



Study on Management Practices of Camel in Arid Zone of Rajasthan

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Abstract

The present study was carried out to investigate the general information about camels' management practices i.e., camel housing, feeding, breeding and general management practices. Two districts, Bikaner and Jaisalmer were selected purposively according to their camel population. A total of 60 camel owners were randomly selected and interviewed from each district for the study. The investigation revealed that the camel farmer possessed an open camel house outside their home. They were mostly grazed their camel to pasture land and concentrate was supplied to camel preferably to pregnant and camel utilize for draft purpose. Camel owners were choosing male camel in herd or outside of herd based on its physical appearance and breed characteristics. Breeding started at the age of four to five years and none of the camel owners maintaining the breeding record. Most of the respondents had an approachable veterinary facility. Dermatitis (mange), Surra and camelpox are the most prevalent and infectious diseases of the study area. However, impaction and fracture were other problems reported by the camel owners. Majority of camel owners treating their camels by self through their traditional knowledge or contacting traditional healers, whereas veterinarians were the first choice for surgical and gynaecological problems.

Keywords: Breeding, Camel Management, Feeding, Housing, Veterinarian, Traditional Healer

Introduction

Camels have an important role in the lives of human beings, especially in arid regions, due to their multipurpose role and unique ability to adapt to harsh conditions. Its primary uses being for draught, transport and agricultural operations. It can survive in the hot climate with high solar radiation and sustain itself on coarse fodder and on salty and thorny bushes. Camel is an important livestock species in the subsistence economy of rural pastoral communities (Aujla *et al.*, 2013) particularly in arid and semi-arid lands (Field, 2005). Camels contribute to household food security through meat and milk (Ahmad *et al.*, 2010), are used as pack animals for transport and provide household income through sale of live animals, meat, milk, fat and other by-products like hides (Mochabo *et al.*, 2005; Faye *et al.*, 2010; Aujla *et al.*, 2013). Yet, the current changes in the camel rearing practices are modifying the traditional relationships between the camel and its environment (Faye *et al.*, 2012). In India, camels are mostly kept by rural people for transportation of fodder and labour. They rarely utilized the camel milk. However, to little extent camel owners utilized the camel for ceremony, wedding function, safari and in tourism. They kept the animal in traditional way. Housing and feeding practices are according to the hot and humid climate in summer and extreme cold in winter. Breeding and health care practices are regularized according to the season.

Materials and Methods

Two districts, Jaisalmer and Bikaner were selected purposively for the study on the basis of highest camel population. Similarly, one tehsil was identified from each district on the basis of highest camel population. For selection of village, a comprehensive list of all villages having camel population was prepared from both the selected tehsils with the help of animal husbandry department and other secondary sources. Four villages were selected randomly from each selected tehsil. Thus, total of eight villages were selected from two districts. Prior to collection of data, a comprehensive list of families who possess at least one camel for their livelihood was prepared for each selected village with the help of panchayat officials and villagers. Then from the prepared list, total of 15 camel owners from each selected village were selected randomly as respondents for the purpose of the study. Thus, total of 120 camel owners were selected as respondents. Various existing camel management practices followed by respondents were recorded. Simple frequency and percentage were calculated.

Result and Discussion

Housing Practices

Animal house is an essential part to prevent animals from adverse climatic condition. Camel owners were asked about the housing provision for camel under different sub-heads as location, type and provision of water trough.

a) Location of housing

As illustrated in Table 1, majority of camel owners in Bikaner (70%) and Jaisalmer (83.33%) were having camel houses outside the dwelling. Whereas, 30 per cent and 11.67 per cent of camel owners were having camel houses within the dwelling. Pooled data shows that about 79 per cent of camel owners kept their camels separate from their residence and rest (21%) were keeping camels with their residence. Camel owners allow their camel flock to freely graze in pasture land. However, in the case of those camel owners who utilized their camel for carting as routine purpose, generally kept their camel at home or camel barn at night time.

b) Type of housing

Data presented in Table 1 revealed that majority (65%) of respondents were having open camel house and rest (35%) were having mixed type of camel house in Bikaner district, whereas in Jaisalmer district majority (93.33%) of the respondents were having open type of house for camels followed by mixed (6.67%) type of housing. Pooled data revealed that about 79 per cent of the respondents were following open type of housing and rest 21 per cent of respondents were following mixed type of housing. These findings also had conformity with Rajput and Tripathi (2005a) they found that camels were kept in open areas irrespective of season and pastoralists have not constructed any type of shed for camels in Rajasthan.

Table 1: Distribution of respondents according to housing provision

S. No.	Type of Practices	Bikaner	Jaisalmer	Pooled
A. Location of camel house				
1	Within dwelling	18 (30.00)	7 (11.67)	25 (20.83)
2	Outside dwelling	42 (70.00)	53 (83.33)	95 (79.17)
B. Type of housing				
1	Open	39 (65.00)	56 (93.33)	95 (79.17)
2	Closed	0	0	0
3	Mixed	21 (35.00)	4 (6.67)	25 (20.83)

Feeding Practices

The data on different aspects of feeding practices were collected from camel owners and analysed.

a) Feeding Method

It is categorically showing in Table 2 that overwhelming majority of respondents in Bikaner (90%) and Jaisalmer (75%) were following both stalls feeding and grazing on pasture land (semi-intensive). In Bikaner 5 per cent of camel owners were grazing their camel on pasture (extensive). Whereas, in Jaisalmer 25 per cent of camel owners were following grazing on pasture land. None of the respondent in Jaisalmer districts was following stall feeding (intensive). Pooled data showed that majority (82.50%) of the respondents were following both stall and grazing followed by grazing on pasture (15%) and stall (2.5%) method of feeding. Camels were fed on bushes and tree like Khejari (*Prosopis cineraria*) leaves, Jharberi (*Ziziphus sp.*), Neem (*Azadirachta indica*), Jaal (*Salvadora oleoides*), Tali (*Dalbergia sissoo*), Ker (*Capparis Decidua*), Fog (*Calligonum polygonoides*) etc. These findings have got substantial support from the study conducted by Bhakat *et al.* (2006) who found that farmers having 2 to 5 camels preferred to feed their animals by semi-intensive system of management in both Bikaner (55.56%) and Pali (60.00%) districts.

Table 2: Distribution of respondents according to feeding method

S. No.	Feeding method	Bikaner	Jaisalmer	Pooled
1	Stall feeding	3 (5.00)	0	3 (2.50)
2	Grazing on pasture	3 (5.00)	15 (25.00)	18 (15.00)
3	Stall + Grazing	54 (90.00)	45 (75.00)	99 (82.50)
Total		60 (100)	60 (100)	120 (100)

b) Grazing Land

The results revealed that majority of respondents in Bikaner (60%) and Jaisalmer (68.33%) were grazing their camel on free grazing pasture land. About 32 per cent in Bikaner and 20 per cent respondents in Jaisalmer were allowing camels to graze at both at own farm and grazing pasture land. Pooled data indicated that majority (64.17%) of respondents used grazing pasture land to graze their camels followed by both own farm and grazing pasture land (25.83%) and own farm land (10%).

c) Feed Composition

In Bikaner district majority (83.33%) of respondents were providing both concentrate and roughage to their camels. In Jaisalmer, equal numbers (50%) of respondents were giving both roughage and concentrate, and roughage only. Pooled data indicated that two third of respondents were feeding their camel with both roughage and concentrate, whereas remaining one third were providing only roughage. Camel owners were giving Guar or cluster bean (*Cyamopsis tetragonoloba*) fodder local name phalgati, Moth (*Vigna aconitifolia*) chara, Wheat straw, Bajra stem and groundnut (*Arachis hypogaea*) chara as roughage. In concentrate feeding they were giving Cotton seed cake, Til cake, Groundnut cake, Sunflower cake, Guar, Moth churi, Gram churi, Barley, Bajra etc.

d) Feed Level

Majority of respondents in Bikaner (85%) and Jaisalmer (80%) districts were giving only maintenance ration to camels. In pooled data 82.5 per cent of respondents were providing only maintenance ration to their camels, while about 20 per cent of respondents were also giving production ration to their camels.

e) Feed Form

Majority of respondents in Bikaner (75%) and Jaisalmer (88.33%) districts were providing fodder after chaffing, while 25 per cent in Bikaner district and 11.67 per cent of the respondents in Jaisalmer district were providing both chaffed and whole fodder. Pooled data revealed that about 82 per cent of camel owners were giving chaffed fodder followed by both chaffed and whole (18.33%) fodder.

f) Feed Source

Camels were fed both stall and in grazing pasture land by majority of the camel owners. Camels were sent in groups for grazing in morning and they move up to 20 to 25 km depending upon season and availability of grazing pasture land. Overwhelming majority of respondents in Bikaner (91.67%) and Jaisalmer (73.34%) were feeding their camels with own farm produce as well as purchased fodder. In Bikaner district 5 per cent of respondents were feeding own farm produce fodder followed by purchased fodder (3.33%), whereas in Jaisalmer district 18.33 per cent of respondents were fed their camel with purchased fodder and 8.33 per cent respondents were feeding own farm for produced fodder. Pooled data revealed that majority (82.5%) of respondents were feeding their camels with both own and purchased feeding material followed by purchased (10.83%) and own farm (6.67%) fodder.

Results indicated that there was insufficient grazing pasture and own farm products to meet the daily requirement of feed for camels due to which about 93 per cent of respondents were compelled to purchase fodder from market.

g) Feeding Trough

Data presented in Table 3 indicated that utilization of manger for feeding was observed as less common practice. The overwhelming majority of camel owners in Bikaner (91.67%) and Jaisalmer (76.67%) districts were using plastic or bamboo basket/old tyre (wheel) of cart as feeding trough. Metal tub as feeding trough was used by 26.67 per cent and 43.33 per cent of camel owners in Bikaner and Jaisalmer, respectively. In Jaisalmer 28.33 per cent of respondents were using manger while in Bikaner it was followed by 8.33 per cent only. In pooled data it was found that majority (84.17%) of respondents were using plastic or bamboo basket/old tyre as feeding trough followed by metal tub (35%), manger (18.33%), jute/ plastic bag (10%) and without any trough or on ground (5.83%). These results showing that there was less practicing of proper manger because majority of camel owners allowed their camel(s) for free grazing on pasture land.

Table 3: Distribution of respondents according to type of feeding trough

S. No.	Feeding Trough	Bikaner	Jaisalmer	Pooled
1	Manger	5 (8.33)	17 (28.33)	22 (18.33)
2	Metal tub	16 (26.67)	26 (43.33)	42 (35.00)
3	Plastic or bamboo basket/ old tyre	55 (91.67)	46 (76.67)	101 (84.17)
4	Jute/Plastic bag	5 (8.33)	7 (11.67)	12 (10.00)
5	On ground floor	4 (6.67)	3 (5.00)	7 (5.83)

Breeding Practices**a) Availability of Breeding Male Camel**

Data presented in Table 4 revealed that majority (55%) of respondents in Bikaner and 40 per cent of the respondents in Jaisalmer districts were reported that breeding male camel was available in their village. Whereas, 45 per cent in Bikaner and 60 per cent of respondents in Jaisalmer district, were mating their female camels with male available

at own herd. Pooled data indicated that more than half (52.5%) of respondents were using breeding male available at home followed by available at village (47.5%). Majority of respondents had tendency to use male camel for breeding purpose from own herd and from other farmers camel herd in the village. These findings got substantial support from study conducted by Dejene (2015) in Ethiopia and found that about 74 per cent of respondents using breeding camel bull from within the own herd.

Table 4: Distribution of respondents according to availability of breeding male camel

S. No.	Availability of Breeding Male	Bikaner	Jaisalmer	Pooled
1	Own herd	27 (45.00)	36 (60.00)	63 (52.50)
2	Other herds	33 (55.00)	24 (40.00)	57 (47.50)
	Total	60 (100)	60 (100)	120 (100)

b) Selection criteria for breeding male camel

It is evident from the Table 5 that overwhelming large number of the respondents in Bikaner (91.67%) and Jaisalmer (78.33%) were selecting breeding camel by their physical appearance. While, 40 per cent in Bikaner and 50 per cent of respondents in Jaisalmer also reported that they were selecting breeding males by their breed characteristics followed by pedigree record of male camel (31.67% in Bikaner and 10% in Jaisalmer). Pooled data revealed that majority (85%) of respondents were selecting male camel by physical appearance followed by breed characteristics (45%) and pedigree record (20.83%).

Table 5: Distribution of respondents according to selection criteria of breeding male camel

S. No.	Selection criteria of breeding male camel	Bikaner	Jaisalmer	Pooled
1	Breed characteristics	24 (40.00)	30 (50.00)	54 (45.00)
2	Pedigree record	19 (31.67)	6 (10.00)	25 (20.83)
3	Physical appearance	55 (91.67)	47 (78.33)	102 (85.00)

c) Age of Camel Utilize for Breeding Purpose

All respondents had begun their camel for first breeding at the age of 4-5 years irrespective of sex.

d) Breeding Record

Only 10 per cent of respondents in Bikaner and 35 per cent in Jaisalmer district were keeping breeding records in memorized form. All of the respondents reported that they were not maintaining breeding record in written form.

Health Care Practices

a) Availability of Veterinary Facilities

Data in Table 6 revealed that 25 per cent of respondents in Bikaner district and 50 per cent of respondents of Jaisalmer district reported that veterinary facilities were available at their own village in form of veterinary sub-centre or veterinary hospital, respectively. However, majority (62.50%) of respondents from both the districts reported about lack of veterinary facility at their village. Table further revealed that veterinary facilities available within 10 km distance in Bikaner and up to 20 km distance in Jaisalmer district. Pooled data showing that 37.5 per cent of respondents were getting veterinary facilities in the village and same proportion (37.5%) of respondents were getting veterinary facility within the range of 10 km from their village and only 25 per cent respondents availing veterinary facilities 10 to 20 km of distance from village.

Table 6: Distribution of respondents according to availability of veterinary facilities

S. No.	Parameter		Bikaner	Jaisalmer	Pooled
1	Availability of veterinary facility in village	Yes	15 (25.00)	30 (50.00)	45 (37.50)
		No	45 (75.00)	30 (50.00)	75 (62.50)
2	Type of veterinary facility	Vet. Hospital	0	15 (25.00)	15 (12.50)
		Vet. Sub-centre	15 (25.00)	15 (25.00)	30 (25.00)
3	Distance of nearest veterinary facility from village	In village	15 (25.00)	30 (50.00)	45 (37.50)
		Up to 10 Km.	45 (75.00)	0	45 (37.50)
		10-20 Km.	0	30 (50.00)	30 (25.00)

b) Prevalent Camel Diseases in Area

Majority of camel owners in Bikaner (45%) and Jaisalmer (70%) districts reported that there was high incidence of dermatitis (mange) in their camel herd. However, there was no direct mortality was reported in such cases. Surra (Trypanosomiasis) was found another infectious disease which was common in both Bikaner (28.33%) and Jaisalmer (46.67%) district and mortality was also reported in some cases of surra. Camel pox was another infectious disease reported by about 20 per cent in Bikaner and 27 per cent of respondents in Jaisalmer districts, respectively. Table 7 further showed that fracture was another cause of economic loss/ death of camel reported by 15 per cent of respondents in Bikaner and 28.33 per cent of respondents in Jaisalmer district. Mandibular fracture was most common among camels. Impaction and foot rot were other common diseases in camel reported by respondents. Some of the respondents in Bikaner district also reported incidence of HS 5-6 years ago in some herds however, HS were not reported by respondents in Jaisalmer district. These results also got support from Rajput and Tripathi (2005b) who conducted study on Raika pastoralists of Rajasthan state and found that surra, mange and pox were major infectious diseases among camels that cause high morbidity in camel herd.

Table 7: Distribution of respondents according to prevalent camel diseases in area

S. No.	Disease	Bikaner	Jaisalmer	Pooled
1	Surra	17 (28.33)	28 (46.67)	45 (37.50)
2	Dermatitis	27 (45.00)	42 (70.00)	69 (57.50)
3	Camelpox	12 (20.00)	16 (26.67)	28 (23.33)
4	Foot rot	3 (5.00)	6 (10.00)	9 (15.00)
5	Impaction	8 (13.33)	18 (30.00)	26 (21.67)
6	Fracture	9 (15.00)	17 (28.33)	26 (21.67)

c) Preference for Treatment

Preference of animal health service provider showed in Table 8 indicated that majority of respondents in Bikaner (55%) and Jaisalmer (50%) district treated medicinal problems by self among their camel followed by veterinarian in Bikaner (31.67%) and Jaisalmer (43.33%).

Table 8: Distribution of respondents according to their preference to veterinary services

District	Source of treatment	Medicinal	Gynaecological	Surgical
Bikaner	Self	33 (55.00)	1 (1.67)	3 (5.00)
	Traditional healer	8 (13.33)	12 (20.00)	22 (36.67)
	Veterinarian	19 (31.67)	47 (78.33)	35 (58.33)
Jaisalmer	Self	30 (50.00)	0	2 (3.33)
	Traditional healer	4 (6.67)	11 (18.33)	19 (31.67)
	Veterinarian	26 (43.33)	49 (81.67)	39 (65.00)
Pooled	Self	63 (52.50)	1 (0.83)	5 (4.17)
	Traditional healer	12 (10.00)	23 (19.17)	41 (34.17)
	Veterinarian	45 (37.50)	96 (80.00)	74 (61.66)

However, in case of gynaecological and surgical problems veterinarians were found first choice in Bikaner of 78.33

and 58.33 per cent of the respondents and 81.67 and 65 per cent of respondents in Jaisalmer district, respectively. It is interesting to note from pooled data that respondents were found trying to contact either traditional healer or veterinarians for treatment of medicinal, surgical and gynaecological problems instead of treatment by self at home. It might be due to that availability of veterinary facilities not at far distance to respondents' villages in selected study area. Rajput and Tripathi (2005a) were also reported that about 32 per cent of respondents visited veterinary hospitals for treatment of their camels against infectious diseases.

Conclusion

It has been concluded that majority of camel owners were following traditional management practices. They fed their camel, as per available at pasture land. However, only those camels utilize for draft purpose, were fed with concentrate ration. Documented breeding records were not available with the respondents that would be big constraints for identifying good quality breeding camel. Most of the common diseases were treated at home by traditional methods of treatment; however, veterinary facilities were available at an approachable distance that was utilized mostly for surgical and gynaecological cases. There is a need to provide training to the camel owners on scientific management practices, so that efficient utilization and optimum production from camel could be achieved in available resources.

Conflict of Interests

There is no conflict of interest.

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