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Camel Rearing in Urban and Rural Areas of Bikaner District

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Authors' contributions

This work was carried out in collaboration among all authors. Author SM designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors SS and VS managed the analyses of the study. Author VS managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

In terms of numerical importance, the camel ranks only as a minor domestic animal. The world population of camels consists of about 17.5 million compared with 1270 million cattle, 1145 million sheep, 822 million pigs, 494 million goats, 138 million water buffaloes and 65 million horses. Yet, population statistics alone does not adequately reflect the ecological importance and historical significance of the camel for human cultural development.

From an ecological perspective, camel husbandry is the only means of exploiting the arid zone that composes about one third of the land surface of the earth. Camel pastorals are the only substance strategy that makes it possible to utilize this vast area for food production in a sustainable way. Thriving on a diet of thorny, fibrous and often very salty plants, camels convert the scattered vegetation of the desert into highly nutritious food and other forms of energy. Camels are able to produce large qualities of milk, wheat meat, wool and dung thrown in as by products. The article provides an overview on economic background of camel owners in rural and urban areas as well as

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different communities of Bikaner district and it is concerned with the utilization pattern of camels, the quality of food and water and the perception of camel owners towards declining number of camel in different landscape and communities of Bikaner.

Keywords: Rearing; nutritious food; economical species; socio-economic.

1. INTRODUCTION

The district of Bikaner is a desert based district lying in the North-North West direction of Rajasthan and in the Thar desert. The region occupied by the district is characterized by very little rainfall and equally splash vegetation and a general lack of surface water resources, even as the ground water is saline as well as deep in most part of the district given these natural conditions, agricultural is normally impossible and animal rearing has been the main stay of the economy of the public. The animals reared here by the people have been draught resistant and hardy, like sheep, goat, cow and camels. Sheep and goat have been valued for their economically important product like wool and meat. The role of the camel has traditionally been central to the life and economy of the Thar desert. This hard species has been important for travel, trade, ploughing of fields as well as draught purposes.

Camel rearing is not only economically significant in the rural areas but it has proved its utility in the towns and cities of the Thar Desert too. Camel carts can often be seen on the roads of the towns and the cities of Western Rajasthan, carrying construction material as well as other goods. As in the rural areas, the camel rearing in urban areas also is mainly being done by the society and economically lower castes and classes. Most of the people are illiterate or lowly educated. Many camel rears leaving in small towns of Bikaner district are also engaged in agricultural operations on the periphery of the towns, such people also used their camels in various agriculture related operations.

There is a dichotomy in the importance of camel rearing within the region. It would see that camel rearing is more important in non-irrigated areas. The landless and the poor people still resort to keeping camels for agriculture as well as draught operations. While the comparatively resourceful persons in the urban areas use different types of vehicles for their earning through transportation of goats. The poorer among the urbanities still rely for making their living on the camel. These people use camel carts to transport various construction and other goats in the towns and the cities of the Thar Desert.

Camel has been recognized as an important species of the desert region since time in memorial for a poor man of the desert region. This economical species meets his various requirements ranging from milk, hide transportation and even meat in these. Pernicious regions. However, most of the work on camels has been done by the zoologist, breeding experts, veterinarians and the managers of camel production. Rathore [1] brought out a comprehensive and well-illustrated book on the management of camels which covers all aspects related to camel rearing and maintenance the book also covers camel anatomy, physiology, metabolism, serology, camel husbandry, feeds, housing, reproduction as well as various major and minor diseases along with their cheap and effective treatment. Gahlot [2] has brought out a comprehensive reference book on camelids which also includes dromedary, bacterium and South American camelids. The book provides varied information, especially on dromedary with reference to genetics and breeding, pharmacology, physiology, ultrasonography, camel training and sport. It has chapters on different types of diseases of dromedary camels, besides some interesting topics related to ecophysiology. The significances of camels in human society as also on physiological explanations on how the camel can survive and produce under desert condition.

Farah et al. [3] have described the ecological and management and socio-economic aspects of camel production among the pastoralist Somali community of Moyle district Northern Kenya. They showed that the pastoralists have evolved rational strategies for adapting to the prevailing conditions of fevering forage amount indicates water and mineral salt. They report that in abdicate veterinary services constitute major constraints to camel production. They emphasize the need to educate the pastoralists on productivity improving management practices.

Wilson [4] has provided a detailed work on various aspects of camel. Yagil (1994) has written a handbook on camel management with a special focus on camel's role in today's world. Oba and Lusigi [5] provided an overview of draught strategies and land use in the African pastoral system. Jhort [6] has written on the pastoral production in Somalia with an interdisciplinary approach and with a special focus on the multipurpose use of camels.

Bulliet [7] brought out the role of camel in the transportation in desert region of the world. Grenote [8] outlines the echo physiological attributes of camels and large herbivorous mammals in arid Africa and Middle East. Since not much has been written except a few aspects of the camels, the few conferences that are held on camels become important source of camels. Kohler-Rollefson and Rathore [9] evaluated the performance of a local NGO that launched a project in mid 2006 to seek value addition to various camel products. The paper also includes the results of a comprehensive survey undertaken in Jaisalmer district.

Rajput and Tripathi [10] presented socio-economic profile of Raika camel pastoralists in Bikaner district through data collected by interview, observation and discussion. Majority of Raikas belonged to low socio-economic status and had large land holdings. Yet all facilities were found to engage in camel husbandry as one majaor source of family income. Razia and Younas [11] had outlined the socio-economic profile of camel racing communities of Baluchistan in Pakistan. He described the role of women and children in this economy activity which incidentally deprives children from education.

The present study has been restricted to the Western Arid and Semi-Arid parts of Rajasthan State, lying to the west of the Aravali hills. This broad region has been taken to make a general assessment of animal husbandry. The specific focus of the study is on the arid Thar Desert district of Bikaner. The overall animal husbandry situation of Bikaner district has also been presented before going on to the central theme of camel rearing in the district. The logic has been to provide a comparative framework for evaluating the importance of camel rearing within the broader back ground of animal husbandry in the districts as well as in the western arid and semi-arid Rajasthan. The district at Bikaner has been chosen because it is a representative district of arid Rajasthan which contains both the non-irrigated as well as the irrigated regions of change in agricultural/animal husbandry productivity. The limited availability of time as well as acquaintance with the area has also been regions for selecting this study area.

The non-desert regions all over the world have been the regions of animal husbandry as an economic activity, adapted to the preventing environmental conditions. The growth of population in other non-desert regions, land need for additional land for agriculture as well as settlement purposes has encouraged incoming of migrants frame other regions. This has been made possible by the extinction of irrigated, agriculture amongst other in the land formerly considered. Marginalized the advent of people, higher productivity economic activities and infrastructure has encouraged people in the district regional to look after alternative life style as well as employment opportunities. The rearing of animals like sheep and camel has been using attraction because of alternative means of transportation agricultural operations and employment. This work is an effort to document the patterns of changing significance of camel rearing in the changes.

Circumstances in the Thar Desert of India with particularly focus on Bikaner district as an illustration. The contention is that camel rearing continues to be an economically significant activity for many marginalized people in rural and urban areas of Thar Desert.

2. OBJECTIVES OF THE STUDY

To see the socio-economic significance of camels in urban and rural areas of Bikaner district.
Study methods and sources of information:

- The study is based both on primary and as well as secondary sources of information.
- Ten households from the four tehsils i.e. a total of forty camel rearing households containing scheduled castes as well as other caste people and poor as well as rich camel owners were purposively selected for the study.
- The study is basically empirical and comparative in nature and broadly employs on following methods of study.

3. STUDY METHODS AND SOURCES OF INFORMATION

1. The study is based both on primary and as well as secondary sources of information.
2. Included in the secondary sources are the publication of census of India, livestock census, statistics published by the Government of Rajasthan, Gazettes of Bikaner, various books, papers, journals as well as articles.
3. The primary data were generated from four tehsils of Bikaner district, selecting to frame each of the four Tehsils.
4. Ten households from the four tehsils i.e. a total of forty camel rearing households containing scheduled castes as well as other caste people and poor as well as rich camel owners were purposively selected for the study.
5. The study is basically empirical and comparative in nature and broadly employs on following methods of study :

(i) Empirical methods: The study is based on first hand information collected from the field study amongst the two hundred camel owing households from rural and urban areas and from different communities by canvassing a schedule.

(ii) Comparative method: The study is comparative in the sense that it compares the pattern and economic condition of camel rearing in urban and rural areas, irrigated and non-irrigated rural landscapes as well as scheduled caste and other communities.

(iii) Cartography and statistical methods: The study is based on tabulations and calculation of the data, obtained from the primary study to enable a more effective presentation of the data and pattern; various diagrammatic and cartographic techniques have been resorted too.

(iv) Descriptive and explorative method: The study is descriptive as well as explorative in nature the socio-economic and ecologic patterns of camel rearing have been described in detail. The study is also explorative in that there have been comparatively fewer studies on this anthropogenic aspect of camel rearing in the Thar region.

4. RESULTS AND DISCUSSION

4.1 Occupational Structure of Urban and Rural Camel Rears

Most of the camel rears in the urban areas of Bikaner district are related with agriculture and rear camels and other animals as an associated activity about ¾ of 50 families and 40% other caste families, report agriculture and Animal rearing as their chief occupation. Nearly 1/5 of schedule caste families and 2/5 of other caste solely rely on animal rearing as their major economic activity. These people hire out their camels and camel carts and may often keep other animals like sheep, goat and cows. About 5% of their surveyed families report their major occupation as services and animal rearing. An equal proportion of families in the urban areas are changed in business along with animal keeping. Such people hire out their camels and camel carts for income enhancement along with their other activity (Table 1).

4.2 Education Status of Animal Rears

The educational status of the animal rears in urban areas is also generally low. About half of these people are educated till primary level only. While around 2/3 of the schedule caste anima rears have education of up to primary level only, the animal dependent other caste people up to primary level are only ¼ of these total rural population (Table 2). This low educational status of animal rears especially scheduled caste animal owner, has significant interrelationship with their economic status and well being.

4.3 Classification of Household According to Land Hold

The distribution of urban based camel rearing household according to land holdings has been shown in Table 3. The table indicates that the notion of bigger land holdings andamongst farmers with un-irrigated land each not fully true in these areas. There is greater parity with respect to size of land holding in irrigated Durban areas then in the un-irrigated areas. In the un-irrigated urban areas, 60% schedule caste households have land holdings up to 20 bighas while in the other caste, 60% of the household have land holding size 3 above 20 bighas. Land holdings can have significant inter-relationship with camel rearing because household with sufficient and/or irrigated land holdings can keep larger n umber of camels for agricultural

operations. Besides, greater land holding may unable greater access to feed and fodder resources for the domesticated animals.

4.4 Agricultural Production from Kharif Crops

The animal rears from urban areas were found to be engaged in agricultural operation. This they do either as farmers or as agricultural laborers, who contact out farming operations for a particular cropping season. The animals rears of Lunkaransar and Kolayat towns were found to be engaged in irrigated agriculture while those of Nokha and Bikaner urban areas were engaged in irrigated farming. About 80% farmers in the irrigated urban peripheral farm were able to produce Kharif crops up to Rs. 50,000/- in the un-irrigated urban agricultural areas of 85% were able to produce Kharif crops up to Rs. 50,000/-. The proportion of un-irrigated urban farmers in below 25000 rupees kharif crops production value was 20% higher for schedule caste and the remaining caste the schedule caste animal rears farmers. In irrigated urban areas was much better place than the un-irrigated are as (Table 4).

4.5 Number of Livestock in the Urban Rural Families

The study has shown that nearly 45% of the urban camel rearing families has 20 or more number of various types of animals. At least 42% families have 10 or more animals. The proportion of families with animals up to 10 in number is only about ¼. The reliance of scheduled caste families on livestock seems to be slightly more than other castes as about 48% scheduled caste families have 20 or more animals in their households. While the other caste families with such number of livestock is only about 40%. The scheduled caste families with less than 10 animals are only 16% of the total of the scheduled caste household whereas, amongst other caste such families form a whopping 47% (Table 5).

4.6 Reason for Keeping Camel

According to the reasons for rearing camel, most of the urban centered animal rears reported its u se in draught operations. The proportion of other caste families in this category was much higher than schedule caste household. The who generally reported use of the camels in agricultural come drought operations (Table 6).

4.7 Economic Productivity from Animal Husbandry

The camel rearers of urban areas in Bikaner district may keep other animals for dairying, wool etc. besides the camel. More than 1/3 household had gross annual income productivity of up to Rs. 50000 from their domesticated animals. The proportion of other caste households was nearly 47% as compared to 32% in schedule caste. In this production value category households with 750000 or more animal production value were 30%. However, the schedule caste households had greater proportion (about 36%) in this higher animal production value category as compared to other castes amongst which only 1/5 households could claim this higher animal production value from their domestic animals. This may be due to the fact that other castes people have diversified to other occupations in the urban areas and they do not solely rely on animal husbandry for their livelihood (Table 7).

4.8 Perception about Camel and its Rearing

When the animal rears in urban areas in Bikaner district were asked about their performance about continuing or relinquishing camel rearing, about ¾ reported about their desire to keep rearing these animals. However, slightly more than ¼ of these people were ready to leave this activity. The proportion of schedule caste house hold was about 1/3 as against 1/9 other caste. Only slightly more than half of the urbanite animal rearers felt that society will be affected if the species of camel were lost. When around 45% thought of no impact on society if this were to happen (Table 8).

4.9 Use of Camel Products

Camel provides services which are invaluable in terms of transportation, agricultural work and potentially in health centers, dairying activities. Even often its demise the various parts of camel are the used in various areas. The hide of the camel is use to make shoes and other leather articles. In earlier times, the camel hide was used to make begs which was utilized to carry drinking water. The Usta artists of Bikaner city have been related with the usta art which is used to decorate camel hide with painting and golden work The Government is trying to revive this dyeing art which is practiced nowhere else into world. The bone of the dead camels is used to make small decorative articles and also in

sugar mills. In the process of sugar production, the hair of camel is also used to make sturdy carpets.

4.10 Ecological and Environmental Inter-relation

The Thar Desert is a region very much prone to droughts and famines. During such times, the availability of fodder and feed from environmental resources becomes difficult or even negligible. In such conditions, the camel rearers have to arrange for the feed of their camels from the market. They have to spent cash for this from their pockets. Most of the respondents were adapted to the environmental conditions at the dissent. If normally feeds from the upper parts of the trees and resort to small herbs and shrubs only when there is nothing to feed on the trees, this nature of is useful for the sustainability of the desert ecology.

Table 1. Occupational structure of urban and rural camel rearer

S.No.	Occupation	SC	Others	Total
1.	Animal Rearing	5 (20%)	6(40%)	11(27.5%)
2.	Agri+ Animal Rearing	19(76%)	6(40%)	25(62.5%)
3.	Services + Animal Rearing	0(-)	2(13.3)	2(5%)
4.	Business + Animal Rearing	1 (4%)	1(6.67)	2(5%)
Total		25	15	40

Table 2. Educational status of animal rearers

S.No.	Education	SC	Others	Total
1.	Illiterate	5 (20%)	1(6.6%)	6(15%)
2.	0-5	11(44.1%)	3(20%)	14(35%)
3.	6-10	4(16%)	4(26.6)	9(22.5%)
4.	11-12	5 (20%)	4(26.6)	9(22.5%)
5.	12-above	0(0%)	2(13.3)	2(5%)
Total		25	15	40

Table 3a. Household according to land hold

Irrigated

S.No.	Land in bighas	SC	Others	Total
1.	0-10	3 (30%)	2 (20%)	5 (25%)
2.	10-20	2 (20%)	3 (30%)	5 (25%)
3.	20-30	2(20%)	3 (30%)	5 (25%)
4.	30-40	2 (20%)	1 (10%)	3 (15%)
5.	>40	1 (10%)	1 (10%)	2 (10%)
Total		10	10	20

Table 3b. Household according to land hold

Un-Irrigated

S.No.	Land in bighas	SC	Others	Total
1.	0-10	4 (40%)	1(10%)	5 (25%)
2.	10-20	2(20%)	2(20%)	4 (20%)
3.	20-30	3(30%)	4(40%)	7 (35%)
4.	30-40	1 (10%)	2(20%)	3 (15%)
5.	>40	0(-)	1(10%)	1 (5%)
Total		10	10	20

Table 4a. Agricultural production from kharif crops irrigated

		Irrigated		
S.No.	**Production value (Annual)**	**SC**	**Others**	**Total**
1.	25000<	5 (50%)	6(60%)	11(55%)
2.	25000-50000	3(30%)	3(20%)	14(35%)
3.	50000-75000	1(10%)	0(-)	1(5%)
4.	75000-150000	1 (10%)	1(10%)	2(10%)
5.	>150000	1(10%)	1(10%)	2(10%)
Total		10	10	20

Table 4b. Agricultural production from kharif crops un-irrigated

		Un-Irrigated		
S.No.	**Production value (Annual)**	**SC**	**Others**	**Total**
1.	25000<	7 (70%)	5(50%)	12(60%)
2.	25000-50000	2(20%)	3(30%)	5(25%)
3.	50000-75000	1(10%)	1(10%)	2(10%)
4.	75000-150000	0(-)	1(10%)	1(5%)
5.	>150000	0(-)	0(-)	0(-)
Total		10	10	20

Table 5. Number of livestock in the urban rural families

S.No.	**Livestock**	**SC**	**Others**	**Total**
1.	0	0 (-)	0(-)	0(-)
2.	1-5	3(12%)	4(26.7%)	7(17.5%)
3.	5-10	1(4%)	3(20%)	4(10%)
4.	10-20	9 (36%)	2(13.3%)	9(27.5%)
5.	20-30	4(16%)	1(16.67%)	5(12.5%)
6.	30-40	3(12%)	3(20%)	6(15%)
7.	40-50	1(4%)	2(13.3%)	3(7.5%)
8.	50-100	2(8%)	0(-)	2(5%)
9.	>100	2(8%)	0(-)	0(-)
Total		25	15	40

Table 6. Reasons for keeping camel

S.No.	**Reason**	**SC**	**others**	**Total**
1.	Agriculture Operations	6 (24%)	4(26.6%)	10(25%)
2.	Draught Operations	9(36%)	9(60%)	18(45%)
3.	Agriculture + Draught Operation	10(40%)	2(13.3%)	12(30%)
Total		25	15	10

Table 7. Economic Productivity from Animal Husbandry

S.No.	**Animal Production Value (Annual)**	**SC**	**others**	**Total**
1.	25000<	3(12%)	4(26.6%)	7(17.5%)
2.	25000-50000	5(20%)	3(20%)	8(20%)
3.	50000-75000	8(32%)	5(33.3%)	13(32.5%)
4.	75000-100000	6 (24%)	2(13.3%)	3(20%)
5.	>100000	3(12%)	1(16.66%)	4(10%)
Total		25	15	40

Table 8. Perception about camel and its rearing

S.No.	Choice	SC	others	Total
1.	Keep	17 (68%)	12(80%)	29(72%)
2.	Leave	8(32%)	8(20%)	11(27.5%)
Total		25	15	40

5. CONCLUSION AND SUGGESTIONS

Importance of camel cannot be neglected among the poor farmers of the Thar Desert. Camel rearing is done by mostly poor farmers in cities and villages. Camel rearing is done by families which are concern with agriculture and animal rearing only. Camel rears are mostly uneducated or primary educated people. They rear other animals along with camels. They take use of their animals during some agricultural season only; otherwise, it is used camel carts for transporting goods from one place to another. It becomes next to impossible for poor farmers to keep them during the droughts and famines. Less number of farmers is interesting in camel rearing in the era of modern technique. Few numbers of farmers are interested in maintaining their occupation. Farmers see bulls and bull carts as its better option. Not easy to maintain camels as they require regular supply of fodder and water for the whole year. Farmers are not so keen to maintain this occupation. But more farmers are in favor of its importance during the drought operations.

5.1 Suggestions

Camels are very important animals for poor and landless people; hence camel rearing should be made popular among them. They should be made aware of specially tuberculosis disease. New cross-breeding techniques should be made population among farmers. Dairy use of female should be encouraged. More use of camels in tourisms can be helpful in encouraging the camel rearing. Government should provide fodder or at least give some subside to farmers during droughts and famines. New research is required on processing of milk and milk-products of camels. As camel milk is very useful for diabetic patients so 'Saras' or other cooperative bodies should start collecting milk from rural areas and provide it in urban areas. Awareness of immunization against various diseases is must. Urgently investigate how to restore sufficient pastureland for camels in order to halt the decline in camel numbers. Make camel health services easily accessible to camel owners. This should include prophylactic and curative treatment of trypanosomiasis and mange. Identify emerging market opportunities for camel products (such as milk and meat) and support changes in the farming system to take advantages of these. Promote the value addition and marketing of camel products (milk, wool, leather, dung). Promote and subsidize the use of camel carts as an eco-friendly source of transport.

CONSENT

As per international standard or university standard, participant's written consent has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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