

# Omani camel calves in a traditional management system

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## Key words

Omani camel - Young animal -  
Livestock management - Morbidity -  
Mortality - Oman.

## Summary

The Omani camel is a distinguished and multipurpose animal in the Gulf region, recently in great demand for its excellent racing qualities. The camel population in Oman was 98,500 head in 1994, with an annual growth rate of 3.7%. The current investigation was conducted in the period 1992-1997. Breeding occurred during winter (November-March). Among 364 mature females, 20 were bred annually. Each year 12 calves were born on average (60% birth rate). The average conception rate was 4.5 indicating a serious defect in the traditional management breeding system. Most of the calves (71.6%) were born from dams in the age group 11-20 years. Younger animals of breeding age were used for riding or racing. The ratio of female to male calves was 1.14:1. In 53 recorded pregnancies the average gestation length was 384.2 days (12.6 months). The annual calf mortality rate was 2.66%. All calf mortality occurred during the first postpartum month and the causes included drenching pneumonia, calf scour and starvation. The traditional management system did not adequately prepare the dams for nursing in the postpartum period. Three camels delivered twice with calving intervals of 3.3, 2.87 and 2.6 years. Seven breeding bulls were kept separately from the females. During these five years 273 services were conducted resulting in 60 born calves. Two of the bulls served 59 times each, and each one gave 11 conceptions. The reproductive management did not allow for male and/or female fertility evaluation.

## ■ INTRODUCTION

The Arabian camel in the Sultanate of Oman is known as the Omani camel. It descended from the Arab peninsula and the Yemen region. Because of the restrictions not to cross the Omani camel with other types, the Omani camel maintained its features and characteristics as a distinct type. Generally it is of medium size, weighs between 350-450 kg and is about 2 m high in front of the hump. It is fast in speed and beautiful in shape. It has different shades of color among which sandy-brown predominates; it also has strong limbs. The Omani camel is a multipurpose animal, suitable for riding, racing, milk or meat.

The camel population in the Sultanate of Oman was 98,500 head in 1994 (7). The animal growth rate between 1989 and 1994 was 3.7% (6). In a survey carried out by the Ministry of Agriculture and Fisheries in 1982, 91% of the camels were females due to

early culling of males. Nursing young camels constituted 12.5% of the camel population. Fully mature males constituted only about 4% of the camels. It is not expected that this distribution was altered recently since the traditional breeding system is still prevailing.

## ■ MATERIALS AND METHODS

The current assessment of calf performance under the traditional management system was based on the records of the Directorate of Camel Affairs between 1992 and 1997. The number of females in the herd under investigation ranged between 337 and 390 head with an average of 364 females. One hundred camels were bred at age 7 to 28 years. Eight breeding bulls were used. Winter is the usual breeding season in the northern part of the country. It lasts from the end of November to early March. However, the duration of the season was subject to the onset and termination of the cold weather.

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## ■ RESULTS

Over the period of investigation 273 services were made on 100 camels resulting in 60 pregnancies. The average number of services per conception was 4.5. This was a clear evidence of a repeat breeder problem.

From the 100 camels bred during this period 60 calves were born with an average of 12 calves per year. The average birth rate was about 3.3%. Only three camels gave birth twice during the observed period. The calving interval of the first, second, and third case was 3.3, 2.87 and 2.6 years, respectively. The average calving interval was 2.91 years (35.06 months).

Most of the calves were born from dams in the age group 11-20 years (43 calves or 71.6%) (table I). Traditionally, young camels are used for racing and they are bred when they retire from the racetrack.

The gestation length recorded in 53 pregnancies ranged between 324 and 426 days with an average of 384.2 days, i.e. about 12.6 months. No major diseases were observed during pregnancy. However, some camels showed profound abdominal edema.

The calves born were 32 females and 28 males. The ratio of females to males was 1.14:1. Thirty-one calves (54.38%) were born during the evening hours while 26 calves (45.6%) were born during the morning hours. The time for three other calves was not recorded. It was noted that both morning and evening deliveries took place when the camel surroundings were very quiet. There was a single incidence of dystocia with a dead fetus in posterior position necessitating hysterotomy.

Eight of the 60 calves died during the first four weeks of life. This constitutes a 13.33% mortality rate over the five-year period and a 2.66% annual mortality rate. Causes of calf mortality were starvation, drenching pneumonia and enteritis.

Seven male camels were used repeatedly while another male was used once and then removed from the breeding program because of non-appealing appearance (table II).

## ■ DISCUSSION

This herd size was predetermined by the budget available. Because a small number of animals were bred each year, the rest of the females continued to cycle through the breeding season without service. Since ovulation in the camel is induced by copulation, many of these animals tend to develop cystic ovaries especially towards the end of the breeding season. How much this would

Table I

Relationship between age group and number of calves

Age group (years)	Num. of calves	%
0-5	0	
6-10	6	10
11-15	27	45
16-20	16	26.7
21-25	8	13.3
26-30	3	5

affect the future breeding records of such females needs further investigating. Since most of the females were bred after they retire from racing at 12 years or more this might have an effect on the calving rate.

Winter was the usual breeding season, with variable length. It appears that the ambient temperature was more important for the onset and termination of the breeding season than the intensity and duration of light. Individual animals started rutting or cycling up to one month before the others. Some males continued to rut in April and May but usually were not allowed to mate in order to avoid calves born during the hot summer days.

The sixty calves born during the five-year period do not reflect the reproductive potential, as the herd size was intentionally limited.

In Saudi Arabia and according to Bedouin breeders, of every 100 she-camels mated, 80-90 brought calves, and about 1% was sterile. One mating per estrus was allowed (3). However, the 4.5 service per conception indicates deficiencies in reproductive management. The following observations were made:

1. Females were not routinely examined for gynecological soundness; on the few occasions when this was done, the findings indicated a high incidence of follicular cyst or persistent *corpora lutea*
2. The bull semen was not examined or evaluated
3. Detection of estrus depended on the limited experience of workers
4. Females were kept separate from males
5. Teasing with bulls was rarely practiced
6. On several occasions forced mating was attempted but the females would not accept the male
7. Some of the breeding workers separated the male by force before copulation was complete with the belief not to completely exhaust the male
8. Pregnancy testing was done two weeks after mating by the tail raising method

In India the conception rate of 67 camels was 77.61%; 1.98 services were required per pregnancy. The calving interval was  $719.94 \pm 9.69$  days (5).

Table II

Male performance

Name of the bull	Num. of services	Num. of services which resulted in conception (%)
Wald Alrih	59	11 (18.6)
Musihan Alsabour	48	10 (20.8)
Samhan Alasil	27	5 (18.5)
Zubian	32	5 (15.6)
Musihan Alashgur	59	11 (18.6)
Musafai	6	2 (33.3)
Musihan Alsarokh	41	8 (19.5)
Wald Alarga	1	0

Eight of the calves born had no breeding records

Since young dams were used for racing and were not available for breeding most of the calves were born from dams 11-20 years old. Fertility in older animals appeared to be affected by various factors pertaining to hormonal levels and possible changes in the ovaries with age.

The calving interval of 2.92 years recorded in three camels does not lead to any conclusion. At Bikaner in India, calving intervals of  $655 \pm 24.9$  days were reported. In Saudi Arabia camel calving intervals were successfully reduced to 16 months through early breeding and early weaning (8).

The ratio of females to males was 1.14. This was within the expected deviation from a 1:1 ratio. Works from India, Egypt and Sudan indicated that the primary sex ratio did not differ from the expected unity (9). The females were preferred for racing and males were usually disposed of when they were 1-2 years old. In this traditional system of breeding, half of the reproductive potential of the animals was undesired. Introduction of reproduction technology including artificial insemination, data sexing and embryo transfer would eliminate this waste in time.

When the calf was born attendants came, milked about half a liter of colostrum and fed it to the calf. Such system started the calf but the risk of drenching pneumonia was increased.

The average gestation length was 12.6 months. This was similar to an India report where the gestation length was given as  $387.00 \pm 2.76$  days for males and  $388.47 \pm 2.08$  for females (5). The variation between the 426 and 384 days corresponds to the 12-13 month generally reported (9).

Calving time was predicted from breeding records and all parturient animals were kept in a separate pen 1-2 months before parturition. The abdominal edema that was noticed prior to parturition disappeared few days after delivery.

Slightly more calves were born during the evening hours than the morning hours. The surrounding of the camel was quiet for a few hours before delivery. Most of the delays occurred during the first stage of labor and once the second stage of labor was reached parturition occurred in 20-30 min. Expulsion of the fetal membranes followed within 30 min. Due to the delivery time attendants were not usually present at the first stage of labor.

As expected, the incidence of dystocia was very low. Also malposition that might be expected because of the long neck and long extremities of camel calves did not occur. The cesarean section was a fairly easy and safe operation. The operation should be the last resort if the fetus is dead and dry.

Annual calf mortality rate was 2.66%. The causes of mortality included starvation, drenching pneumonia and enteritis. In Sudan it was reported that out of 415 calves examined over a one-year period 199 died leading to a crude mortality rate of 48%. Causes of death included calf diarrhea, helminth infection, tick paralysis and contagious ecthyma (2). In India it was reported that out of 1225 camel calves observed during the period 1961-1990 at Bikaner NRC the overall calf mortality was 13.56%. The causes of death included respiratory infection, heat stroke, digestive disorders and snake bite (5). In a study carried at Godwala village in India the calf mortality rate was about 20-25% (5).

Although calf mortality was low in this investigation, deficiencies in calf raising were observed:

1. Pregnant camels were not adequately prepared for lactation. This in combination with other factors such as the breed itself resulted in some of the dams being without milk in udder in the postpartum period. The calves either starved to death or were hand fed
2. No nursing bottles were used for hand feeding calves. Instead, the milk was poured down the throat with the tongue fixed to the lower jaw with one finger. Cases of drenching pneumonia were seen following such management system
3. When calves were hand fed, little attention was paid to hygiene resulting in some cases of enteritis

The males' low breeding performance was probably mainly due to poor management; the semen quality was not assessed and the male was separated from the female before copulation was complete. When breeding aimed at racing qualities no progeny test was ever made and none of the daughters were in the racing camel group.

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**Résumé**

Musa B.E., Salim M.A., Abu Samra M.T. Gestion traditionnelle des chamelons Omani

Le dromadaire Omani est une race particulière de la région du Golfe persique. C'est un animal à usages multiples et, depuis récemment, très demandé pour ses qualités de coureur. La population cameline à Oman était de 98 500 têtes en 1994 avec un taux de croissance annuel de 3,7 p. 100. Cette enquête a été réalisée entre 1992 et 1997. La reproduction a lieu en hiver (de novembre à mars). Vingt femelles adultes sur 364 ont été mises à la reproduction chaque année. En moyenne, 12 chamelons sont nés chaque année (taux de mise bas de 60 p. 100). Le taux moyen de conception a été de 4,5 p. 100, indiquant un sérieux problème dans le système d'élevage traditionnel. La plupart des chamelons (71,6 p. 100) sont nés de chameaux du groupe d'âge 11-20 ans. Les plus jeunes animaux en âge de se reproduire étaient utilisés pour la selle ou la course. Le rapport des chamelons femelles/mâles était de 1,14. Pour 53 gestations répertoriées, la durée moyenne de gestation a été de 384 jours (12,6 mois). Le taux de mortalité annuel a été de 2,66 p. 100. Tous les cas ont été répertoriés au cours du premier mois post-partum. Les causes de mortalité du chamelon comprenaient la pneumonie, les diarrhées et la sous-nutrition. Le système traditionnel d'élevage n'était pas adapté à une préparation adéquate de la mère pour l'allaitement post-partum. Trois chameaux ont mis bas deux fois avec des intervalles entre les mises bas de 3,3, 2,87 et 2,6 ans. Sept mâles reproducteurs étaient gardés séparément des femelles. Au cours des cinq années d'observation, 273 saillies ont été effectuées, conduisant à 60 naissances. Deux des mâles ont sailli 59 fois chacun, et chacun d'eux a participé à 11 conceptions. La gestion de la reproduction n'a permis une évaluation de la fertilité mâle ou femelle.

**Mots-clés** : Chameau Omani - Jeune animal - Conduite d'élevage - Morbidité - Mortalité - Oman.

**Resumen**

Musa B.E., Salim M.A., Abu Samra M.T. Camellos omaníes jóvenes bajo sistemas de manejo tradicionales

El camello omaní es un animal característico y multipropósito en la región del Golfo, cuya demanda reciente ha sido importante debido a sus excelentes cualidades para carreras. La población de camellos en Omán era de 98 500 cabezas en 1994, con una tasa de crecimiento anual de 3,7%. La presente investigación se llevó a cabo durante el período 1992-1997. El apareamiento se dio durante el invierno (noviembre-marzo). De 364 hembras maduras, 20 hembras se cruzaron anualmente. Cada año nacieron 12 crías en promedio (tasa de nacimiento de 60%). La tasa promedio de concepción fue de 4,5, indicando un serio defecto en el sistema de manejo reproductivo tradicional. 71,6% de los jóvenes nacieron de hembras pertenecientes al grupo de edad 11-20 años. Los animales en edad reproductiva más jóvenes fueron utilizados para monta o carreras. La relación entre hembras y crías macho fue 1,14:1. De 53 gestaciones registradas el promedio de duración de la gestación fue de 384,2 días (12,6 meses). La tasa de mortalidad anual de los jóvenes fue de 2,66%. Toda la mortalidad de jóvenes ocurrió durante el primer mes postpartum y las causas incluyeron neumonía, diarrea e inanición. El sistema de manejo tradicional no proveyó una preparación adecuada de las hembras para el amamantamiento en el período postparto. Tres camellos parieron dos veces con intervalos entre partos de 3,3, 2,87 y 2,6 años. Se mantuvieron siete toros de cría separados de las hembras. Durante los cinco años, se llevaron a cabo 273 montas, resultando en el nacimiento de 60 crías. Dos de los toros montaron 59 veces cada uno, con 11 concepciones por toro. El manejo reproductivo no permitió una evaluación de la fertilidad de la hembra y/o el macho.

**Palabras clave**: Camello Omani - Animale giovane - Manejo del ganado - Morbosidad - Mortalidad - Oman.