S. Afr. Tydskr. Landbouvoorl./S. Afr. J. Agric. Ext.,
Vol 36, 2007
ISSN 0301-603X

SMALL-SCALE LIVESTOCK FARMERS IN THE PERI-URBAN AREAS OF BLOEMFONTEIN, SOUTH AFRICA

K.C. Lehloenya[1], J.P.C. Greyling, and L.M.J. Schwalbach

Correspondence author: K.C. Lehloenya, Department of Animal, Wildlife and Grassland Sciences, University of the Free State, P O Box 339, Bloemfontein 9300, Tel.: 27-51- 4012211, Fax.: 27-51-4012608, E-mail: LehloeKC.SCI@ufs.ac.za.

Keywords: Cattle, sheep, goats, small-scale, farming

ABSTRACT

A questionnaire survey was conducted to characterise small-scale livestock farmers and to describe the most important husbandry management practices adopted by small-scale livestock farmers around Bloemfontein in South Africa. The questionnaire included questions on human capital, reasons for farming and basic animal husbandry practices. The study revealed that most peri-urban small-scale farmers in this region are married with a primary or secondary education. These farmers farm for commercial (generate income) related reasons. The mean herd size is 11.30±1.4, 17.34±3.6 and 9.00±2.0 for cattle, sheep and goat, respectively. The herd structures are composed mostly of young animals in the breeding categories. The calving interval for most farmers is 24-36 months for cattle and 12 months for small stock. Basic husbandry practices like identification, castration and dehorning are largely practiced.

1. INTRODUCTION

Small-scale farming in African countries play a major role in improving the livelihood of rural people and has a major contribution play in the national gross domestic product (GDP). In Uganda for example, small-scale farmers and pastoralists own about 90% of the cattle herd and almost all of other domestic animals. The livestock production is estimated to contribute about 9% of the GDP (Kulunda, 1996:1). In South Africa, small-scale farming also contributes about 30% to the national economy (ARC, 2004). Nevertheless, the potential of small-

[1] *Department of Animal, Wildlife and Grassland Sciences, University of the Free State, Bloemfontein 9300, South Africa.*

scale farming for provision of animal protein and generation of income from wool and hides to the rural communities should not be underestimated. However, small-scale farming seems not to be sustainable due to low productivity, not only in South Africa but, in most African countries. The major contributing factors to the low productivity of this production system, being communal grazing with uncontrolled stock rates (Webb et al., 2003:2). Moreover, poor adoption of using modern technologies due to their high cost and poor access to markets are also factors (Nell, 1998:21-23). Under such disadvantageous conditions, small-scale farmers in South Africa have to compete with commercial farmers for markets. The recent world-wide phenomenon of globalisation has aggravated the difficulties to the sustainability of small-scale farming systems in Africa. African small-scale farmers have to compete with commercial farmers worldwide using modern technologies leading to high productivity and often supported by subsidies of their governments. The challenge is to find and provide effective animal husbandry practices as well as evaluating the usefulness and preserving indigenous technologies which have potential for improved productivity. The purpose of this study was to characterise small-scale livestock farmers and to describe the most important husbandry management practices adopted by these small-scale livestock farmers around Bloemfontein in South Africa

2. MATERIALS AND METHODS

The study was conducted in the peri-urban areas of Bloemfontein (Botshabelo and Thaba-Nchu) from October 2002 to November 2005. Thaba-Nchu is situated approximately 64 km East from Bloemfontein, while Botshabelo is 50 km to the South-East of Bloemfontein. The whole region is situated at 28.57° South latitude, 25.89° East longitude and at an altitude of 1304m above sea level. The summer mean temperature averages ± 23°C and the winter mean temperature ± 8°C. January is the hottest month with the mean temperature ranging from 15-32°C, while June is the coldest month, with the mean temperature from cold 1°C to mild mean 17°C. The average annual rainfall is 500-600mm.

A questionnaire based survey was conducted among 90 cattle farmers and 28 sheep/goats farmers. Information regarding personal characteristics and human resources, reasons for farming and animal husbandry practices performed by small-scale farmers was collected.

3. RESULTS AND DISCUSSION

Table 1 illustrates the description of personal characteristics and human resources, and the reasons for farming.

Table 1: The personal characteristics and reasons for farming amongst small-scale livestock farmers in the peri-urban areas of Bloemfontein

Parameters	Cattle farmers		Sheep/goat farmers	
	Frequency	Percentage	Frequency	Percentage
Gender				
Male	79	84.4	23	82.1
Female	14	15.6	5	17.9
Marital status				
Single	10	11.1	3	11.1
Married	60	66.7	21	77.8
Divorced	5	5.6	0	0
Widow/er	15	16.7	3	11.1
Level of farmer education				
None	6	17.1	3	17.6
Primary	12	34.3	7	41.2
High school	11	31.4	2	11.8
Tertiary	6	17.1	5	29.4
Reasons for farming				
Cultural	36	17.4	12	18.5
Own consumption	41	19.8	14	21.5
Investment	58	28.0	20	30.8
Source of money for emergency	44	21.3	14	21.5
Social prestige	28	13.5	5	7.7

The vast majority of small-scale livestock farming is headed by men (84.4% & 82.1%) and a minority headed by women (15.6% & 17.9%) for cattle and small ruminants, respectively. These results contrast with the popular perspective that most small-scale farming is headed by women in African countries (Bembridge & Tapson, 1993:362).These may be attributed to the lack of migration to the peri-urban areas of Bloemfontein. In some countries like Lesotho, animal farming activities are handled more by women, as most of men are migrant labourers in South Africa. It has been reported that 60% of the dairy farmers in

Lesotho are women (Phororo, 1996:3). However, in South Africa similar results have been reported in the Eastern Cape Province, where 68% of the communal goat farmers are men (Mahanjana et al., 1996:1) and in the North West province, Marfo (2000:63) reported that 87% of small-scale cattle farmers were men, while women represented only 13%.

The majority of the peri-urban farmers (66.7% & 77.8 for cattle and small ruminant farmers, respectively) around Bloemfontein are married. Similar results were observed in the North West Province, where 70% of the farmers were indicated to be married. The larger group of the farmers (34.3%) have some formal primary education and only 17.1% of farmers are uneducated which is in contrary to the situation in the North West Province, where over 80% of the farmers have high school and tertiary education (Marfo, 2000:65).

The management practices as well as the productivity of small-scale farmers are affected by their main reasons for keeping animals. In KwaZulu Natal and the Northern Province it was reported that the major objective for keeping animals among small-scale farmers was for own consumption and cultural reasons as opposed to commercial reasons (De Lange 1992:113, Hedden-Dunkhorst & Moller 1998:718). In this survey it was found that a smaller percentage of small-scale livestock farmers (30.9% and 26.2% for cattle and sheep/goats farmers, respectively) kept their animals for cultural reasons like paying lobola and social prestige. Most small-scale farmers keep their animals for money related reasons (49.3% and 52.3%) for cattle and sheep, respectively. It was previously observed that the majority of these farmers (79%) sell live animals and milk however, through informal markets (Lehloenya, *et al*, 2005:412), therefore they do not declare income and pay no taxes on their farming income. These tendency has been confirm by the report that small-scale farmers in the Northern Province and Nigeria keep their cattle as investment and for sale when they have an emergency for cash (Asuamah 1992:160, Schwalbach et al., 2001:201). These results give an indication that small-scale farmers realise that money can be generate from livestock production but, they do not have appropriate information on how to implement certain managerial practices.

Table 2 depicts the cattle herd size and structure. The mean herd size was 11.30±1.4 head of cattle in this region (Bloemfontein, Botshabelo

Table 2 : Mean cattle herd size and structure of peri-urban small-scale farmers around Bloemfontein

Class of animal	N	Mean ± SE	%
Cattle numbers	**1006**	**13.64 ± 1.4**	
Heifers (years)			
(0-1)	140	2.59±0.3	13.9
(1-2)	113	3.53±0.6	11.2
(2-3)	112	3.61±0.6	11.1
Cows			
(2-3)	129	4.03±0.7	2.8
(4-6)	271	5.11±0.8	26.9
(7-10)	39	2.60±0.5	3.9
(>10)	3	1.50±0.5	0.3
Males			
(0-1)	103	2.71±0.4	10.2
(1-3)	67	1.91±0.2	6.7
(4-6)	21	1.40±0.2	2.1
(7-10)	8	8	0.8

and Thaba-Nchu) is higher than the mean of 10.8±11.5 reported in previous studies in Thaba-Nchu (Moorosi , 1999:28) and the average herd size of 6 cattle normally observed in communal lands of South Africa (Bembridge & Tapson, 1993:363). The cattle herd structure (Table 2) clearly shows that the total herd is composed mainly of young animals. Older animals above 7 years constitute 4.9% of the whole herd. This contrast with the findings of Moorosi (1999:30) who reported that old cows (> 10 years) represented 48.8% and 46.7% in the Thaba-Nchu and Botshabelo areas, respectively and the perspective that people in the rural areas keep a lot of old animals in their herd as the number of animals is more important for social status than productivity.

Cows of breeding age represented the larger number compared to other categories (Table 2), emphasising that owners are aimed at increasing herd size. Similar results of high numbers of breeding stock have been reported earlier in other communities (Bembridge & Tapson, 1993:364, and Schwalbach *et al,* 2001:201). Male animals constitute a smaller percentage (19.79%) of the total herd and their numbers decline with age (Table 2). In the North West province the male animal structure showed a similar trend (Marfo, 2000:77). This situation is due to the sale

of male animals to generate income leaving female animals for breeding. Most of the traditional ceremonies also require the use of male animals. The mean flock size of 17.34±3.7 for sheep and 9.00±2.0 for goats (Table 3) is lower than the flock mean of 24.9 reported in the former Ciskei and Transkei (Eastern Cape Province) by Bembridge and Tapson (1993:365). These results indicate that the peri-urban small-scale farmers in Bloemfontein keep more sheep than goats. The reason being that goats are mostly slaughtered and sold for traditional purposes, while sheep can be slaughtered for traditional purposes as well as for meat to feed the family and sold to generate income.

Table 3: The mean small ruminant (sheep and goats) flock size and structure of peri-urban small-scale farmers around Bloemfontein

Parameters	N	Mean ± SE	%
Overall			
Sheep	479	17.74±3.7	
Goats	18	9.00±2.0	
Female lambs			
(0-1)	128	8.53±3.6	23.9
(1-2)	76	5.85±1.5	14.2
Ewes			
(2-6)	260	10.83±4.1	48.5
(>6)	14	7.0±1.0	2.6
Males			
(0-1)	36	2.77±0.6	6.7
(1-2)	12	2.0±0.6	2.2
(2-6)	9	1.80±0.4	1.7
(>6)	1	1	0.2

Most cattle farmers identify their animals with brand marks (Table 4) in order to guard against stock theft. This method has been recommended by the government. In addition to brand marks some farmers use ear tags and those with few animals use names. In the Northern Province of South Africa, similar methods of identification have been reported (Marfo, 2000:89). For sheep/goats, the majority of farmers use ear tags and ear notching to identify their animals. Most farmers castrate their animals (84.3% and 82.1%) for cattle and sheep/goats, respectively. In most cases the farmer castrates his own animals and in few incidences

farmers use the assistance of their neighbours or extension officers. Few cattle farmers dehorn their animals.

Table 4: Management practices adopted by peri-urban small-scale livestock farmers around Bloemfontein

	Cattle		Small stock	
Parameters	**Frequency**	**Percentages**	**Frequency**	**Percentages**
Method of identification				
Ear tags	21	15.3	14	37.8
Tattoos	6	4.3	3	8.1
Brand marks	69	50.0	5	13.5
Names	42	30.4	4	10.8
Ear notching	-	-	11	29.7
Castrate their animals	70	84.3	23	82.1
Method of castration				
Knife	16	22.9	8	34.8
Burdizzo	39	55.7	6	26.1
Elastrator	15	21.4	9	39.1
Who castrates				
Farmer	47	66.2	18	75.0
Extension officer	8	11.3	2	8.3
Neighbour	16	22.5	4	16.7
Age at castration (months)				
6	66	94.3	-	-
12	2	4.3	-	-
18	1	1.4	-	-
Dehorning animals	18	21.7	-	-

Fifty-one percent of the farmers reported their heifers' age at first calving to be 2 years, while 37.7% reported the same parameter to be between 2-3 years (Table 5). This indicates that in this area, heifers calve earlier when compared to other areas like the North West Province of South Africa where 88% of the farmers have their heifers first calving at 3 years (Marfo, 2000:91), as well as in Zimbabwe, where the general average age at first calving is 4 years in communal farming systems (Barret, 1991:18). A calving interval of 12 months was reported by 64% farmers while 35.4% farmers reported the calving interval between 18-24 months. These results are in line with 12-24 months calving interval reported in North West Province by Marfo (2000:91)

and between 19 and 19.3 months in Botswana reported by Madibela et al. (2001:1-4). These results indicate that there is a potential to improve the overall cattle productivity by reducing both the age at first calving (to 24 months) and the calving interval (to 12 months). Achieving these goals (optimal production levels) will require assistance from the extension services to improve the management practices, particularly nutritional and reproductive management and will result in higher beef and milk production.

Table 5: Age at first calving, calving intervals and weaning age of cattle farmed by small-scale peri-urban farmers in Bloemfontein

Parameters	Frequency	Percentages
Age at fist calving (months)		
24	40	51.9
24-30	15	19.5
30-36	14	18.2
> 36	8	10.4
Calving interval (months)		
12	53	64.6
18	14	17.1
24	15	18.3

The majority of the sheep/goats farmers (63%) reported their animals' age at first lambing/kidding to be less than 18 months (Table 6).

Table 6: Age at first lambing, lambing interval and weaning of lambs of small ruminant farmed by small-scale peri-urban farmers in Bloemfontein

Parameters	Frequency	Percentages
Age at fist lambing (months)		
≤18	17	63.0
18-24	8	29.6
>24	2	7.4
Lambing interval (months)		
≤12	24	88.9
12-18	3	11.1

These results are in line with the age at first kidding between 16 and 18 months of age in indigenous South African goats reported in the former Kwandebele (Webb et al 2003). The lambing/kidding interval reported by 88.9% of the farmers was 12 months. Webb et al (2003:4) reported a similar kidding interval in indigenous goats. Similar to cattle, there is also a potential to improve overall sheep and goat productivity by reducing both the age at first lambing/kidding (to ≤18 months) and the lambing/kidding interval (to ≤12 months). Almost all farmers (92.6%) indicated that, they do not wean their lambs and kids.

4. CONCLUSIONS

It can be concluded that these production systems used by small-scale farmers in the peri-urban areas of Bloemfontein are very similar to those found in most other parts of Southern Africa. The main reasons for keeping livestock are income generation related reasons while own consumption and cultural reasons has a lower priority. Most farmers make use of informal markets and therefore do not contribute to tax revenue generation. Basic husbandry practices are adopted by most farmers; however, the reproductive performance is relatively low and could be improved with adequate assistance from extension services. The financial limitations and managerial skills also place a big burden on the productivity in small stock and large stock enterprises. Before practices like reducing the age at first calving/lambing/kidding can be contemplated a lot of training and extension has to be done and particular attention should be given to nutritional and reproductive management aspects. Basic handling facilities has to be made available and communal grazing controlled. Once both the age at first parturition and the interval between parturitions has been achieved, the overall animal productivity and farming income can be increased. Once the importance of this source of income is realised the small-scale farmers would allocate more time to the enterprises hence more money can be made. Increased productivity may contribute to better access to formal markets and a greater contribution of small scale livestock farming in the peri-urban areas of Bloemfontein to the national economy.

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