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“ Recent advances in camelids biology, health and production ”

12 - 15 November 2018
Laâyoune, Morocco



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ولاية جمعة للمين الساقية للحمرل



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Camel herds' reproductive indicators and rearing practices' effects on their profitability

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ABSTRACT

The reproductive performances of camels under desert environments are poorly documented as most of the studies have been conducted in different conditions, mainly research stations (Faye, 2018). This study aims to evaluate the main reproduction parameters of camel herds in the area of Mhamid El Ghizlane as well as to assess the husbandry practices and their effects on profitability. The study was conducted in three administrative communes, downstream the Drâa valley (Zagora governorate, South East Morocco). A retrospective analysis of 63 camel herds' reproductive performances was carried out, according to the 'twelve-month' method of Lesnoff (2009). The study revealed that adult females comprised about 40.6% of the total 1929 animals surveyed. Reproduction performance was rather poor, characterized by long calving intervals (an average of 2 years), late age at first mating (3 to 5 years), and an average calving rate of 50%. Mortality rate in calves (birth to yearlings) reached an average value of 5.4%, mainly reported in suckling calves, with diarrhea as the principal cause of these deaths. Since we distinguished three herds' sizes (number of animals), we realized that there were no marked differences among the herds. The abortion rate was higher in medium and large size herds (respectively 8.3 and 9.7%), meaning that in small herds (4.9%) more attention was devoted to pregnant females to avoid reproduction failures. The average lactation period was around one year, with a mean milk yield of 3 liters per day. Milk was only sold by one camel farmer, while the others expressed difficulties to deliver milk from remote desert areas to the nearest cities (Mhamid El Ghizlane and Ouarzazate). Most of camel sales are made locally to avoid transport expenses. Feed is the most expensive single cost, mainly to purchase local feeds such as cull dates. The average annual cost per herd is about 1090 Euro. The feed cost is followed by off-farm wages (268 Euros) and by veterinary treatments (4.5 Euros per herd per year). The main income is from camel sales, whereas milk sales are negligible. Camels are often kept with other livestock such as goats and sheep. However, livestock do not provide enough income to cover households' expenses, forcing camel farmers to look for additional incomes to ensure the livelihoods of family members. It was concluded that many problems characterize camel productivity in the Mhamid El Ghizlane area including the low conception rate and high abortion and mortality. The low productivity results in low incomes, which negatively impact on the livelihoods of local inhabitants. Several research questions remain with regard to the cultural roles of camel breeding as well as its resilience, given its lack of attractiveness to young generations, as it represents a harsh activity with limited remuneration.

Keywords: Camel husbandry, Demographic parameters, Feed supplementation, Profitability.

INTRODUCTION

Camel herds' effective reproductive performances remain poorly documented *in situ* in many desert areas, although several studies have been conducted in research stations to identify the most decisive effects affecting this species' reproduction (Faye, 2018). In addition, camel breeders' practices (mainly feed supplementation and prophylactic treatments) effects also remain unclear, and their impacts on the profitability of this activity are seldom known. This study aims therefore to evaluate the main reproduction parameters of camel herds in the area of Mhamid El Ghizlane as well as to assess breeding practices (feed, prophylaxis, etc.) and their effects on the profitability of camel breeding.

METHODOLOGY

The study was located in three administrative communes (Ktaoua, Mhamid El Ghizlane and Tagounite); downstream the Drâa valley (Zagora governorate, South East Morocco). The climate is arid with an average rainfall level not exceeding 100 mm per year. The vegetation is composed of xerophytes and grasses and it is scattered in very vast desert rangelands surrounding date palm groves. Dates' wastes and barley grains are often used as feed supplements for camels. The study consisted in a retrospective analysis of 63 camel herds' reproductive performances, according to the 'twelve month' 12 MO method (Lesnoff, 2009). The

survey also constituted an appropriate occasion to investigate breeding practices (feed supplementation, work, prophylaxis and veterinary treatments) and to assess their effects on the profitability of camel breeding and its share in the overall incomes of the families involved in this activity.

RESULTS AND DISCUSSION

The study revealed that herd structure was dominated by adult females, which represented almost 40.6% of the total 1929 animals surveyed (Table 1).

Table 1. Structure of the studied herds with regard to age and gender

	Female yearlings	Female subadults	Female adults	Male yearlings	Male subadults	Male adults	Total
Number	221	443	783	160	193	129	1 929
%	11.5	23.0	40.6	8.3	10.0	6.7	100

Reproduction performances were rather poor, characterized by a long interval between two calving (an average of 2 years), a late age at first mating (3 to 5 years), and implying that the average parturition rate did not exceed 50%. Mortality rate reached an average value of 5.4%, mainly reported in non weaned yearlings, with diarrhea as the principal cause of these deaths. Since we distinguished three groups of herds, according to the size (number of animals), we realized that there were no marked differences among groups (Table 2). The abortion rate was however higher in medium and large size herds, meaning that in small herds more attention was devoted to pregnant females to avoid reproduction failures.

The average lactation duration was around one year, with an average milk yield of 3 liters per she-camel per day. Milk was only sold by one camel breeder as the others mentioned difficulties to deliver milk from remote desert areas to the neighboring cities (Mhamid El Ghizlane and Ouarzazate). Therefore, milk is sold in a very short circuit, which implies a limited value addition to the product.

Tableau 2. Reproduction parameters with regard to herd size

Herd type	Calving rate (%)	Between calvings duration (year)	Net prolificacy (%)	Abortion rate (%)
Small	0,532	1.9	97.4	0,049
Medium	0.493	2.0	100.0	0,083
Large	0.533	1.9	100.0	0,097

Most of camel sales are directly made in the rangelands, to avoid transport expenses. Annual feed costs are the most important ones, representing an average of 1090 Euro per herd. They were followed by off-farm wages (268 Euros) and by veterinary treatments (4.5 Euros). The main incomes sources are represented by camel sales, whereas milk sales are rather negligible (Table 3).

Table 3. Main components of camel breeding profitability according to herd size (Euro/year)

Type	Small	Medium	Large	Mean value
N	27	18	16	-
Products				
Live weight sales	1075.0	1431.2	2091.2	1 467
Milk sales	1.4	0	0	0.5
Extra camel incomes	976.5	1020.7	411.9	827.9
Expenses				
Feed supplement purchases	978.5	700.0	1678.0	1090.0
Veterinary treatments	1.8	4.2	9.4	4.5
Labour wages	195.6	204.5	455.3	268.2
Camel breeding gross margin	-99.5	522.5	-51.5	104.8
Overall income	877.0	1543.2	360.4	932.7

Camels are most often owned by households that also keep goats and sheep as additional activities. Livestock is however insufficient to cover the expenses of the households, implying that extra agricultural incomes, mainly coming from migration to other regions of the country, are necessary to try to ensure the livelihoods' of the camel breeders' family members.

CONCLUSION

This preliminary research confirms that many setbacks characterize camel productivity in the Mhamid El Ghizlane area, from conception failures to abortion and mortality. The results also show that camel products' incomes remain limited, not enough to secure the livelihoods of local inhabitants. Therefore, they are forced to have additional activities to get more incomes. Several research questions remain with regard to the cultural roles of camel breeding as well as its resilience, given its lack of attractiveness to young generations, as it represents a harsh activity with limited remuneration.

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