productivity such as nutritional, health and breeding management in communal areas, and developing their entrepreneurial skills. However, this study will therefore be conducted in order to characterize the economic, social and nutritional importance of existing goat farmers in the Molopo district of North West region of South Africa. Also to identify critical constraints and opportunities this could impact on the potential expansion of goat farming activities.

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