

## **Pregnancy test on urban and periurban dairy farms in the Maseru District/Lesotho**

Peter Gilles<sup>1)</sup>, Ezzat S. Tawfik<sup>2)</sup>

Department of International Animal Husbandry  
University of Kassel, Steinstrasse 19  
37213 Witzenhausen

Tel.: +49 5542-981249; Fax: +49 5542-981250;  
email: <sup>1)</sup> ruraldev@pixie.co.za; <sup>2)</sup> tawfik@wiz.uni-kassel.de

### **1 Dairy farming in Lesotho**

#### **1.2 Development of commercial dairy farming in Lesotho**

Commercial dairy farming in Lesotho has a very short history compared to other countries in the region, e.g. Swaziland or Zimbabwe, where commercial dairy farming was established during colonial times.

Basothos have always kept cows, e.g. for draught work, for regional marketing and for milk production. Dairying was always part of cattle farming but specialised milk production was not practised.

The growth of independent dairy farming started in the early 60s when farmers were encouraged by the Ministry of Agriculture to acquire Brown Swiss as double purpose cattle. They were given special training in their management (Phororo, 1993).

Originally the dairy farming programme was introduced to improve the nutritional health of the rural population. The Government of Lesotho has attempted since the middle 70s to establish independent dairy farming by various regional development programmes in the 7 lowland districts. Special attention has been directed at Maseru as the climatic conditions can be regarded as favourable, there is a large market and the necessary infrastructure (transport, veterinary and extension services, input markets, dairies) appears relatively easy to establish (Phororo, 1993).

The animal hygiene service has been established since then. This service covers important functions, e.g. advice on buying and import of cows, animal health, training of farmers and artificial insemination (AI). A dairy with a processing capacity of 10.000 litres / daily in Maseru and 8 milk collection centres have been established, 3 of which are in lower areas (Mahloane, 1997).

A larger number of the population was encouraged to participate in all areas of dairy farming up to marketing. Women were especially included (Chabani, 1998).

### **1.3 Department of Livestock Services (DLS)**

The Department of Livestock Services is a part of the Ministry of Agriculture, Co-operation, Marketing and Youth Affairs (MOA). The Department of Livestock Division is divided into three sections. Range Management Division, Animal Production Division and the Veterinary Service.

#### **1.3.1 Veterinary Service**

The Veterinary Service and the Animal Health Service is a part of the three livestock departments.

Head of Department is a Chief Veterinary Officer (CVO), who is stationed at the Department of Livestock Services. He has a Principal Veterinary Officer under him. The field service is supported by District Veterinary Officers (DV) who are stationed in various veterinary clinics in the country. These officers are supported by Livestock Assistants (LAs), who are stationed in Livestock Improvement Centres (LICs). The Livestock Attendants (LAT) work for the latter in the field (Mahloane, 1999):

#### **1.3.2 Livestock Improvement Centres (LICs)**

47 Livestock Improvement Centres over the whole of Lesotho take on extension functions. Livestock Assistants train farmers on a „household-field-level“ on animal husbandry in general, basics of veterinary health and other management practices. Most of the LICs have been equipped with newly trained staff (LAs).

The Livestock Attendants work directly with small scale farmers at village level. The Livestock Attendants are supported by the LAs and are trained further directly in the field.

#### **1.3.3 Animal Production Division**

The Animal Production Division of the Department of Livestock Services is subdivided into various areas: Sheep and goats, poultry, pigs, beef and milk production. Head of the Livestock Production Division is an Animal Production Officer (Mahloane, 1999).

##### ***Dairy Section***

The Dairy Section is headed by a Senior Dairy Production Officer. He works closely with the extension service of the Ministry and the Livestock Improvement Centres. He is at the disposal of all Dairy Technician Officers for the various districts. He is also in the extension service and assists the import of breeding livestock Mokonyana, 1999).

## ***Insemination service***

The Insemination Service is directly responsible to the „Dairy Section“. A Veterinary Officer for AI works directly under the Chief Dairy Officer, who heads the insemination section. He has 4 fully trained insemination officers with under him who co-ordinate the field work. Two of these work in the Maseru District, one is responsible for the southern districts and one for the northern districts. In the districts, the fieldwork is carried out by locally distributed insemination technicians (2 in Maseru, 1 Butha Buthe, 2 Leribe, 1 Berea, 2 Mafeteng, 1 Mhales Hoek, 1 Quthing) (Mahloane, 1999).

### ***1.4 Artificial Insemination***

Artificial Insemination (AI) has been used by the Department for Livestock Services since the middle of the 80s in Lesotho to improve stock (Phororo, 1983). A study carried out in 1992 by Sechaba Consultants in the 7 lowland districts shows that 60% of the farms make use of artificial insemination. There are however large regional fluctuations. In the Maseru District the rate is far higher than in the other districts.

**Table 1: Number of artificially inseminated dairy cows by district in Lesotho, 1992/93 - 1997/98**

<b><i>District</i></b>	<b><i>1992/93</i></b>	<b><i>1993/4</i></b>	<b><i>1994/5</i></b>	<b><i>1995/6</i></b>	<b><i>1996/7</i></b>	<b><i>1997/8</i></b>
Butha-Buthe	147	127	155	142	166	104
Leribe	203	209	261	256	240	148
Berea	116	139	123	62	104	128
Maseru	461	1059	985	464	444	758
Mafeteng	83	75	81	84	62	109
Mohale's Hoek	38	25	-	7	1	10
Quthing	16	31	11	-	-	-
Total	1064	1665	1543	1015	1014	1247

Source: Author, according to Phororo (1993) and Mofolo (1998)

Farms, which did not use artificial insemination, did so mainly for two reasons: 32% stated that there was a bull in the neighbourhood. 12.5% said that the insemination service was difficult or impossible to reach (Gay & Green, 1992).

It can be seen in Table 1 that most inseminations take place in the Maseru District, followed by Leribe, Buthe Buthe, Berea and Mafeteng. In Mhales Hoek there were only 10 animals inseminated, in Quthing there have been no inseminations since the 1994/95 season.

It can be concluded that the important position of the Maseru District is because of the fact that there is the highest animal density and that the insemination

service is connected directly to the Department of Livestock Service. The Department has the most staff and transport at its disposal.

Falls in insemination rates are according to Mokonyana (1999) due to the bad infrastructure. After the end of the Lesotho Canada Dairy Project 1992 maintenance of vehicles went back to the Department of Livestock Services, which lead to considerable problems. A further problem was the change in staff in the insemination service in the middle of the 90s.

### 1.5 Pregnancy test programme

A pregnancy test programme has existed since 1991 in Lesotho. The demand is currently fairly low. An extension of the programme has been slowed down by various problems, as follows.

#### **Problems:**

- ⇒ In Lesotho cows are mainly kept in „backyards“, it is difficult for the extension office to know or to find the farms.
- ⇒ To be able to examine larger groups of farms, the farmers were asked to bring their animal at various intervals to collection points. This request was however not complied with.
- ⇒ The main problems for the Department of Livestock Services are the transport possibilities. Animals are only examined at the farm if the farms organised transport themselves.
- ⇒ Farmers do not come regularly to test their animals for pregnancy but only if problems arise.

**Table 2: Inseminations, Animals examined for Pregnancy and Pregnancy Rate 1993/94 - 1997/98**

<b>Year</b>	<b>Inseminated Animals</b>	<b>Animals examined</b>	<b>Pregnant Animals</b>	<b>Pregnancy Rate %</b>
1993/94	1665	724	346	47,79
1994/95	1543	435	196	45,05
1995/96	1015	469	204	43,49
1996/97	1014	433	206	47,57
1997/98	1247	209	97	46,41

During the period 1993/94 and 1997/98 6,684 animals were artificially inseminated of which 2,270 (35%) were examined for pregnancy (Table 2). Of these 1,049 cows were pregnant. The rate of conception was 46,2%. In the Maseru District the rate of pregnancy was 50,1% and therefore somewhat better than the country's average. These ratings are however far below the 85% that is wanted. This leads to a bad economic result due to a large change in the lactation period, less milk capacity and fewer calves (Mahloane, 1998).

According to Mahloane (1998) reproductive-technical problems are not to be blamed for the bad ratings but bad management, especially feeding, seems to be the main reason for the low pregnancy rate.

## 2 Research results

### 2.1 First insemination and inter-birth interval

Cattle as a rule can be inseminated at an age of 19 months for the first time. The average inter-birth interval at the farms in the test was 422 days (min 400 - max. 600 days). There were no extreme differences between urban and periurban regions surveyed.

### 2.2 Artificial Insemination

Thirty eight of the examined farms stated (Table 3) that artificial insemination was used on their dairy cows. On 17 of the farms artificial insemination was used for the first or the second insemination. If the cows did not become pregnant using this method, they were left to mate with a bull. Only 5 farms used natural mating alone<sup>1</sup>.

**Table 3: Artificial (AI) and natural matings divided according to regions of testing**

	Total		Periurban		Urban	
	N	%	N	%	N	%
AI	38	63.3	19	63.3	19	63.3
Natural mating	5	8.3	4	13.3	1	3.3
AI, with natural matings	17	28.3	7	23.3	10	33.3

N = number of farms

On average the farms have 7.36 years of experience with artificial insemination. In urban areas of testing the farms had 8.76 years, with periurban regions 6.48. The first farms began in 1980 with artificial insemination.

Forty two percent of the farm managers (23) reported that artificial insemination was successful after the first insemination. In the urban area surveyed the initial insemination success was 48.3% while in periurban areas 34.6% of inseminations were successful. Artificial insemination was successful on 25.5% of the farms after the second insemination (periurban 26.9% of the farms, urban 24.1% of the farms).

As a rule there are three inseminations on 21.8% of the farms (periurban 34.6%, urban 10.8%), inseminated four times in 9.1% of the farms (periurban 3.8%, urban 3.8%) and on one periurban farm one insemination. On an

<sup>1</sup> The periurban farms which use natural mating, have on average 2.25 cows, the urban farms 4 dairy cows

average it is necessary to have 2.05 inseminations (periurban 2.07, urban 2.03). 30 Maloti are paid for one insemination as a rule<sup>2</sup>.

***Problems the farm managers have with artificial insemination:***

- ⇒ 54% mentioned that the insemination officers were difficult to get hold of and were unreliable (periurban 55% / urban 53%)
- ⇒ 26% mentioned problems with the bad pregnancy rate (periurban 22% / urban 28%)
- ⇒ 13% of the farms had a lack of communication (telephone) or transport to get to the insemination service punctually and easily
- ⇒ 4% were not in the position to pay for service
- ⇒ one farm each (urban and periurban) mentioned problems with the difficulty of recognising heat (periurban) and one farmer complained of the incompetence of the insemination officers

***Suggestions for improvement for the area of artificial insemination:***

- ⇒ 35% of the farms demand that there should be more vehicles at the disposal of the insemination service (periurban 33% / urban 38%)
- ⇒ 29% are of the opinion that more insemination officers should be employed (periurban 38% / urban 21%)
- ⇒ 16% want privatisation of the insemination service (periurban 21% / urban 10%). The farmers were of the opinion that the insemination service should be transferred to the farms. Farmers should be trained in insemination and small insemination stations should be established locally
- ⇒ 5% were of the opinion that the insemination officers need a better education and should be trained further
- ⇒ 2% would like a larger choice in bull sperm
- ⇒ 2% would like to be able to see the insemination offices at any time during the day at the Department of Livestock Services
- ⇒ 1% was of the opinion that the farms should have regular visits by the insemination officers.

### **2.3 Servicing (Natural mating)**

Five farms used a bull to service their dairy cows. Seventeen farms used the natural method for inseminating if problems arose with artificial insemination.

The success rate is 1.28 matings per conception. A service costs on average 39 Maloti. Three of the 60 farms tested had their own breeding bulls (periurban 2 / urban 1), which were then loaned to nearby farms. The periurban farms, which had their own bull, have two to four cows, the urban farm 4 dairy cows.

### **2.4 Fertility**

In co-operation with the Department of Livestock Services 102 farms took part in pregnancy tests (n = 302). The tests took place during the earliest 5 weeks

---

<sup>2</sup> 1 Maloti = 0.31 DM

after insemination. The pregnancy rate<sup>3</sup> was 55%. There was no significant difference between various test regions (Table 4).

Uterine cysts were found in 6% of the animal population. Only one animal (0.3%) had metritis.

As can be seen from the following table, it is not reproduction-technical problems, which are the cause of the bad insemination results, but mainly bad management in the control of heat and feeding.

**Table 4: Results of pregnancy testing with 302 dairy cows of the animal population to be tested**

	Total		Urban		Periurban	
	n	%	n	%	n	%
Total	302	100.0	96	100.0	206	100.0
Pregnant	166	55.0	52	54.2	114	55.3
Not pregnant	154	45.0	44	45.8	92	44.7

n = number of animals

To see the influence of the feeding management and body condition on the success of insemination the animals were scored before the examination according to their body condition and divided into condition classes.

The scoring was based on the body condition scoring method of Metzner et al. (1993). This classification allocates grades according to a five point scale:

- 1 = skin and bones
- 2 = thin
- 3 = medium
- 4 = round/fat
- 5 = completely fat

The visual scoring was carried out for 8 body parts on a standing animal: The spinal process; the connecting line between the spinal and transverse processes; the transverse processes; the transition to the stomach pit; the point of the hip; the pin bone; the area between both points of the hip and the pelvis pit.

From 302 cows 77 animals (25.5%) were in a very poor body condition (1 and 2) whilst nine animals (3%) were very fat (5). There were 168 animals (55.6%) with body condition score 3 and 48 animals (15.9%) which scored 4 (Table 5).

Table 5 shows that the best conception rates are seen in animals with body condition score 4 (75%), followed by body condition score 3 (63.9%). Animals in poor condition and animals that are too fat displayed impaired conceptions

---

<sup>3</sup> The pregnancy rate shows the percentage of animals pregnant at the time of testing

rates. From the 78 animals that scored 1 and 2, there were only 21 pregnant (29%). Only 3 of the 9 very fat cows conceived.

The test showed no significant difference between periurban and urban farms tested.

Table 5: Results of the pregnancy trials divided according to body condition

Body condition	n	pregnant %	not pregnant %
Total			
1	5	0.0	100.0
2	72	29.2	70.8
3	168	63.1	36.9
4	48	75.0	25.0
5	9	33.3	66.7
Periurban			
1	5	0.0	100.0
2	55	23.6	76.4
3	100	69.0	31.0
4	40	75.0	25.0
5	6	33.3	66.7
Urban			
1	0	0.0	0.0
2	17	47.1	52.9
3	68	54.4	45.6
4	8	62.5	37.5
5	3	33.3	66.7

n = number of animals

### 3 References

- Chabani, (1998): Ministry of Agriculture, Dairy Production Report 97/98, Maseru, Lesotho
- Chabani (1999): Ministry of Agriculture, Dairy Production Report 98/99, Maseru, Lesotho
- Gay, J.S. & T. Green, (1992): The needs of dairy farmers. A report of a survey of dairy farmers in seven lowland districts of Lesotho, Lesotho National Dairy Board, Maseru, Lesotho
- Gilles, P., (2001): Entwicklung und Perspektiven der urbanen und periurbanen Milchviehhaltung im Distrikt Maseru/Lesotho. Dissertation, Witzhausen
- Mahloane, G.R., (1994): Annual Report (A.I.P.M.), July 1993 - July 1994, Livestock Division, Maseru.
- Mahloane, G.R. (1995): Annual Report (A.I.P.M.), July 1994 - June 1995, Livestock Division Maseru.
- Mahloane, G.R., (1996) Annual Report on Artificial Insemination Programme: July 1995 - June 1996, Livestock Division, Maseru



- Mahloane, G.R. (1997): Quarterly Report: January - March 1997, Artificial Insemination, April - June 1997, Livestock Division, Maseru
- Mahloane, G.R. (1997): Cattle Section Quarterly Report, October - December 1997, Livestock Division, Maseru
- Mahloane, G.R. (1997): Report on Gynaecological Examination and Training Course in Butha Buthe, Livestock Division, Maseru
- Metzner, M., W. Heuwieser, W. Klee: Die Beurteilung der Körperkondition (body conditions scoring) im Herdenmanagement.
- Mofolo, S.G., (12998): Animal Production Report, April 1997 - March 1998, Livestock Division, Maseru, Lesotho
- Mokonyana, M. (1998): Animal Production in Lesotho, Dairy Division, Maseru, Lesotho
- Mokonyana, M. (1999): Dairy Section Annual Report 1998/99, Dairy Division, Maseru, Lesotho
- Phororo, D.R., (1993): Policy framework and strategy for Lesotho's dairy industry development, Lesotho National Dairy Board, Maseru, Lesotho