

Research Article	Pak-Euro Journal of Medical and Life Sciences
DOI: 10.31580/pjmls.v7i5.p2.2911	Copyright © All rights are reserved by Corresponding Author
Vol. 7 No. Special 2, 2024: pp. S337-S344	
www.readersinsight.net/pjmls	Revised: December 01, 2024 Accepted: December 13, 2024
Submission: December 19, 2023	Published Online: December 15, 2024

UNDERSTANDING LOCAL FARMING PRACTICES OF LASSI CAMELS IN LASBELA REGION BALOCHISTAN

Illahi Bakhsh Marghazani^{1*}, Muhammad Akram^{2, 3}, Atique Ahmed Behan², Muhammad Hayat⁴, Shahzad Ahmed³, Farooq Ahmed Luni³, Naseer Rind³, Ghulam Farooq Esot³

¹**Department of Animal Nutrition**, Faculty of Veterinary and Animal Sciences, PARC- LUAWMS Camel Project (AS010), Lasbela University of Agriculture, Water and Marine Sciences, Uthal, Pakistan

²**Department of Livestock Management**, Faculty of Animal Husbandry and Veterinary Sciences, Sind Agriculture University, Tandojam-, Pakistan.

³**Livestock & Dairy Development Department Balochistan**, Quetta, Pakistan

⁴**Department of Veterinary Pathology**, Faculty of Veterinary and Animal Sciences, Lasbela University of Agriculture, Water and Marine Sciences, Uthal, Pakistan

***Corresponding Author:** Illahi Bakhsh Marghazani. E. mail: marghazani76@yahoo.com



Abstract

The study on understanding prevailing husbandry practices, social status, and milk composition of Lassi camel was conducted in the Lasbela region of Balochistan. To conduct this study, a questionnaire was used as a research instrument. In this connection, camel farmers (n=60) were randomly selected from four different locations of Lasbela region i.e., Winder, Lakhra, Bela and Uthal. Colostrum and milk samples were also collected to learn the colostrum and milk composition of camels in pastoral grazing. The collected data were statistically analysed using frequency distribution. Results showed that residence is available to all Laasi camel farmers however, all camel farmers live in Kaccha houses (100%). They had no access to tap water and natural gas for fuel purposes (0%). Like other sources of income, camel shared 30-50%, 50-70% and more than 70% of the contribution to family income earned by 35, 39 and 26% farmers' population, respectively. The Lassi camel production system showed that all camels were kept through an extensive system (100%). The number of camels per farmer was; 1-10 farmers were 46%, 11-30 shared 30%, 31-50 farmers shared 14% and more than fifty (50) farmers shared 10% of camel per family. Mostly 93% of calves weaned at the age of 12 months and only 7% from the age of above (>12) months. In milk production, 63% of camels secreted 6-8 litres per day, and 25% of camels produced more than eight (>8) litres per day. A majority (97%) of adult male camel sales at the rate of 150000 and only 3 % sold more than 150000 (>150000) during the study period 2019-21. On the other hand, the average sale of adult female camel varies from (75- 80000). Camels of different ages (mostly male calves) are slaughtered on a daily basis. The milk of camel did not sell out so the availability of milk in the market was (0%). All camels were mostly kept on grazing (99%). Very rare feeding of crop residues and the concentrate is practised (0.5%). Camels do travel up to 5 km for grazing (93%). The most preferred rangeland species by the order were Jaar, Babur Kanda etc. The milk composition of Lassi camels showed that fat, solid-not-fat (SNF), protein, lactose and salts were 3.51, 11.17, 5.55, 6.42 and 1.06 per cent, respectively. Colostrum composition of Lassi camels showed that fat, SNF, protein, lactose and salt contents were 0.48, 24.62, 9.08, 13.46 and 1.61 per cent, respectively. This study has surfaced different aspects of conventional farming of Lassi camels. If those conventional practices intervened and improved through awareness and capacity building of camel farmers, it would improve the health of camels, milk yield, breaking religious misconceptions, marketing and consequent poverty alleviation of camel farming communities.

Keywords: Farming practices, Lassi camels, Lasbela, Marketing, Milk, Poverty

INTRODUCTION

Livestock keeping is an important segment of the social life of people in Pakistan. Livestock shares 58.92 per cent in agriculture and 11.11 per cent of national GDP (1). The human population in the country is increasing at a rapid pace. In this scenario, livestock keeping is considered a safer source of income and food security. Moreover, the quality of food for such a huge chunk of the population can be fulfilled by increasing food products of animal origin in the form of meat and milk. However, in Pakistan, the production per unit animal is far less than in the developed countries (2). Cattle, buffaloes, sheep and goats are major livestock species being kept in rural societies and smallholder commercial farms. Among livestock species, camels



also have huge potential to be used as a major earning source however, it's rearing on a commercial level has not yet been conceived in Pakistan.

The current estimated population of camel globally is approximately 27 million including 24 million dromedaries (one-humped) and approximately 2 million bactrianus (two-humped). In Pakistan, there are twenty documented camel breeds which are all single-humped camels i.e., dromedaries (3). It is the 8th major camel-producing country in the world. Among all provinces, Balochistan has the highest population (41%) followed by Sindh (30%), Punjab (22%) and KPK (7%) (4). In Sindh, the documented camel breeds are Dhatti, Kharai, Larri or Sindhi and Sakrai. In Punjab, the documented camel breeds are Marecha or Mahra, Bagri or Booja, Barilla or Thalochi, mountainous or Cambel puri and Kala chitta. In KPK, the documented camel breeds are Gaddi, Ghulmani, Khader and Maya whilst in Balochistan, the documented breed are Brahvi, Kharan, Lassi, Makrani, Pishin, Kacchi and Rodbar (5).

In Balochistan livestock production system is based on a traditional farming system where the rural population raise livestock in vast arid and semi-arid range lands of Balochistan to fulfill their basic livelihood requirements. In some parts of Balochistan pastoral nomadic, pastoral transhumant and agro-pastoral production systems are also being practiced whereas in rural areas of Balochistan intensive and semi-intensive livestock farming is almost equal to null. Camel farming has been an old tradition among the rural population of Balochistan and it has mostly been used for draught purposes throughout the region. In the present era, the camel farming among the rural population has been declined.

The camel population has shown a dynamic trend. It includes negative and positive changes. Pakistan faced a severe decline of 29% in camel population between 1994 and 2004 (6). At present, the camel population is 1.1 million (7) however, the natural potential of the camel for milk and meat production is not valued by all stakeholders including government, policy makers and camel farmers. This situation exists at both provincial and national levels. In the context of these prevailing conventional practices and misconceptions, the camel farmers do not fetch true income from the camels and remain grabbed in a vicious cycle of poverty (8). In Balochistan, studies on livestock species in general and on camels in particular are deficient. Hence, it is essential to understand the local farming practices of camels for any intervention and improvement in the farming and production status of camels. Based on these prospects, this study was designed to understand the local farming of Lassi camels, their feeding systems, production status and marketing.

MATERIALS AND METHODS

The study on "Understanding local farming practices of Lassi camels in Lasbela region" was conducted as part of PARC-LUAWMS Camel Project (AS010) in Department of Animal Nutrition, Lasbela University of Agriculture, Water and Marine Sciences, Uthal, Pakistan.

PREVAILING CAMEL HUSBANDRY PRACTICES OF LASSI CAMELS

In this phase, Lassi camel habitat was surveyed. For this purpose, four different locations (Uthal, Lakhra, Winder and Bela) of Lasbela region were selected and Lassi camel farmers (n=60) were randomly interviewed using questionnaire as research instrument. The questionnaire was comprised of basic questions regarding local farming practices of Lassi camels, feeds preference, feeding practices, production status, lactation length, milk utilization and milk marketing etc.

MILK ANALYSES

Samples of lactating Lassi camels were collected from different areas (Uthal and Winder zones where more than 80% Lassi camel population exist) and brought to laboratory and analysed for milk composition on fresh basis. Samples of colostrum were also collected from the field. Lactoscan (Bulgaria) was used to determine fat, Solid-Not-Fat (SNF), lactose, protein and salt contents in collected milk and colostrum samples.

STATISTICAL ANALYSES



Data collected on local camel farming practices, camel farmers social status, milk yield, marketing, and chemical composition of milk and colostrum were statistically analyzed using frequency distribution (9).

RESULTS

The result of social status of Lassi camel farmers in Lasbela region is given in table 1. The residence is available to all Lassi camel farmers (100%). All farmer lives in Kaccha houses (100%). The school was available to 38% of the famer's population, yet all interviewed camel farmers were found illiterate (0%). They had no access to tape water and gas (0%). Road access was available to 59 % of the camel farmers' population. Land was owned by 56% farmers. Of it, 34 % land was being irrigated using tube well. They were earning their source of family income from different sources i.e., labor, livestock and others (42%, 38%, 20%) respectively. The overall total monthly income of the camel farmers showed that 20% of farmers had earnings from 10000-15000 PKR whilst 40% of the farmers were earning from 15000-20000 PKR/month. Further, 28% of the farmers were earning more than 25000 rupees per month. Like other sources of income, camel also shared varied amount in total family income. In this context, 30-50%, 50-70% and more than 70% contribution of camel in family income was earned by 35, 39 and 26% farmers population, respectively. The percentage of camel income share showed that 35% of the population was (30-50%), 39% share (50-70 %) and 26% shared more than seventy percent (> 70%). In camel management, 80% from the family members of farmer up to one percent (01%) was involved to share (80%) in camel management while more than two percent (was shared 20% in camel management. There were no any aid/subsidy or any intervention by government/NGOs (0%).

The result of Lassi camel farming, production and marketing practices in Lasbela region is given in table-2. Lassi camel production system showed that there were no any scientific system for keeping camels like intensive (0%) and semi intensive (0%). All the camels were kept through extensive system (100%). The number of camels per farmer varied from each other. The share of 1-10 farmer were 46%, 11-30% shared 30%, 31-50 farmer shared 14% and more than fifty (.50) farmers shared 10% of camel per family. The number of lactating she camels 1-5, 6-10 , 11-15,6-20 and more than twenty (>20) were 37%,12%,32%,5% and 14%, respectively. The farmer were not used their camels for commercial purposes(0%) but they used all camels for home facilities (100%).The secondary sex character (puberty age) appears at different age of months including 03 years, 04 years and 05 years. The share of puberty age in percent showed 7%, 11%, and 82% respectively. The average age of camel varies according to their mode of habitat. Forty four percent (44%) lives up to the age of 20 years and 56% lives more than 20 years (>20). The weaning age of camel calves were different because of farmers own experience. Mostly 93% calves weaned at the age of 12 months and only 7% from the age of above (>12) months. The milk production (maximum and minimum) depends upon the camel age, lactation stage, availability and types of feed, environment etc. From 12% camel population, maximum milk obtained 2-5 litter per day, 63% camel secreted 6-8 litter per day, 25% camel produced more than eight (>8) litter per day. The minimum milk potential yielded from 54% camel up to 2 litter per day whilst 46% yielded more than two (>2) litter per day. The keeping quality (shelf life) of camel milk showed that 13% of milk cannot became spoiled up to 4 hours without refrigeration, 59% in the range of maximum half day (4-12 hours) and 12% from half to one day (12-24 hours) . The average sale of adult male camel (he camel) and adult female camel (she camel) depends upon the age of he or she camel, theirs health, physical appearance etc. Majority (97%) of adult male camel sale at the rate of 150000 and only 3 % sale more than 150000 (>150000). On the other hand, the average sale of adult female camel varies from 75000- 80000 PKR. The maximum (94%) average sale of young male stock was up to 40000 whilst in case of female young stock, the maximum (83%) sale was recorded 30000 PKR. Camels of different age (mostly male calve) slaughtered on daily basis. Therefore, the availability of meat in that area was (100%). The farmers do not sale camel milk, hence availability of camel milk in market was recorded as zero percent (0%).

Feed and feeding practices of Lassi camels in Lasbela region is given in table-3. The availability and use of feed resources for Lassi camel was grazing (rangeland plants). All camels were mostly kept on grazing (99%). Very rare feeding of crop residues and concentrate is practiced (0.5%).



Feeding practice of collected fodder was also deficient (0.5%). Camels do travel up to 5 km for grazing (93%). Most preferred rangeland species by order was Jaar, Babur and Kanda etc.

Milk and colostrum composition of Lassi camels are presented in table-4. In case of milk, the fat, solid-not-fat (SNF), protein, lactose and salts were 3.51, 11.17, 5.55, 6.42 and 1.06 percent, respectively whilst in case of colostrum, the fat, SNF, protein, lactose and salt contents were 0.48, 24.62, 9.08, 13.46 and 1.61 percent, respectively.

Table I. Social status of Lassi camel farmers in Lasbela region

Serial #	Description	Percent share
1	Residence	100
2	Type of Residence	
	Pakka	0
	Kaccha	100
3	School	38
4	Electricity	0
5	Tape water	0
6	Gas	0
7	Road	59
8	Literacy/Educational level of camel farmers	0
9	Land possession	56
10	Irrigation availability (Tube well)	34
11	Source of family income	
	Labor	42
	Livestock	38
	Others	20
12	Monthly total family income	
	Up to 10000	1
	10000-15000	20
	15000-20000	40
	20000-25000	4
	>25000	28
13	Contribution of camel in family income	
	30-50%	35
	50-70%	39
	>70%	26
14	Number of family members involved in camel management	
	Up to 01	80
	>02	20
15	Aid/subsidy or any intervention by Government/NGOs etc.	0

Table II. Lassi camel farming, production and marketing practices in Lasbela region

Serial #	Description	Percent share
1	Intensive	0
	Semi-intensive	0
	Extensive	100
2	Number of camels per farmer/family	
	1-10	46
	11-30	30
	31-50	14
	>50	10
3	Number of lactating she camels	
	1-5	37
	6-10	12
	11-15	32
	16-20	5
	>20	14
4	Use of camel	

	Commercial	0
	Home	100
5	Average age of Puberty in camels (Years)	
	03	7
	04	11
	05	82
6	Average age of camels (years)	
	Up to 20	44
	>20	56
7	Average age of weaning camel calves (months)	
	12	93
	>12	7
8	Maximum milk potential (L/d)	
	2-5	12
	6-8	63
	>8	25
9	Minimum milk potential (L/d)	
	Up to 2	54
	< 2	46
10	Camel milk shelf life (hrs)	
	Up to 4	13
	4-12	59
	12- 24	28
11	Average sale price of a dult he-camels	
	150000	97
	>150000	3
12	Average sale price of a dult she-camels	
	75-80000	100
13	Average sale price of male young stock	
	Up to 40000	94
	>40000	6
14	Average sale price of female young stock	
	30000	83
	>30000	17
15	Availability of camel meat market in area	100
16	Availability of camel milk market in area	0

Table III. Feed and feeding practices of Lassi camels in Lasebla region

Serial #	Description	Percent share
1	Use of Feed resources	
	Grazing (rangeland plants)	99
	Crop residues	0.5
	Fodders	0
	Concentrates	0.5
2	Supplement feeding	0.5
3	Feeding practice of collected fodder	0.5
4	Daily distance for grazing	
	Up to 5 km	93
	5-10 km	6
	>10 km	1
5	Most preferred rangeland species	
	Jaar	58
	Babur	26
	Kanda	16

Table IV. Colostrum and milk composition of lactating Lassi camels

Nutrients	Percent Composition	
	Colostrum	Milk
Fat	0.48	3.51
SNF	24.62	11.17
Protein	9.08	5.55
Lactose	13.46	6.42
Salts	1.61	1.06

*SNF=Solid not fat

DISCUSSION

Study on understanding local farming of Lassi camels was conducted in the Lasbela region of Balochistan as the Lassi camel breed is one of the eight local camel breeds of Balochistan (10). For this purpose, sixty camel farmers were interviewed, and observations were recorded to understand local camel husbandry practices. The samples of camel milk and colostrum were also collected and analyzed for nutritional composition.

Our results showed that the social status of Lassi camel farmers was downtrodden. The lack of basic education facilities in most of the areas resulted in continued illiteracy generation after generation. Further, the non-availability of drinking water and electricity showed the fabric of the stone age. In agreement with our findings, one of the studies analyzed some parameters on the social setup of livestock farmers in the Lasbela region and found that the low literacy ratio among livestock farmers well relates to the poverty of the region which is recorded highest in the province (11). He further explained that due to allocating more time to earn a livelihood, livestock farmers give less time to education. However, in our case, Lassi camel farmers have a much different social set-up than other livestock farmers in the region. They are living away from the main population stream and have no basic social facilities and contacts. This can be improved well with a multi-pronged strategy and bridging the gap between policymakers, government and non-government organizations to carry out need-based and focused work to improve the social set-up of Lassi camel farmers.

Our findings showed that conventional Laasi camel husbandry practices have the potential to improve significantly in both milk and meat production. This camel breed 'Lassi' has natural potential to produce 6-7 L/d on available grazing however; its milk is not being used for marketing purposes. Lassi camel farmers consider the sale of milk as a "forbidden tree" due to religious, norms and other irrational characteristics. The price of camel milk in a nearby mega city is "350-400 PKR/L". If camel farmers sell their camel milk even at a very low rate (Rs. 100/L), still they can earn a very modest income. It was estimated that if a camel farmer has five lactating Lassi she-camels, he can save half of the total milk yield and can earn 1500 PKR/d (45000/diem). However, to make this possible, a lot of work is required in two approaches; i) to launch an awareness campaign and bring them out from their false religious, social and other misconceptions regarding the sale of camel milk ii) launch a milk collection, transportation and marketing facility. It is strongly believed that a slight change in conventional camel farming will significantly boost income generation resources for poor camel farmers. The other major shortcoming observed in conventional Lassi camel farming was poor breeding management. In prevailing Lassi camel farming, she-camels after parturition are not bred on similar lines as in cattle and buffaloes. Lassi camel farmers practice mating after one year of parturition and consequently next crop (calf) is expected more than a 2 years gap. This gap can be reduced to 30-50% by better breeding management and hence number of calves from the available herd can be increased.

In our study, we found that the Lassi camel habitat has two different landscapes where the availability of grazing areas widely differs. Uthal and Lakhra areas have dense forests for grazing camels whilst the Winder area has a desert landscape having sparse vegetation resulting in long travels in search of vegetation, low nutrient availability and less production. These differences in vegetation also led to differences in preference of rangeland species.

In calf management, the Lassi camel farmers feed colostrum to the calves within 30-40 minutes. They feed it *ad libitum* to the newborn calf. Colostrum is rich in antibodies that develop immunity in newborn calves. In milk composition, the camel has less fat contents, SNF and more salts than other livestock species. Variations in milk composition exist due to many factors i.e., geographical condition, grazing availability, feeding condition, breed, stage of lactation, age and number of lactation (12-15). The literature also explains that camel milk has good medicinal properties. In Kazakhstan, camel milk is traditionally used as a tonic and for the treatment of gastroenteritis, tuberculosis and many infections (16). This was also stated by Lassi camel farmers who opined that camel milk is effective against many diseases and maintains good health. Many of them used the word "Satt bimari" to mean seven diseases. These seven diseases were named asthma/respiratory, constipation/digestive issues, ageing appearance, insomnia, exhaustion, bone weakness and diabetes.

The expected benefits of this study are substantial, particularly for designing any policy or strategy for alleviating poverty in camel farmers. These findings have surfaced major weaknesses in their social set-up, conventional camel husbandry practices, utilization of available rangeland species and misconception regarding camel milk marketing. Mitigating these major weaknesses i.e., improving social deteriorating conditions, awareness of improved camel husbandry practices, proper rangeland utilization, and implementing a milk marketing network will definitely lessen the poverty of poor Lassi camel farmers on one hand and increase the availability of healthy milk on the market, conservation of camel as pseudo-ruminant species and managing the ecosystem of nature on the other hand. These findings may further open the way to the paradigm shift from conventional camel farming to commercial camel farming in the region and other parts of the country.

CONCLUSION

This study has surfaced out different aspects in conventional farming of Lassi camels. If those conventional practices intervened and improved through awareness and capacity building of camel farmers, it will improve health of camels, milk production, breaking religious misconceptions, marketing and consequent poverty alleviation of camel farming communities.

References:

1. Economic Survey of Pakistan. Economic Advisor's Wing. Ministry of Finance Govt. Pak. Islamabad, Pakistan. 2017-18.
2. Marghazani IB, Makhdoom AJ, Pasha TN, Abdullah. Effect of supplementation with protein differ for rumen degradability on milk production and nutrients utilization in early lactating Sahiwal cows. Italian J. Anim. Sci. 2012;11(1):58-62.
3. Iqbal A. A socioeconomic profile of camels in Pakistan with special emphasis on management and production aspects. Proc. Internat. Workshop on Camel Research and Development. Wad Medani, Gezira State, Sudan. 2001; 45-50.
4. Ahmed S, AM YM, Tariq Economic importance of Camel: A unique alternative under crises. Pak Vet Journal. 2010;30(4):191-197.
5. Isani GB, Baloch MN. Camel breeds of Pakistan. The Camel Applied Research and Development Network (CARDN), NADRI, Islamabad, Pakistan. 2000.
6. Rollefson IK, Camels on Rapid Decline in Asia. League for Pastoral Peoples and Endogenous Livestock Development. 2005;1.
7. ESP. Economic Survey of Pakistan. Economic Advisor's Wing. Ministry of Finance Govt. Pak. Islamabad, Pakistan. 2022-23.
8. Marghazani IB, Kakar MHU, Umar M, Luni FA, Saleem M, Hamayoon K, Safi MJ. The Camels in Balochistan: Status, farming practices and camel centered measures. Pure and Applied Biology. 2019;8(1): 503-508.
9. Steel, RGD, Torrie JH, Dickey DA. Principles and Procedures of Statistics. Biochemical Approach, 3rd ed., McGraw Hill Book Co. Inc., New York, USA. 1997.
10. Fatih A, Kiani MT, Sheikh IS, Raza Q, Hameed T, Rafeeq M, Marghazani IB, Ahmed J, Fraz A, Jehan M, Tareen MA. Performance and specific characteristics of Balochistan camel breeds. Pak-Euro Journal of Medical and Life Sciences. 2021;4(2):65-72.



11. Yaseen M. Identification and nutrients composition of different rangeland species (grasses,herbs, shrubs and trees) grazed by small and large ruminants in Lasbela region. M. Phil Thesis. 2017. Department of Animal Nutrition, Sind Agriculture University, Tandojam.
12. Khaskheli, M., M.A. Arain, S. Chaudhry, A.H. Soomro, T.A. Qureshi . Physico-chemical quality of camel milk. *Journal of Agriculture and Social Sciences*.2005;2:164-166.
13. Konuspayeva G, Faye B, Loiseau G. The composition of camel milk: a meta-analysis of the literature data. *Journal of Food Composition and Analysis*. 2009; 22(2):95-101.
14. Idrees EM, Ishag IA, Eisa MO. Factors Affecting Chemical Properties of Camel Milk. *Scientia*. 2016;16(2):49-53.
15. Iqbal A, Gill RA, Younus M. Milk composition of Pakistani camel (*Camelus dromedaries*) kept under station/farmer's conditions. *Emirates Journal of Food and Agriculture*. 2000; 7-10.
16. Sharmanov TS, Dzhangbylov AK. Medical Properties of Kumis and Shubat (in Russian), Ed. Gylym, Almaty, Kazakhstan 1991:173.