



MEWARI CAMEL

S C Mehta, S S Dahiya, Rekha Sharma,
M S Tantia & Arjava Sharma

Network Project on AnGR
Characterisation of Mewari and Jalori Camel



ICAR- NATIONAL RESEARCH CENTRE ON CAMEL
Post Box-07, Bikaner-334001 (Rajasthan), India



Camel Genetic Resources of India

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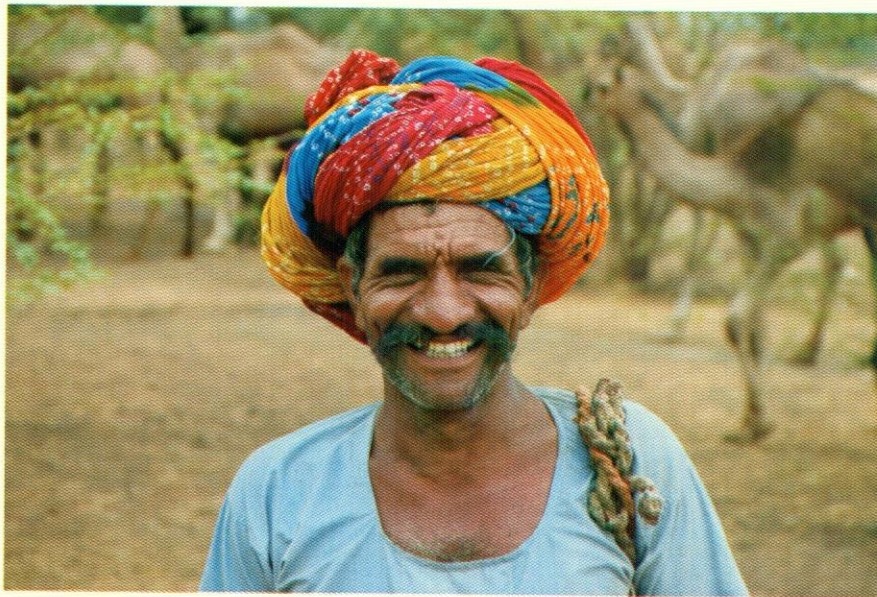
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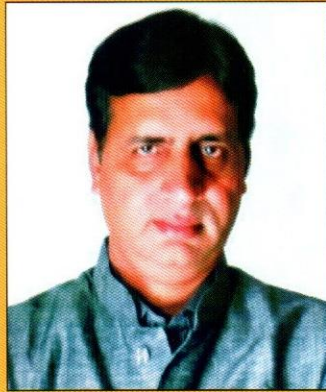
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NETWORK PROJECT ON ANGR
CHARACTERISATION OF MEWARI AND JALORI CAMEL



ICAR NATIONAL RESEARCH CENTRE ON CAMEL
POST BOX-07, BIKANER-334001 (RAJASTHAN), INDIA





Preface

Camel, an iconic animal to symbolize the state of Rajasthan, is now the State Animal of Rajasthan. It has a very glorious history and by virtue of several adaptive features, it has served the mankind for centuries under harsh climatic conditions. Though, the traditional use of camel for travelling long distances has gone down but its use in riding and safari has increased significantly in recent past. However, the use of camel in transportation of goods, in the religious and ceremonial processions and by the border security force of the country is still continuing and contributing to its sustenance in this digital era.

The population of the camel has gone down mainly because of change in life style and mindset of the people. The camels do not compete with other livestock species in grazing because of the height at which they graze, also vast unutilized land is still available in this country, unemployment is a big problem, nutritional status of the human population needs to be increased, per-capita milk availability needs to be tripled to achieve the figures of developed countries. The camel husbandry has contributed and can further contribute in supporting the country on above issues but the time has come to organise the sector and modernise it.

The Mewari breed of camel is well known for the production of camel milk for last five decades. The marketing of camel milk is better established in the breeding tract of Mewari camel than that of other breeds and thus it has acted as a model for production and marketing of camel milk in the country. With increased support, the milk production potential can act as boon for its sustenance under changing scenario.

The policies, planning's and road-maps for improvement and conservation of any breed or species, even though prepared with enough technical competence, will not be successful unless it reaches the masses, the end users, the animal owners. A continuous live

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connection and interaction needs to be established and maintained for a long period. Inspired by the “*Mann Ki Baat*” programme of Honourable Prime Minister, “Talks of Camel : A Mission for Conservation of Camel” was conceptualized and executed with great success by starting a Radio programme “*Untan Ri Bataan*” and synchronizing it with the latest information technology tools to reach every corner of the society in this project. The kind of connect and faith that was established with the camel farmers and other stakeholders during the programme was overwhelming.

The success of any programme depends on the concept and the team. The support received by me, Co-PI Dr.S.S.Dahiya, Scientist (SS) and Supervisors Sh. Pankaj Singh, Rajendra Kumar, Ashish Kumar, Kalpesh Awasthi, Arjun Kumar and Jitendra Singh in execution of the project from committed officers of Animal Husbandry Department viz. Dr. Laxman Lal Rathore, Additional Director; Dr.Dinesh Mathur and Dr.B.L.Dashora, Joint Directors; Dr. Abdul Karim, Dr.Bhupendra Bhardwaj, Dr.Rakesh Pokharna, Deputy Directors; Dr. C.P. Sethi, Dr. Surendra Chhangani, Dr. Chandrashekhar Bhatnagar, Dr.Sharad Arora, Senior Veterinary Officers; and the camel owners is highly acknowledged. The All India Radio Team of “*Untan Ri Bataan*” programme and all experts who delivered that talks deserve hearty appreciation.

The contribution of Professors of Rajasthan University of Veterinary and Animal Sciences, Bikaner, Dr. R. K. Tanwar, Dr. A. K. Kataria and Dr. T. K. Gahlot for the technical support they have extended to me in solving the clinical problems and the honourable Vice Chancellor Prof. (Col.) Dr. A.K.Gahlot for moral support is highly solicited.

Sincere thanks are due to the higher authorities of Indian Council of Agricultural Research, New Delhi for sanctioning the project and to Dr. M.S. Tantia, Principal Scientist & In-charge and Dr. Arjava Sharma, Project Coordinator and Director, ICAR-National Bureau of Animal Genetic Resources, Karnal for the kind of support they have extended in execution of the project. The Director, Scientists and all officers and staff members of ICAR-National Research Centre on Camel, Bikaner who have extended their whole hearted support in successful execution of the project, is duly acknowledged.

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Characterisation of Mewari and Jalori Camel

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Mewari Camel

INTRODUCTION

The evolution of camelids took place around 45 million years ago in North America. The earliest camelids was the rabbit-sized *Protylopus*. Around 35 million years ago, camelids such as *Poebrotherium* were about the size of a present day goat. The family diversified and prospered but remained confined to the North American continent until only about 2 or 3 million years ago, when representatives arrived in Asia, and South America.

Camelids across the world are reared for milk, meat, draught, race and tourism. They are distributed in the South American, African, Arabian and Asian countries. Apart from this a feral population exists in Australia and recent reports indicate that a few animals of the species are also being reared in Europe. Camel (*Camelus dromedarius*) is the predominant species of the camelids. The world has 27.73 m camels spread across 48 countries. Of the 48 camel rearing countries, 29 produces milk to the tune of 2.9 m tonnes per annum and 36 produces 0.53 m tonnes of meat per annum. Looking at the country wise statistics 27 countries produce both milk and meat and 10 countries produce only meat. Ukraine and Qatar produces only milk. Nine countries, including India, have neither been listed as milk nor meat producing countries. There are about 83 populations of the dromedary camel in the world spread mainly across African and Asian countries. There are about 3.04 m Alpacas in world with Huacaya and Suri as the two main populations and 3.24 m Llamas with Chaku and Kara as the two main populations. The Guanaco population in the world is about 0.5 m and that of Vicuna is 0.35 m. The wild Bactrian camels are around a thousand but the domesticated Bactrian camels are about 0.6 m.

The camelids occupy most difficult lands on the earth and hence they have developed several unique adaptive features for sustenance. Some of the important features are:-

1. They have a three-chambered rather than a four-chambered digestive tract.
2. The upper lip splits in two, with each part separately mobile.
3. The red blood cells are elliptical in shape.

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4. They also have a unique type of antibodies lacking the light chain, in addition to the normal antibodies found in other mammals. These so-called heavy-chain antibodies are being used to develop single-domain antibodies with potential pharmaceutical applications.
5. Tylopoda means "padded foot". They do not have hooves.
6. The two Afro-Asian camel species have developed extensive adaptations to their life in harsh, near-waterless environments.
7. Wild populations of the Bactrian camel are even able to drink brackish water.

The dromedary camel or Arabian camel (*Camelus dromedarius*) is a large, even-toed ungulate with one hump on its back. Dromedaries use a wide set of vocalizations to communicate with each other. They have various adaptations to help them exist in their desert habitat. Dromedaries have long eyelashes and the unique ability of closing their nostrils to face sandstorms. They can fluctuate their body temperature to avoid excess perspiration and have specialized kidneys, which make them able to tolerate even more than 30% water loss. The unique Red Blood Cells (Erythrocytes) of Camel (*Camelus dromedarius*) are non-nucleated but oval in shape. The camels are so adapted to the hot and arid climate that it can go days without drinking water, surviving extreme dehydration and safely losing 40% of its body weight. The oval Red Blood Cells (carrying oxygen) cross over the smallest blood vessels, even when blood thickens during severe dehydration. Further, the camel's Red Blood Cells are capable of expanding up to 240% of their original volume without rupturing, whereas most animals' cells can expand only up to 150%. This makes it possible for the camel to drink the necessarily large amount of water to recover from dehydration. The dromedaries are beneficial as beasts of burden, and their docility and toughness are additional advantages. The hair is an excellent source material for woven goods.

Globally there are 83 population of dromedary camel of which nine populations have been listed for the country. They are Bikaneri, Jaisalmeri, Sindhi, Kutchi, Marwari, Mewari, Malvi, Mewati and Shekhawati. But, since the population of camel in India has gone down from its ever highest of 1.10 million in 1977 to 0.4 million in the year 2012, several of the camel rearing tracts now possess very few animals without any breeding group. The dwindling camel population in the country is a matter of major concern for the conservation biologist, policy makers and the state governments. Still, the efforts of the Indian Council of Agricultural Research –National Bureau of Animal Genetic Resources, Karnal has helped the scientists to reach to those areas which were not covered earlier but still maintaining sizable population of the camel.

ORIGIN OF MEWARI CAMEL

Mewari camel derives its name from the erstwhile State *Mewar* ruled by the *Maharana* with its capital at Chittorgarh which was shifted to Udaipur in the year 1559. At present the *Mewar* State corresponds to the southern part of Rajasthan state in western India which includes the Chittorgarh, Rajsamand, Udaipur and Bhilwara districts of Rajasthan and Neemuch, Mandsaur districts of Madhya Pradesh and some parts of Gujarat. This state was mostly surrounded by the Aravalli hills and had good vegetation and rainfall. Due to the requirement to carry loads across the hilly terrains in this kind of climate, there developed a breed of camel from the hill camels of old Punjab which could thrive on the trees that grow in the hills and withstand more rains than other camels. This breed has also been referred to as mountain type or hill camels in the literature. Thus, the development of the breed was mainly for riding and baggage, but the present day use of the breed is milk production. Geographically the hilly terrains of *Mewar* continues through Bijoliya to Bundi, the capital of erstwhile state *Hadoti*, encompassing present Kota, Bundi, Baran and Jhalawar districts. Thus the breeding of hill camels probably took place predominantly in the *Mewar* and *Hadoti* regions. The camels of Mewari breed are reared mainly by the *Rebari* community.

GEOGRAPHICAL DISTRIBUTION AND BREEDING TRACT

The geographical distribution of the breed encompasses chiefly the *Mewar* area, i.e. Udaipur, Chittorgarh, Rajsamand, Pratapgarh, Dungarpur, Banswara, Bhilwara districts and *Hadoti* area, i.e. Kota, Bundi, Baran and Jhalawar districts, of Rajasthan. Thus the Aravali hills adjoin the Malwa plateau and bordering the water-course of Chambal River are the major geographical features of the tract. Chambal, Banas, Jakham, Chandrabhaga, Kalisindh are the major rivers and Jaisamand lake is the largest water body in the area. The tract has sizable land under reserve forest for the protection of vegetation and wild animals. The breeding tract extends in east from 76°73' to 72°80' longitude and in north from 22°55' to 25°42' latitude with fairly good vegetation and average annual rainfall ranging from 60 to 80 cm. Average elevation of the breeding tract from main sea level ranges from about 302 meters to 592 meters. The breeding tract of Mewari camel in south is closely placed with the Malwa region of Madhya Pradesh, the habitat of Malwi camel, and thus an admixture of the two populations in the bordering zones can be seen. The tract in north-western side is attached to relatively plain area of Sirohi districts which in itself has Pali- Marwar, the habitat of Marwari camel, on one side and Jalore, the habitat of Jalori camel, on the other side. The northern side of the tract is surrounded by the breeding tract of most numerous breed of camel i.e. Bikaneri camel.

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Breeding Tract of Mewari Camel

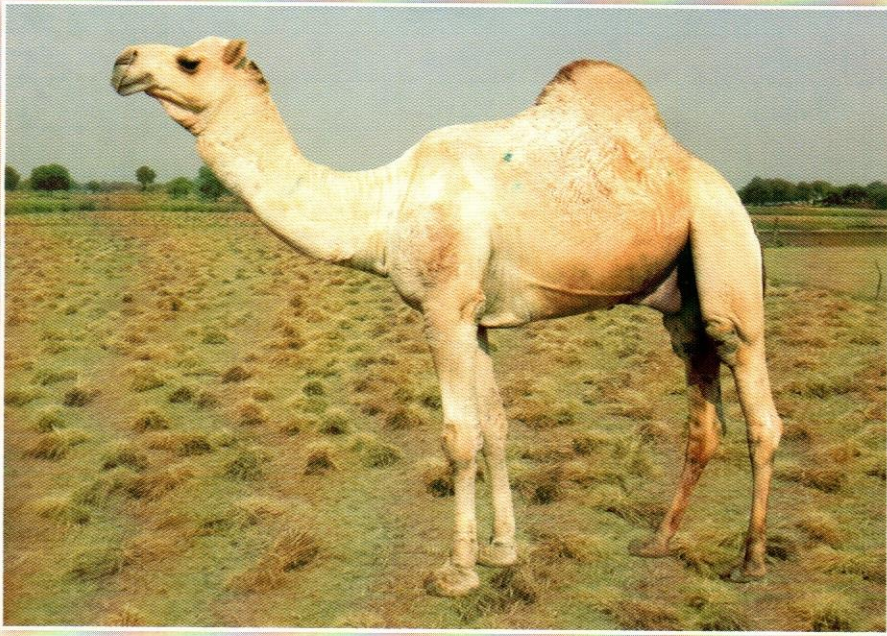
MEWARI CAMEL

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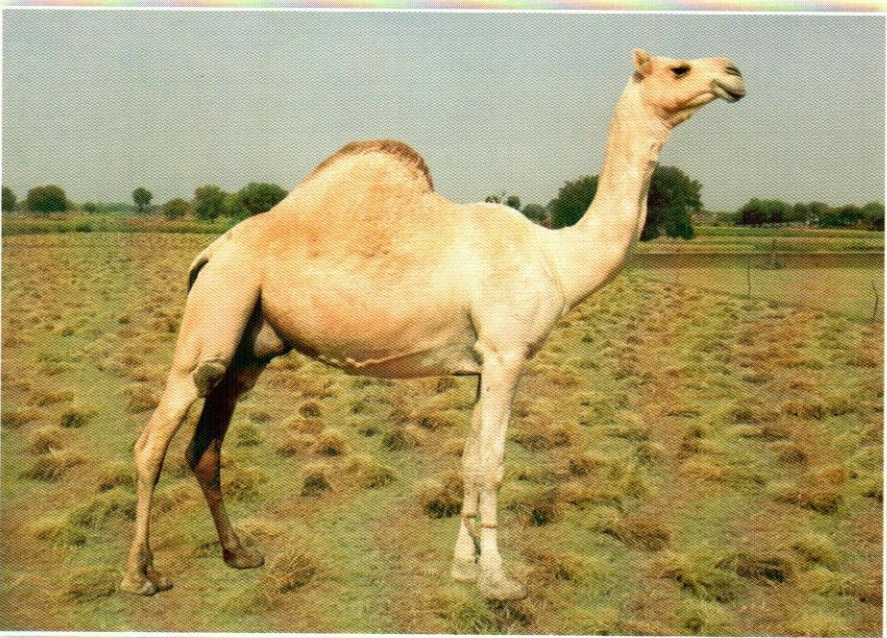
Table 1: Extent of survey for characterisation of Mewari camel

S. No	District	Tehsil	No. of Villages
1	Udaipur	Mavli	1
		Girwa	7
2	Pratapgarh	Dhariyawad	1
		Bhadesar	7
4	Rajsamand	Amet	1
		Nathdwara	3
		Rajsamand	5
5	Jhalawar	Jhalarapatan	1
		Khanpur	2
6	Kota	Ramganj Mandi	3
		Ladpura	3
		Sangod	1
		Kanwas	2
7	Baran	Chhipabarod	1
		Atru	3
		Chhabra	1
8	Bundi	Indergarh	2
		Hindoli	2
		Bundi	4
9	Bhilwara	Asind	1
		Bhilwara	4
		Jahazpur	1
		Kotri	1
		Mandalgarh	6
		Raipur	1
		Sahara	5
10	Dungarpur	Aspur	5
Total	10	27	74

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ADULT MEWARI MALE



ADULT MEWARI FEMALE

MEWARI CAMEL

Extent of Survey

Characterisation is an integral part of the conservation because only after proper characterisation the availability of breeding males, females and the population of a breed can be estimated. Hence, in order to have the true picture of the breed, the entire breeding tract was covered. The survey work was carried out in 74 villages of 27 tehsils belonging to 10 districts of the breeding tract (Table 1). Looking at the geographical features and frequent movement of camels, these 10 districts were grouped in to three zones. The Udaipur, Chittorgarh, Pratapgarh, Dungarpur and Banswara i.e. the *Mewar* and adjacent *Vagad* area was kept in the first zone; rest of the *Mewar* i.e. Rajsamand and Bhilwara was kept in the second zone and the Kota, Baran, Bundi and Jhalawar i.e. *Hadoti* region was kept in the third zone.

STATUS OF MEWARI CAMEL

The status of a particular breed with respect to its age-wise and sex-wise distribution in different zones of the breeding tract is very important. As per the Livestock Census 2012 (GoI), the total population of the Camel in the entire breeding tract is 19037, out of which about 33% population belonging to 199 households was covered in the present survey (Table 2 & 3). The morphometric traits were recorded for 1209 camels. Individual camel was judged for the breed characteristics and it was observed that in the first zone, i.e. Udaipur, Chittorgarh, Pratapgarh, Dungarpur and Banswara, the Mewari camels were 73.82 % and in second zone, i.e. Bhilwara and Rajsamand, the Mewari camels were 69.72 %. The majority of the crossbreds were showing the features of Bikaneri breed. Since the major source of breeding males for the breeders of Mewari camel is Pushkar fair which is invariably attended by most of the camel keepers of Rajasthan and adjoining states, they purchase Bikaneri males for breeding because of their better look and physic. However, in the third zone, i.e. Kota, Baran, Bundi and Jhalawar, the Mewari camels were estimated to be 85.63%. It was observed that in Bundi district the crossbreds were showing the features of Bikaneri breed but in the Jhalawar, Kota and Baran district the crossbreds of Bikaneri type were relatively less as they migrate towards Guna and Shivpuri in Madhya Pradesh. The overall population of Mewari camels in the breeding tract was estimated to be 14460 heads. The earlier estimates of the breed were relatively less as the extent of survey was restricted to the typical Mewar area, i.e. the Udaipur, Chittorgarh, Rajsamand and Pratapgarh districts. This is due to the current Network Project on AnGR, for the first time detailed survey of Bhilwara, Kota, Bundi, Baran, Jhalawar, Dungarpur, Banswara districts for knowing the status of Mewari camel was carried out and hence the population estimates improved.

In the present survey the ratio of breedable males to females was 1:16. The ratio is

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alarming and indicates the danger of loss of genetic variation in the future generations. The age-wise and sex-wise population of Mewari camels covered under the survey and status of the Mewari camels in the three zones and the breeding tract as whole is presented in Table 2 & 3 below.

Table 2: Age-wise and sex-wise population of Mewari camels covered under the survey

Sex	Age Group-wise Number of Camels Covered			
	≤ 1 Year	1-4 Years	>4 Years	Total
Male	558	384	164	1106
Female	515	703	2643	3861
Total	1073	1087	2807	4967

Table 3: Status of Mewari camel in the breeding tract

Zone	Districts	Camel Population*	Population Covered	Mewari Camels				Mewari (%)	Estimated Population of Mewari camel
				≤1 year	1-4 Years	Adults	Total		
1	Chittorgarh Udaipur Pratapgarh Dungarpur Banswara	7200	1039	176	191	400	767	73.82	5315
2	Rajsamand, Bhilwara	6227	1800	238	335	682	1255	69.72	4341
3	Baran, Bundi, Kota, Jhalawar	5610	3439	659	561	1725	2945	85.63	4804
	Total	19037	6278	1073	1087	2807	4967	79.12	14460

* Livestock Census 2012

DEFINING PHENOTYPE IN CAMEL

STOP (Depression) - Present



STOP (Depression) - Absent

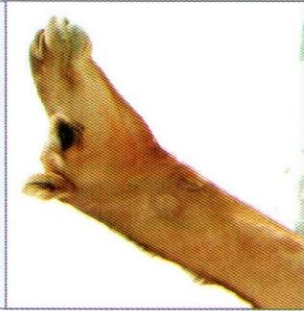


Jheepra (Luxuriant Growth of Hairs)

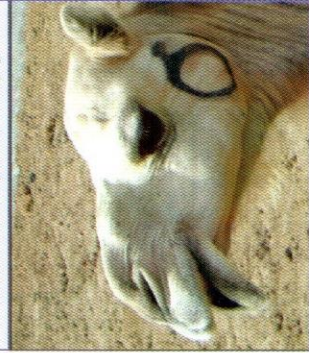
Present



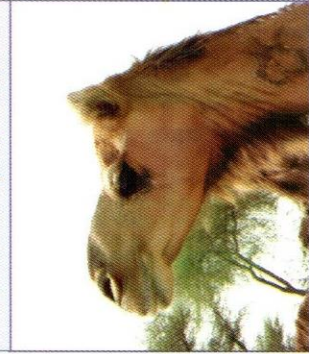
Absent



Lower Lip-Droopy



Lower Lip-Normal



BREED CHARACTERISTICS

Body Colour

The physical appearance of any animal is chiefly defined by the body colour followed by stature and other phenotypic characteristics. The predominant colour of Mewari camels is light brown. However, it varies from off-white to brown. When the calves are born, the body colour is generally lighter in shade and the hairs are curly. The body colour gets darker and the curls, they open with increase in age.

Head Profile

In camel, the distinguishing features of head are more pronounced and used for distinguishing the breeds more often than colour. The head in Mewari camel is small to medium in size. It gives a heavy look and is well-set on a thick neck. Unlike the Bikaneri camel, in Mewari camel, the forehead is normal in appearance and has no "Stop", which is a name given to a depression on the frontal bone at the upper edge meeting the parietal bone. The supraorbital foramen, which is in the form of a deep fissure at the rostromedial margin of the orbit, is normal in depth as compared to the Bikaneri camel, where it is deep. The muzzle is round in shape, unlike Jaisalmeri camels where it is pointed. Ears are thick, short and set well apart. The typical adaptive feature of desert camel, the "Jheepra" character i.e. the luxuriant growth of hairs on eye lashes, ears and around the neck, which is often observed in Bikaneri camel, is absent in Mewari camel. The lips are loose and the lower lip is not droopy as seen in Kachchhi camels. However, very few animals were observed with droopy lower lips. The droopy lower lip gives a look which is not preferred by the camel farmers of Rajasthan. The literature indicates that majority of the Kachchhi camels and sizable Mewari camels were having such a look in past but now this kind of look and hence the appearance is not seen in Mewari camels. Thus the present day Mewari camels are of active temperament and are good looking.

Body and Stature

The Mewari camels are stouter and have strong hindquarters, heavy legs, hard and thick foot pads. All these adaptive features indicate the change in body with the passage of time to sustain and serve the purpose of rearing in the stony hills of the area. The hump is small to medium in size.

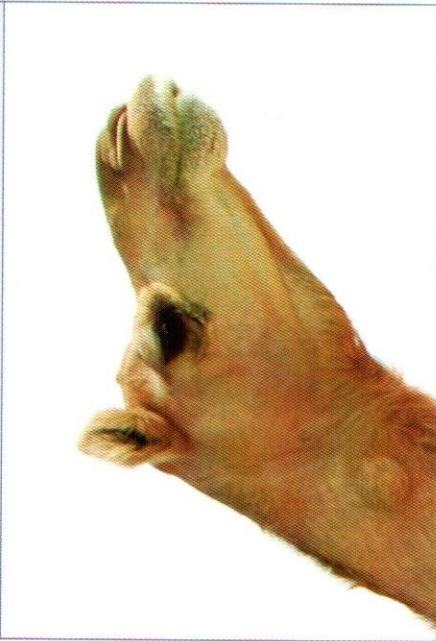
The body hairs are coarse in quality and medium in length. Tail is long and thick which helps the animals in protecting themselves from the insects which are abundant in the tract due to the dense forest and lot of vegetation that exists in the tract.

Udder Characteristics

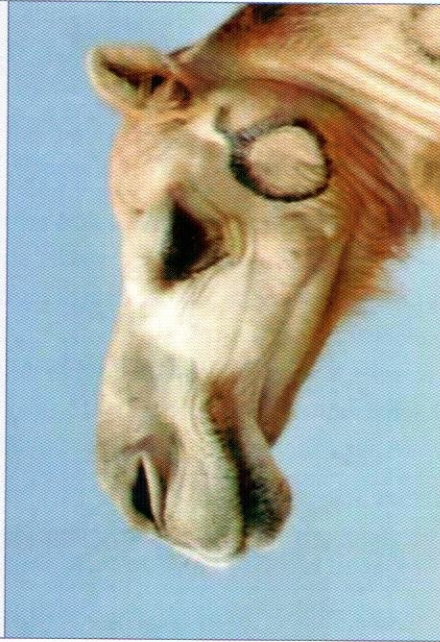
Though the origin and initial rearing of the Mewari camel refers to baggage and riding

DEFINING PHENOTYPE IN CAMEL

Muzzle-Pointed



Muzzle-Normal



Off-white



Light Brown



Brown



Dark Brown



Dark Brown to Black



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in the hilly terrains of the area but the present day use of these camels has been observed as the milk production for human utilisation. So, the selection for milk production has taken place in recent past and the milk vein is prominent and the udder is round and well developed in Mewari females. There are four quarters and each quarter has a small cone shaped teat with two canals in it.

Morphometric Characteristics

The camels of four year and above age are considered adult as the females as well as the males attain puberty at this age and the permanent incisors start erupting. However, the camels continue to gain weight significantly over previous year till eight years of age, which is generally noticed by the presence of prominent canines in the month. Looking at the length of growth phase, the morphometric traits have been presented separately for the calves of up to one year age, followed by adolescent camels of 1 to 4 years of age and then for adult male and female camels of above four years age (Table 4-7).

Table 4 : Morphometric measurements (cm) of ≤ 1 year Mewari camels (N = 371)

S.N.	Character	Mean \pm S E	Minimum	Maximum	CV%
1	Heart girth	138.86 \pm 1.15	71	186	21.01
2	Body length	102.98 \pm 1.36	45	148	25.48
3	Height at wither	144.18 \pm 1.13	76	174	15.01
4	Tail length	37.78 \pm 0.52	20	52	26.63
5	Neck length	68.86 \pm 1.10	30	102	30.86
6	Face length	29.60 \pm 0.34	13	41	21.91
7	Distance between eyes	15.13 \pm 0.20	7	25	25.85
8	Ear length	8.33 \pm 0.11	4	12	25.65
9	Fore leg length	121.93 \pm 0.82	81	150	12.07
10	Hind leg length	133.51 \pm 0.84	93	166	12.07
11	Foot pad (L/W)				
	i. Fore Leg (Length)	11.78 \pm 0.13	6	19	21.76
	(Width)	13.02 \pm 0.13	7	20	18.95
	ii. Hind Leg (Length)	10.76 \pm 0.14	5	17	25.59
	(Width)	11.94 \pm 0.14	5	18	22.81

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Table 5: Morphometric measurements (cm) of 1 to 4 year Mewari camels (N = 310)

S.N.	Character	Mean \pm S E	Minimum	Maximum	CV%
1	Heart girth	183.04 \pm 0.98	102	216	9.43
2	Body length	129.79 \pm 1.09	82	177	14.75
3	Height at wither	175.73 \pm 0.94	116	215	9.42
4	Tail length	39.30 \pm 0.51	25	64	22.72
5	Neck length	87.94 \pm 0.62	60	116	12.50
6	Face length	42.50 \pm 0.36	28	58	15.01
7	Distance between eyes	17.54 \pm 0.19	10	26	18.72
8	Ear length	9.46 \pm 0.08	7	13	15.51
9	Fore leg length	140.57 \pm 0.38	91	160	4.79
10	Hind leg length	150.84 \pm 0.38	106	170	4.40
11	Foot pad (L/W)				
	i. Fore Leg (Length)	15.74 \pm 0.12	7	22	13.63
	(Width)	16.88 \pm 0.12	9	24	12.01
	ii. Hind Leg (Length)	14.71 \pm 0.14	6	21	16.88
	(Width)	15.74 \pm 0.14	7	22	15.44

Table 6 : Morphometric measurements (cm) of adult Mewari Males (N = 95)

S.N.	Character	Mean \pm S E	Minimum	Maximum	CV%
1	Heart girth	215.3 \pm 1.60	135	235	7.26
2	Body length	153.83 \pm 1.47	112	185	9.29
3	Height at wither	195.73 \pm 1.63	117	228	8.13
4	Tail length	51.82 \pm 0.72	38	65	13.47
5	Neck length	99.80 \pm 0.99	74	112	9.63

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S.N.	Character	Mean \pm S E	Minimum	Maximum	CV%
6	Face length	46.53 \pm 0.54	38	58	11.29
7	Distance between eyes	20.43 \pm 0.26	14	26	12.34
8	Ear length	10.56 \pm 0.11	8	14	10.40
9	Fore leg length	149.51 \pm 1.02	127	170	6.65
10	Hind leg length	160.63 \pm 1.11	137	180	6.07
11	Foot pad (L/W)				
	i. Fore Leg (Length)	18.34 \pm 0.22	12	24	00.49
	(Width)	19.52 \pm 0.22	13	26	11.03
	ii. Hind Leg (Length)	16.63 \pm 0.21	11	21	12.47
	(Width)	17.76 \pm 0.23	10	22	12.64

Table 7: Morphometric measurements (cm) of adult Mewari Females (N = 433)

S.N.	Character	Mean \pm S E	Minimum	Maximum	CV%
1	Heart girth	215.21 \pm 0.67	129	235	6.45
2	Body length	157.22 \pm 0.60	100	185	7.92
3	Height at wither	195.89 \pm 0.65	116	230	6.95
4	Tail length	52.46 \pm 0.44	30	74	17.43
5	Neck length	99.27 \pm 0.55	70	132	11.48
6	Face length	47.00 \pm 0.27	33	62	11.80
7	Distance between eyes	20.07 \pm 0.12	15	26	12.50
8	Ear length	10.56 \pm 0.07	7	16	14.07
9	Fore leg length	150.45 \pm 0.45	130	170	6.23
10	Hind leg length	160.28 \pm 0.44	136	180	5.66

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S.N.	Character	Mean \pm S E	Minimum	Maximum	CV%
11	Foot pad (L/W)				
	i. Fore Leg (Length)	18.85 \pm 0.11	13	24	12.56
	(Width)	19.94 \pm 0.13	12	26	13.41
	ii.Hind Leg (Length)	17.00 \pm 0.11	11	25	13.97
	(Width)	18.15 \pm 0.13	10	24	14.34

Growth Profile

Growth of an animal is considered as an index of its health, production potential and reproductive performance. Thus, maintenance of proper body weight is essential for work performance as well as milk production. The body weight of healthy Mewari camels from birth to adulthood are presented in Table 8 below.

Table 8: Body weight of Mewari camel

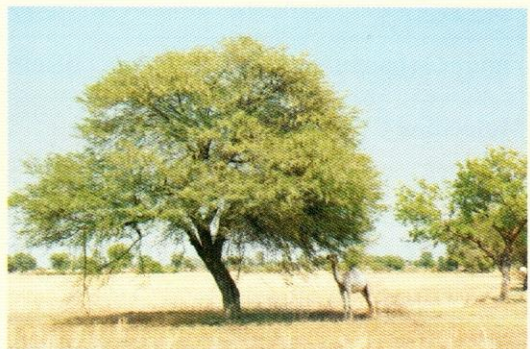
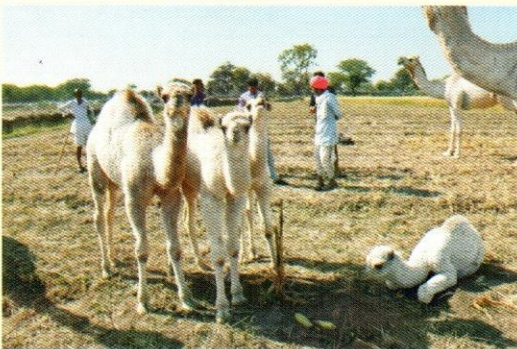
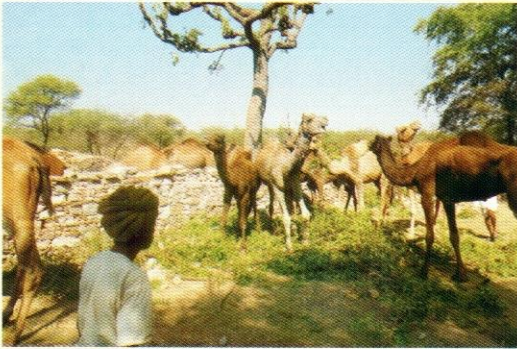
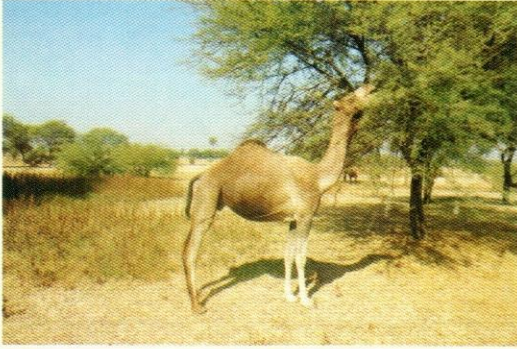
Age	Body Weight \pm Standard Error (kg)	
	Male	Female
Birth Weight	35.00 \pm 0.88 (29)	35.13 \pm 0.93 (32)
1 Year	237.64 \pm 8.72 (25)	231.19 \pm 9.90 (26)
2 Years	260.19 \pm 28.52 (16)	301.40 \pm 12.43 (20)
3 Years	421.64 \pm 13.08 (11)	372.95 \pm 14.44 (19)
4 Years	423.33 \pm 14.56 (6)	387.95 \pm 29.85 (21)
\geq 5 Years	556.51 \pm 12.11(35)	533.55 \pm 11.07(78)

Figures in parenthesis indicate number of animals

Molecular Characterisation

The molecular characterisation of Mewari camel was done using twenty five microsatellite markers. The genotype data generated in present study showed that significant amount of genetic variation is maintained in the Mewari populations. A total of 213 alleles were detected in Mewari with VOLP67 presenting the highest number of 20 alleles. The mean observed and effective number of alleles across all the loci was 8.52 \pm 0.977 and

Camel Genetic Resources of India



Grazing : Mewari Camel in the Breeding Tract

MEWARI CAMEL

4.552±0.688. Lower values of expected number of alleles as compared to observed number of alleles suggested that there were many low frequency alleles in the population. Number of loci deviating from Hardy Weinberg Equilibrium (HWE) ($P < 0.05$) was 10 in Mewari camel. Estimates of observed heterozygosity, 0.596±0.049 for Mewari confirmed the existence of remarkable level of diversity in the studied population. Observed heterozygosity was lower than expected heterozygosity and correspondingly analysis of F_{IS} evidenced some heterozygote deficiency (0.091±0.050). The studied population did not suffer any recent genetic bottleneck. The analyses showed that a significant amount of genetic variation is maintained in Mewari camel population.

Migration of Mewari Camel

The Mewari camels are being reared for milk production. In spite of the fact that camels cannot be fed on natural resources at one place for longer duration, the milking females need to be in reach so that everyday morning their milk can be collected and sold in the market. These camels generally move in the range of about 40-60 km all through the year. The average grazing distance is about 5 km and the average grazing hours are 8-10 per day. Apart from moving within the native district, the camels of Udaipur district generally move to nearby Chittorgarh and Pratapgarh districts; the camels of Chittorgarh district to nearby Pratapgarh and Neemuch districts; the camels of Dungarpur, Pratapgarh, Bhilwara and Rajsamand districts generally move to the adjacent districts; the camels of Bundi district move to nearby Tonk district. However, the camels of Kota, Baran and Jhalawar districts migrate up to Guna and Shivpuri districts in Madhya Pradesh. The camels of Banswara district migrate to nearby Ratlam and Malva area of Madhya Pradesh. The camels of Marwar area also migrate through the breeding tract of Mewari camel i.e. Rajsamand, Udaipur, Chittorgarh, Pratapgarh to reach the area near Sitamau in Mandsaur district. The Mewari camels mostly graze on the hilly strip which connects Rajsamand, Udaipur, Chittorgarh, Pratapgarh, Dungarpur, Banswara, Neemuch and Mandsaur districts. On the other side these hills connect Chittorgarh and Bundi via Bijoliya and join the Guna and Shivpuri districts. Mostly the tribal people they live in this area but still majority of these hills are still unoccupied and plenty of grazing resources are available on these hills. This area is rich in water resources and the quality of water is also very good. Irrespective of the breed and location, the camels in the Rajasthan are reared by *Rebaries*, which are also known as *Dewasi* or *Raikas*. During migration sheep can be seen accompanying the camel herds. Mostly, the camel owners of nearby locality put their camels in one herd during migration, so that the management becomes easier and the manpower can be utilised efficiently.

Camel Genetic Resources of India



Migration of Marwari Camel

MEWARI CAMEL

MANAGEMENT SYSTEM

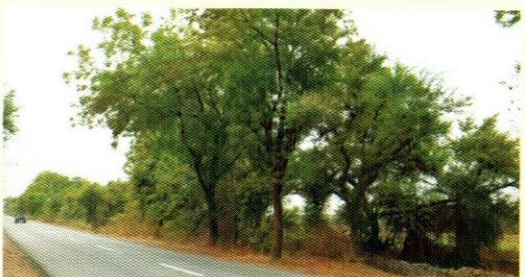
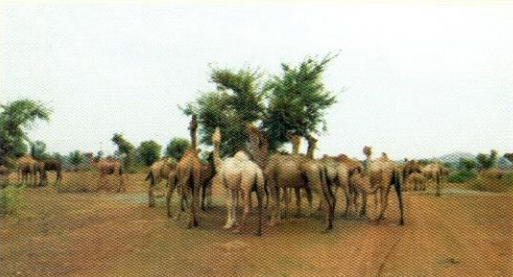
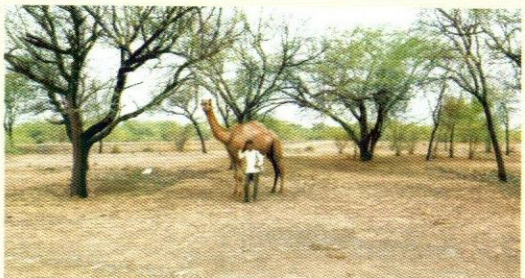
Housing and Grazing Management

Camels are mostly reared under extensive system of management. No housing is provided during day as well as night time except to those which are reared for transportation, tourism or entertainment. The camels are kept in open and some shelter may be provided during night time. Generally, the camel owners identify a place for temporary living for a period of about 4-5 days or longer depending on the availability of vegetation in the area. This place is generally referred as *Dera* in local dialect. This place can be any barren land or an agriculture field after harvesting of the crop. From this *Dera*, they run their life for the period of stay. The animals move out from here for grazing and return in the evening. The average daily grazing distance is around 5 km and grazing hours are around 8-10 depending on the season and fodder resources available in the tract. However, the migratory camels travel higher distances and hence the average grazing distance is around 11 km per day. The calves stay at the *Deras*. Since, the Mewar area has enough trees and the heat intensity during day is also not so high, as in the desert, the calves are kept under the shady trees during day time. The young calves are allowed to suckle their dams immediately when they return to this place in the evening. Depending on the demand, the camel owners milk the she-camels in the evening. The evening milk is generally consumed by the camel owners and their families and is not sold in the market. In the late evening, the camel owners tie the legs of their camels in sitting position so as to restrain them for the night time as well as to prevent the calves from suckling their dams. In the early morning, the camel owners milk the she-camels and the collected milk is sold in the market either by the camel owners themselves or by their relatives. The camel owners tie one bell in the neck of a leader camel, generally the adult male camel, which helps the camel owners in locating the camels during grazing. The foot marks and lying camel dung is also utilized for tracking the camels during grazing and migration.

Feeding Management

An adult camel requires about 10-12 kg of dry fodder per day for maintaining its body weight and performing normal physiological functions. The concentrate feed containing about 18 % crude protein can be supplemented in varying quantity depending on the production and work requirement. It is also recommended that the micro and macro nutrients, such as minerals and vitamins, are also provided to the camel in required quantity. However, it has been seen that apart from the camels which are being maintained for tourism, cart pulling and entertainment, the camels are not being stall-fed in the breeding tract of Mewari camel. However, the calves and animals requiring special attention may be fed at the

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Fodder Resources in the Breeding Tract

MEWARI CAMEL

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place of temporary stay i.e. *Dera*. The feed and fodder resources in the Mewari breeding tract are ample enough to feed the camels because of the vegetation available on the unoccupied hills, river course, unreserved forest area and road-side land. The camels graze mainly on the trees and the tree lopping's offer by the accompanying grazier. Neem (*Azadirachta indica*), Khejri (*Prosopis cineraria*), Babool (*Acacia arabica*), Israili babool (*Acacia tortilis*), Dhavra (*Anogeissus latifolia*), Mango (*Mangifera indica*), Fig (*Peepal*) (*Ficus religiosa*), Khair (*Acacia catechu*) are the common trees and Ber (*Zizyphus mauratiana*) and Ghat-ber (*Zizyphus xylopyra*) are the common bushes found in the tract and utilized by the camels. The offering of dry fodder is not practiced in the breeding tract. However, the crop residues e.g. Wheat straw (*Tritium aestivum*), Maize straw (*Zea mays*), fodder of locally grown leguminous crops like Groundnut fodder (*Arachis hypogea*), Chana (*Cicer arietinum*) chara etc. are generally available in the harvested agricultural fields and are also utilized by the camels. Bhurat (*Cenchrus cathaniticus*), Bhangta (*Aluda mutica*), Baroo (*Sorghum helipense*), Anjan (*Cenchrus ciliaris*), Doob (*Cynodon dactylon*), Munj (*Saccharum munje*) are the common grasses and camel may feed on them but generally they are not available to camel because the other livestock species like Cattle, Buffalo, Sheep, Goat etc. feed on them. Similarly the green fodder like Lucerne (*Medicago sativa*), Barseem (*Tripholium alexandrium*), Methi (*Trigonella foenum-graecum*), Bajra (*Penniseteum typhoideum*), Jowar (*Sorghum vulgare*) and Jai (*Avena fatua*) are also available in the breeding tract but only under special cases, they may be offered to the calves, advance pregnant and sick camels. A good number of camel owners provide salt to their camels. A few camel owners also offer concentrated feed in the form of feed pellets to the female camels in milk. The quantity and frequency of offering sweet oil (Groundnut, Mustard, Sesame and Linseed) and concentrated feed not only depends on the know-how and economic status of the farmer but also on the physiological state of the individual animal and economic returns expected out of it. Offering of sweet oil and jaggery to the breeding males, especially when are used for mating, is commonly seen to maintain their energy level.

There is no scarcity of water in the area. There are several water bodies in the area. Chambal, Banas, Jakham, Chandrabhaga, Kalisindh are the major rivers, there are several small dams and ponds. The open wells during monsoon season and tube wells are also good source of water in the tract. The Jaisamand Lake is the largest water body in the area. The Rajsamand and Pichhola Lake are also available in this breeding tract. The quality of water is also good.

Breeding and Reproductive Management

The age at puberty, age at mating and the age at first calving is about one year less in Mewari females as compared to the other breeds of camel in the country. In Mewari camels

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generally the signs of oestrus are seen at 2.5 years of age, successful mating takes place at an age of about 3 years and the first calving takes place at 4 years of age. Accordingly the number of calving in life time goes up to 8-9. The gestation period is 13 months and the inter-calving period is about 2 years. The females do not exhibit the signs of oestrus and are induced ovulating i.e. the ovulation is induced by seminal plasma and it generally takes place within 48 hrs. of mating. However, a receptive female is considered in oestrus. The Mewari male camels show puberty at an age of about 4 years. In male camels vocalisation, lack of appetite, frequent micturition and restlessness can be seen during this period. They through their inflated soft palate out of the mouth making lot of noise. The mating takes place, when the female camel is in sitting position. Human assistance in guiding the penis facilitates the mating. The average copulation time is about 4-5 minutes and the semen volume ejaculated per copulation is about 2.5 to 3 ml. The camel owners generally maintain one breeding male per herd, which may have about 15-20 breedable females. They do share the males for breeding. Generally, 1-2 males of 1-3 years of age are also kept in the herd as a replacer of the main breeding stud. However, the camel owners use their own wisdom and purchase adult male camel from other herds or from camel fairs for breeding their females, as per the need. The important Animal Fairs of the breeding tract are *Shri Kartik Pashu Mela*, Pushkar, Ajmer and *Shri Chandrabhaga Pashu Mela*, Jhalrapatan during November and *Shri Gomti Sagar Pashu Mela*, Jhalrapatan in the month of May every year.

Health Management

Irrespective of the breed and breeding tract, the camels suffer from Trypanosomiasis, which is popularly known as *Surra* or *Tibarsa* because the disease causes progressive weakness and lasts for about 3 years. It is caused by a blood protozoa *Trypanosoma evansi*. Almost every camel owner goes for prophylactic as well as curative treatment of this disease. A number of chemo-therapeutic ingredients are available in the market but the combination of Quinapyramine Sulphate and Quinapyramine Chloride is one among the safest drug. It is also recommended that the camel owners should not use Diminazine Aceturate, which is used in other livestock species against blood protozoans, because of the toxicity it causes in camels.

Mange is the second cause of worry to the camel breeder across the breeding tracts of different breeds of camel. It is caused by sarcoptic mite *Sarcoptes scabiei* var. *cameli*. Mange spreads by contact with infected animals or soil or surrounding. Improper management, malnutrition and overcrowding are generally the predisposing factors. It has been observed in the breeding tract of Mewari camels too. Fungal infection was also found associated with it. Ivermectin or doramectin injections along with antifungal treatment and external spray of Deltamethrin was found effective in curing the animals from this ailment.

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Pneumonia in young and adult camels is often observed in the camels. The camel owners go for systemic treatment in consultation with the veterinary officers. Round worms were not a big cause of worry and only the progressive camel farmers were going for prophylactic medication with Fenbendazole or Albendazole.

However, when clinical signs were observed the camel owners were going for the treatment. Generally, the broad spectrum antibiotics along with antipyretic and vitamins therapy cures the camels. Contagious ecthyma was also seen in young animals and the symptomatic treatment generally cures the animals. Very few cases of Mastitis and skin candidiasis were also seen in the tract.

Apart from the above infectious and systemic diseases, the Still Birth, Abortion, Dystokia and Retention of placenta have been reported as the other important health issues commonly faced by the camel owners in the breeding tract.

SOCIO-ECONOMIC PROFILE

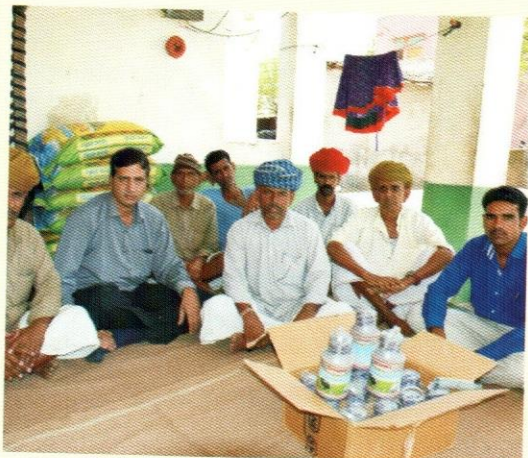
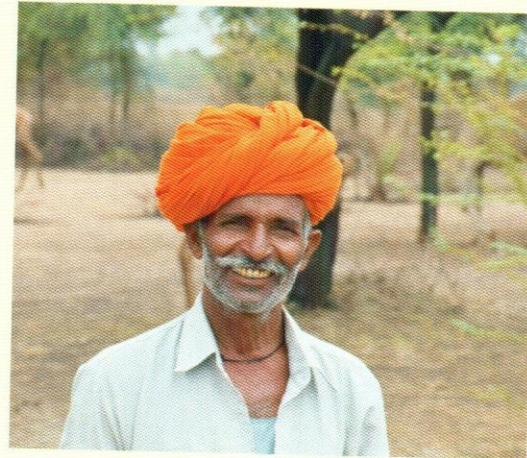
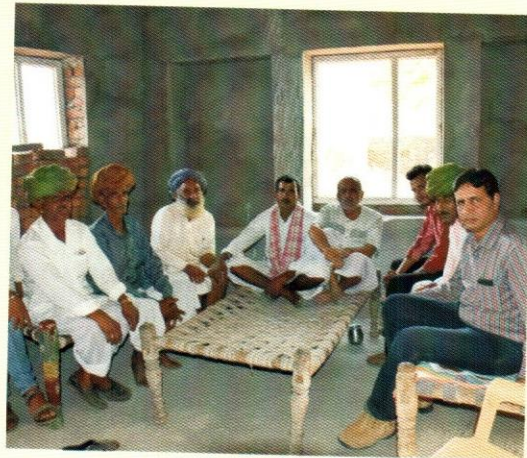
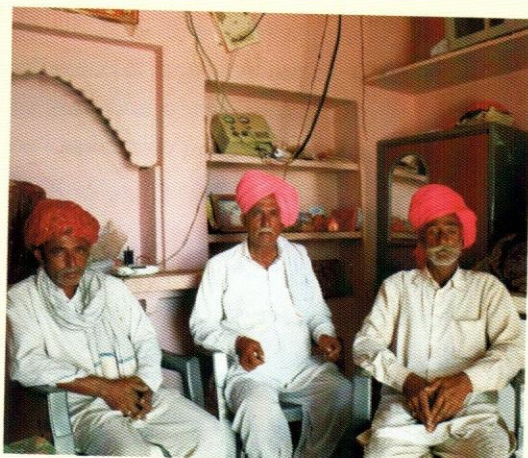
The average annual income of the camel farmers in the tract has been recorded as ₹ 48185. The camel farmers mainly belong to the *Rebari* community. About 17 % of the camel owners also rear cattle and 59% rear buffalos. The other livestock species reared by them are very less in number (Table -9). The average land holding is also very less (Table 10). In the entire breeding tract the camels are being reared for milk production. Sale of camel milk is the chief source of income to the breeders. However, the sale of extra animals, use of camel for domestic purpose and in tourism adds to the income of camel breeders. The

Total 9: Livestock species reared by the camel owners in the tract

Zone	Districts	No. of Household	Cattle	Buffalo	Sheep	Goat	Camel
1	Chittorgarh, Udaipur, Pratapgarh, Dungarpur, Banswara	47	46 (15)	20 (9)	2 (1)	53 (7)	1039 (47)
2	Rajsamand, Bhilwara	60	2 (1)	226 (32)	0	0	1800 (60)
3	Baran, Bundi Kota, Jhalawar	92	102 (18)	440 (77)	1 (1)	1 (4)	3439 (92)
	Total	199	150 (34)	686 (118)	21 (2)	70 (11)	6278 (199)

Figures in parenthesis indicate number of camel owners

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Socio-Economic Status

MEWARI CAMEL

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marketing chain for camel milk is good in *Mewar* area but it is relatively weak in *Hadoti* area. The use of camel hairs for preparation of items of domestic need contribute indirect income to the camel owners. Due to frequent change of place or continuous migration of the camels, the life of the accompanying person is very difficult and this is why the young generation is not opting the camel husbandry.

Table 10: Average land holding of camel farmers in the Mewari tract

Land in Bigha (0.625 Acre)

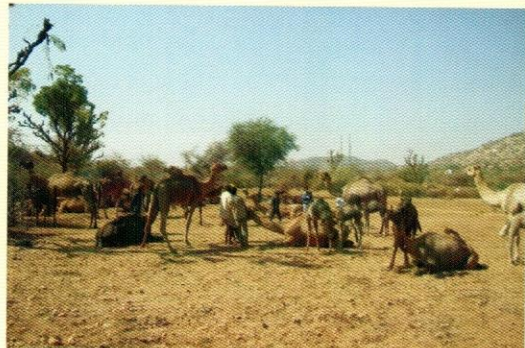
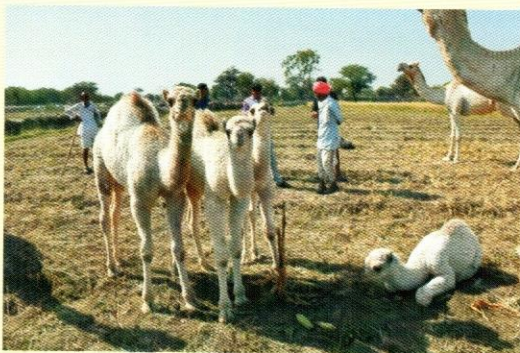
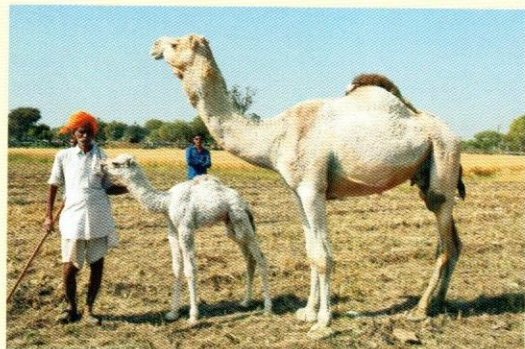
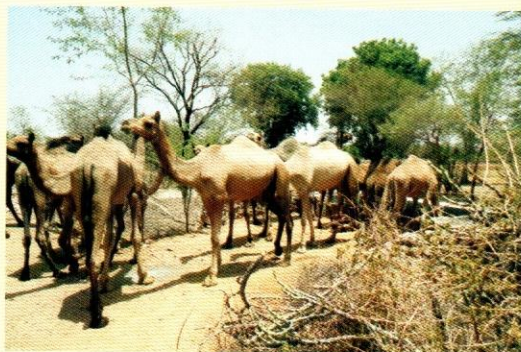
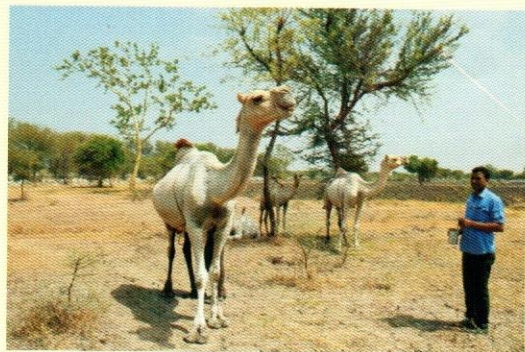
Districts	Total House Hold	Irrigated	Unirrigated	Total
Baran, Bundi, Kota, Jhalawar	92	1.67	0.58	2.25
Chittorgarh, Udaipur, Pratapgarh, Dungarpur, Banswara	47	2.19	1.28	3.47
Rajsamand, Bhilwara	60	2.90	0.87	3.77
Total	199	2.17	0.83	2.99

PRODUCTION OF MEWARI CAMEL

Milk Production and Quality

Since, the Mewari camels are mainly being reared for the production of milk, 31 she-camels were continuously recorded for a period of 11 months in the field area for their milk production potential (Table 11). Weekly recording of milk yield was carried out at the farmers door step. No special feed was being given by the farmers. Health was monitored throughout the lactation and milk production of only healthy animals was recorded. A few animals were dropped in the process. As per the practice adopted in the breeding tract, the farmers allow the calves to suckle in the evening and there after they tie the legs of the female and thus disallowing further suckling. In the morning, they milk the animals and after that they allow the calves to be with them for few hours and then separate the calves and take the dams for grazing. The morning milk production was measured and this amounts to about a half of the milk produced by the animal. In this manner, the average per day milk yield in Mewari camels was observed as 4.03 litres. The milk yield was high in initial four months averaging about 4.5 litres per day and it reduced to 3.6 litres per day in 11th month of lactation. It is clear from the data (Table 11) that the Mewari camels are producing on an average 8 litres of milk per day and during peak months the production is still higher. The selection of elite animals for breeding and proper feed supplementation can further increase the milk production and add to the income of camel farmers in the breeding tract. The camel milk in

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Production and Management

MEWARI CAMEL

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the breeding tract is solved for human use and is generally used for the preparation of tea and coffee. However, ICAR-National Research Centre on Camel, Bikaner has prepared a variety of products from the camel milk, the preparation and sale of such products may further add to the income of the farmers.

Table 11. Average per day milk yield of Mewari camels in the breeding tract

(milk yield in ml)

Month of Lactation	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
1	34	4794.12	478.597	82.079	4000	6000
2	130	4576.92	786.173	68.952	3000	6000
3	92	4336.96	774.273	80.724	2000	6000
4	88	4545.45	709.688	75.653	3000	6000
5	117	4196.58	967.037	89.403	2000	6000
6	120	3616.67	890.504	81.292	2000	5000
7	112	3460.71	857.858	81.060	1600	5000
8	118	4021.19	974.886	89.745	2000	6000
9	128	3828.13	897.147	79.297	2000	6000
10	122	3815.57	793.050	71.799	2000	5000
11	65	3653.85	754.792	93.620	3000	5000
Pooled	1126	4029.40	927.140	27.630	1600	6000

The analysis of milk quality was also carried out and the concentration of Fat, SNF (Solid Not Fat), Protein, Lactose and Ash was recorded as 3.50 %, 6.49%, 2.21%, 3.55% and 0.73%. The pH was recorded as 6.31.

Hair Production and Quality

The camel hair is used in making carpets, blankets, ropes and other items of day to day use. Fine quality hair is utilized for blanket making whereas coarse quality hair is used for carpet and rope making. These carpets and blankets are very cheap and durable. The life of a carpet is approximately 50 years and that of a blanket is 15 years. The rope made of camel hair is used for tying the animals and in making cots. The annual hair production from an adult camel is about 700 gm. The average fibre length was 5.62 cm, the average diameter is 40.44 μ and total medullation was 95.13% (Table 12).

Camel Genetic Resources of India

Table 12. Hair quality parameters of Mewari camel

Parameters	N	Mean± S E	Std. Deviation	Minimum	Maximum
Fibre Length (cm)	50	5.62±0.10	1.47	3.00	10.20
Diameter (μ)	50	40.44±2.14	15.11	19.25	89.79
Pure Fibre (%)	50	4.87±0.73	5.20	0.00	20.33
Medullated : Hetero (%)	50	25.46±2.21	15.63	2.66	52.66
Medullated : Hairy (%)	50	69.67±2.81	19.91	32.67	97.33
Total Medullation (%)	50	95.13±0.73	5.20	79.67	100.00

DRAUGHT

Mewari camels have multipurpose utility but camels of this breed are mainly classified as milch animals and baggage type. Both male and female can climb with loads on hilly and stony land. Males are good baggage animals on hard land. Camel carts in this area are generally confined to the mining area. Short distance transportation of bricks and other raw materials is done to a very limited extent. Camel carts act as a source of livelihood for landless and poor farmers especially during drought and lean period.

TOURISM

The use of camel in tourism is increasing significantly as it allows a person to live in the city area and due to increased inclination of the tourists to go for camel riding and safari, enough income is being generated by the camel owners. With the increased craze for taking selfie and for doing photography, people have started paying for taking photographs with camel. Though, the number of camels engaged for this purpose in this area is very less but recently an increase in this demand has been noticed.

EFFORTS FOR CONSERVATION

Rajasthan State Government Initiatives

Camel: Declared as the State Animal of Rajasthan

The camel has so far been used as a pride animal. It has been used as an iconic animal to symbolise Rajasthan by Government of Rajasthan, Rajasthan Tourism, Rajasthan Bank, BSF- Camel corps and several other organisation. Looking at the close association of camel in the art and culture of the society in the state and the current population status, the present Rajasthan Government has declared camel as State Animal of Rajasthan on June 30, 2014.

Thus “The Camel” became the first domestic animal to be declared as “State Animal” in this country and a Camel Development Policy was prepared. In brief, the policy is as under:-

I. Policy Support

- A. Act (i) Ban on Camel Slaughter (Complete Ban or Females complete ban and Males after selection) (ii) Restriction on camel export/migration
- B. Breeding Policy : New breeding policy with emphasis on camel milk production
- C. Sale of Camel Milk : Collection, processing and marketing of camel milk by organized sector (RCDF)
- D. Inclusion of camel in famine code
- E. Pasture Development: (i) Forest Area –Rational entry of camels for grazing, (ii) Pasture Land: Re-seeding and Plantation.

II. Incentives for Camel Breeding

- A. Support to camel breeders on birth of a camel calf –cash incentive for calf born, feed and mineral mixture for dams, treatment and other services.
- B. Loans, Subsidy and Insurance Support: Loan for new purchase, subsidy on sale of camel milk and insurance cover to all camels.

III. Breed Registration and Camel Breeders Association

For their own welfare and to address the smaller and localized issues

IV. Camel Development Cell

To look after all camel development activities

The Rajasthan Camel Bill 2015 Enacted

The state government took appropriate action for giving legal framework to the decision taken and “A Bill” for the formulation of act on above lines was prepared by the Animal Husbandry Department of the Rajasthan Government and it was named “The Rajasthan Camel (Prohibition of Slaughter and Regulation of Temporary Migration or Export) Bill, 2015”. After appropriate approval of the honourable President of the Country, the Bill was in enacted.

Camel Insurance

The Rajasthan State Government has launched an Insurance scheme named “*Bhamashah Pashu Bima Yojana*” for the livestock species including camel at subsidized rate. A camel owner can get maximum of five camels with a maximum cost of ₹50000/- per camel insured at a subsidized rate of 3.5 % for a period of one year or 9% for a period of 3 years. This premium is further reduced by 70% in case of Scheduled Caste (SC), Scheduled Tribe (ST) and Below Poverty Line (BPL) category, and by 50 % for general category.

Calf-Subsidy

It was felt that the camel owners are losing the interest in breeding their camels because a pregnant camel cannot be put to use for a substantial period and also to encourage the camel breeders to breed their camels at regular interval to have a check on the declining population of the species, the state government has launched a scheme worth ₹ 3135 lakh under Rajasthan Krishi Vikas Yojana (RKVY) for a period of 4 years. Under this scheme, a camel owner has to register his pregnant female camels and he will get ₹ 3000/- when the calf is born and attains an age of 1 month. The second instalment of ₹ 3000/- he will get when the calf attains an age of 9 months and the third installment of ₹ 4000/- he will get when the calf attains the age of 18 months. They will have to insure these animals and when they sale these animals, they will have to inform to the nearest Veterinary Hospital. The treatment of these animals will be done free of cost.

FSSAI Approval

The Food Safety and Standards Authority of India (FSSAI) under section 16 (5) of Food Safety and Standards Act 2006, operationalise the standards for camel milk on November 29, 2016. For the raw, pasteurised, boiled, flavoured and sterilised camel milk the standards are set to a minimum of 6.5% SNF and 3 % Fat.

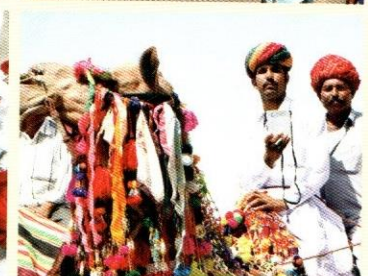
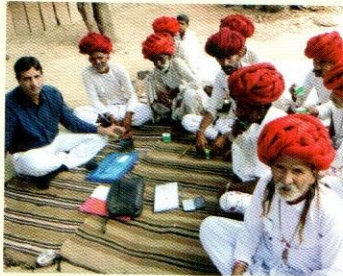
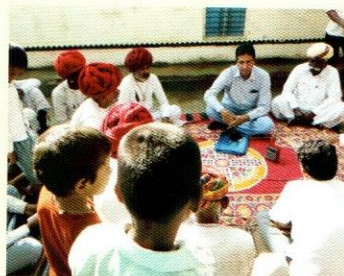
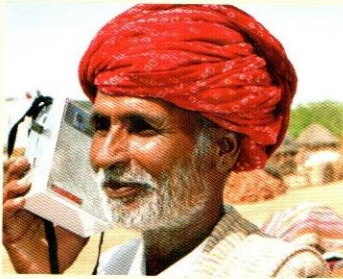
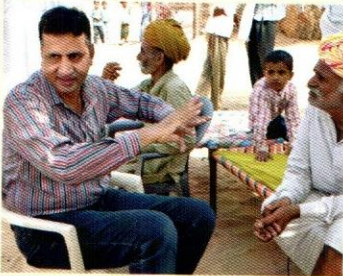
Network Project on AnGR and Associated Initiatives

Talks of Camel: A Mission for Conservation of Camel

Aggrieved by the declining population of the camel and poor condition of the camel farmers in the Country, at ICAR-National Research Centre on Camel, Bikaner, Dr. S.C. Mehta, Principle Scientist took an initiative in the year 2015 to help the State Animal of Rajasthan and named it as “Talks of Camel: A Mission for Conservation of Camel”. The ICAR-National Bureau of Animal Genetic Resources, Karnal supported this mission by funding for the Radio programme and other activities. This Mission had the following components:-

1. **Radio Programme-Untan Ri Bataan**(Talks of Camel) : Inspired by the “*Mann Ki Baat*” programme of Honourable Prime Minister, An All India Radio Programme “*Untan Ri Bataan*”(Talks of Camel) was broadcasted on every first and third Friday of the month from Bikaner, Jodhpur, Udaipur and Kota stations covering 21 districts of Rajasthan. The human population covered is about 4 crores. Three minutes time in the episodes was dedicated to answer the questions asked by the camel owners. In all 33 episodes covering different topics of camel husbandry were broadcasted. All episodes were uploaded on Google Drive and Sound Cloud and link posted on Facebook and

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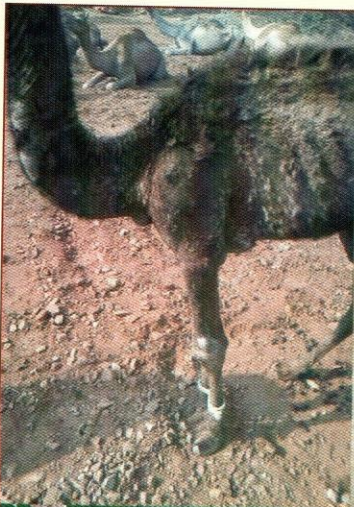
Talks of Camel : A Mission for Conservation of Camel

MEWARI CAMEL

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WhatsApp for easy access 24x7 through computers, laptops and cell phones.

2. **Talks of Camel “Untan Ri Bataan” Logo:** In order to give identity and better visibility to the programme, a Colourful Logo utilizing the tri-colours of the National Flag was designed and used since April 16, 2015. The Trade Mark No.308931 with **Registration Certificate No.1460454** has been issued and the Trade Mark published in the Trade Marks Journal No. 1761, 2016.
3. **Meeting with the Camel Farmers:** Knowing it well that in the present era also there are several Camel Farmers who doesn't listen to the Radio and are not aware of the Facebook, WhatsApp, You Tube etc., it was decided to organise the meetings and question-answer sessions with the camel owners on every first and third Friday of the month. Additionally, a good number of extended meetings were also organized wherein apart from the deliberation on a particular topic, discussion on policy issues, question-answer sessions and on-site treatment of sick animals was also done. In order to serve the society, 102 such meetings in 90 villages spread across the state having sizable camel population were conducted. A total of 1943 camel owners / stakeholders were educated during these meetings. The **Limca Book of Records** has recognized this work as **The National Record**.
4. **WhatsApp Group:** “Talks of Camel” group on WhatsApp was created to share the programme details, news items, disease photographs and links of talks uploaded on Google Drive and Sound Cloud. All through, it had 100 members including ICAR, SAU, Animal Husbandry Officers and Camel farmers.
5. **Cell Phone:** The camel farmers used the Cell phone to a great extent and maximum support in terms of veterinary health care has been extended using the Cell phone.
6. **Facebook Page-** "Talks of Camel": Page has been used to share the Programme details, National and International news items, disease photographs and links of talks uploaded on Google Drive and Sound Cloud.
7. **Sound Cloud-** "Talks of Camel Channel": Every month two experts delivered the Radio Talk on various aspects of Camel Husbandry. The same were uploaded after broadcast and their links forwarded to the stakeholders on WhatsApp, Facebook and through group email for 24x7 easy access by the computers, laptops and cell phones. Hundreds of people have listen to the “Talks of Camel” programme through this channel.
8. **You Tube -** "Talks of Camel Channel": The popularity of You Tube among cell phone users was also utilized for the purpose. All-important Talks delivered on All India Radio were converted into video films and uploaded on You Tube. The links were



A E Nivsarkar, Aashish ch...



A E Nivsarkar, Aashish ch...

राज्य पशु ऊंट संरक्षण के लिए अब चेती सरकार

पशु प्रगति 2007 में 2776 ऊंट 2012 में 2166

संरक्षण का संकल्प | **विशेषज्ञ** | **पाँच लाख में 610 ऊंट कम**

राज्य पशु एवं विज्ञान विभाग ऊंट के संरक्षण के लिए अब सरकार के तहत एक अलग प्रभाग में ऊंट की संरक्षा का काम करेगा। इससे ऊंट की संख्या में वृद्धि होगी।

ऊंटों के संरक्षण के लिए सरकार ने एक अलग प्रभाग का गठन किया है। इससे ऊंटों की संख्या में वृद्धि होगी।

यह मिशन अनुदान में

ऊंटों के संरक्षण के लिए सरकार ने एक अलग प्रभाग का गठन किया है। इससे ऊंटों की संख्या में वृद्धि होगी।

When I was presenting this slide on February 13, 2015 in the International Symposium held at Chennai, there were many questions especially from Dr. Ilse

Type a mess...

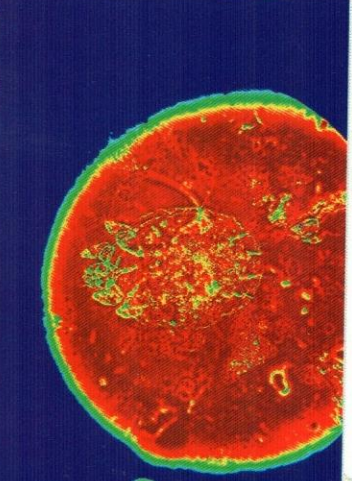
A E Nivsarkar, Aashish ch...

8:17 PM ✓

श्री कंवर लाल जी, विधायक मनोहर धाना, सुश्री टीना भील, जिला प्रमुख, श्री अनिल जी पोरवाल, नगर पालिका अध्यक्ष एवं सुश्री भारती नागर, प्रधान द्वारा प्रसार सामग्री का लोकार्पण

8:23 PM ✓

Type a mess...



A E Nivsarkar, Aashish ch...

Village - Nitoda tahsil - sirohi
1 motil devasi 2
piraram 3 obaram 4
lakaram devasi 5.
Ssvaram. 6.
Bhagavanrsm. 7
dudaram

7:37 PM

Type a mess...

Use of Latest IT Tools for Camel Development

BIG

UNAO, LIFE E

A E Nivsarkar, A K Gahlot, ...

Dear Sir/Colleagues
सुनने : ऊंटों की बाता का इक्कीसवाँ अंक
विशेषज्ञ : डॉ. एस. सी. मेहता, प्रधान वैज्ञानिक, राष्ट्रीय उष्ट्र अनुसन्धान केंद्र, बीकानेर
विषय : ऊंटों के संरक्षण के लिए समन्वित प्रयास की आवश्यकता
Please Listen: Twenty-First Episode of "Talks of Camel ऊंटों की बाता"
Expert: Dr. S. C. Mehta, Principal Scientist, National Research Centre on Camel, Bikaner
Subject: Need of Synergic Efforts for Conservation of

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e Agricultural Extension

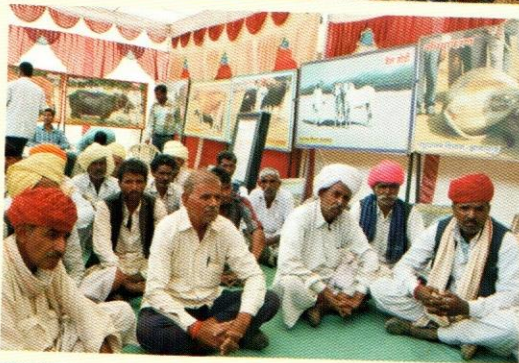
MEWARI CAMEL

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forwarded to the stakeholders on WhatsApp, Facebook and group email for 24x7 easy access. Hundreds of stakeholders have listen to the programmes of Talks of Camel through this App.

9. **Google Drive-**"Talks of Camel Folder": The space required to store one Radio Talk is about 27 MB. In order to facilitate the users, a folder named "Talks of Camel" on Google Drive was created for storing all the information, documents, photographs, audio and video files pertaining to this mission. The links were shared with the stakeholders through Facebook, WhatsApp and group emails.
10. **Treatment of Camel:** Around 2000 sick camels were treated for various ailments during this programme
11. **Group eMail :** Immediately after the broadcasting and uploading of the Radio Programme on Google Drive and Sound Cloud, the links were sent regularly to all staff members of ICAR-National Research Centre on Camel, Bikaner; Director and In-charge Network Project, ICAR- National Bureau of Animal Genetic Resources, Karnal; Project Director, Directorate of Knowledge Management in Agriculture, Indian Council of Agricultural Research, New Delhi; Deputy Director General (Animal Science), Indian Council of Agricultural Research, New Delhi and Experts. This was done to make the programme accessible to them at one click. The programmes were sent to Directorate of Knowledge Management in Agriculture, Library and Agricultural Knowledge Management Unit of ICAR -National Research Centre on Camel, Bikaner for sharing and storing the programmes in their eLIBRARY for subsequent use.
12. **Television Programme:** In order to create awareness in the general society about the conservation of camel and to support the camel farmers, ETV Rajasthan channel was contacted and they gave full coverage of the programme in News at Prime Time i.e. 7.30 PM on June 26, 2015. On Door Darshan Kisan Channel, this programme was covered in the Hello Kisan Programme, on August 4, 2016 and February 16, 2017. Additionally, the A1 TV channel covered the programme twice.
13. **FM Radio:** FM Radio is very popular in the cities. 92.7 Big FM was contacted and they covered the programme twice and broadcasted each of them two-three times in their morning session "Big Chai" spanning around an hour or more.
14. **News Papers :** All leading News Papers of Rajasthan i.e. Dainik Bhaskar, Rajasthan Patrika, Dainik Navjyoti and small News Papers like Yugpaksh, Abhay India, National Rajasthan, Thar Express, Desert Times, Thar Savera, Raftar, Khas Khabar etc. have continuously covered our programmes all through the year.

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Selection of Elite Animals and Prize Distribution

MEWARI CAMEL

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15. **Calendar, Posters, Banners, Pictures & Leaflets:** One attractive Calendar for the year 2016 focused on promoting camel husbandry was prepared and released on January 1, 2016. Very attractive posters, banners, pictures and leaflets were prepared for promoting camel husbandry.
16. **Documentary-**"Talks of Camel: A Mission for Conservation of Camel" documentary has been prepared to cover and highlight the components of the programme along with the feedback from the stakeholders and assessment of the impact among the camel farmers.
17. **Exhibitions-** Exhibitions on camel husbandry were organised at two places in Udaipur district and one each in Jhalawar and Pratapgarh districts to create awareness and improve the technical knowledge of the camel owners.
18. **Work Shop:** One day workshop with the Camel Milk Vendors was organised at Veterinary Polyclinic Campus, Udaipur to address various issues pertaining to sale of camel milk, human health benefits of camel milk, packaging, transportation and eMarketing of camel milk through websites etc.
19. **Camel Competitions:** In state level Chandrabhaga Fair 2015, in order to promote rearing of better animals for breeding and production and to encourage the camel owners various competitions were organised and 40 Camel Owners were honoured for the purpose.

IMPROVEMENT AND CONSERVATION OF MEWARI CAMEL

The utility of the species conserves it. The major source of income to the camel farmers in the tract is through sale of camel milk and surplus animals. The Open Nucleus Breeding Programme for increasing the milk production with its nucleus at the Government Farm or Research Centre and associated herds with the camel owners may lead to significant improvement in the production potential of the animals and increase their income. An integrated rotational grazing system, silvi-pasture development programme along with proper nutritional and health care support will facilitate the camel owners in rearing the camels *in situ*. Continued policy support and awareness programme will not only help the camel owners in maintaining the Mewari camel with diverse livestock species under optimum production but also will boost their morale and bring happiness in them.

Camel Genetic Resources of India



Workshop with Camel Milk Vendors

MEWARI CAMEL

Breed Descriptor

A. GENERAL DESCRIPTION

1. Name of the breed : Mewari
2. Local Names/Synonyms : Mewari
3. Species : Camel (*Camelus dromedarius*)
4. Background for such name : Named after the habitat: *Mewar*
5. Since when breed is known : Since long
6. Communities responsible for breeding : *Rebaris* are the traditional camel breeders
7. Native environment
 - a. Soil description : Mixed red & black soil
 - b. Mean min. temperature-summer : 28.8° C
 - c. Mean max. temperature-summer : 38.3° C
 - d. Mean min. temperature-winter : 11.6° C
 - e. Mean max. temperature-winter : 28.8° C
 - f. Mean relative humidity : 59%
 - g. Annual rain fall : 600-800 mm.
8. Feed and Fodder
 - a. Dry feeds : Wheat straw (*Tritium aestivum*), Maize straw (*Zea mays*), fodder of locally grown leguminous crops, Groundnut fodder (*Arachis hypogea*), Chana (*Cicer arietinum*) chara etc.
 - b. Green fodder : Lucerne (*Medicago sativa*) Barseem (*Tripholium alexandrium*), Methi (*Trigonella foenum-graecum*), Bajra (*Penniseteum typhoideum*), Jowar (*Sorghum vulgare*) and Jai (*Avena fatua*).
 - c. Grasses : Bhurat (*Cenchrus cathaniticus*), Bhangta (*Aluda mutica*), Baroo (*Sorghum*

Camel Genetic Resources of India

- helipense*), Anjan (*Cenchrus ciliaris*), Doob (*Cynodon dactylon*), Munj (*Saccharum munje*).
- e. Bushes : Ber (*Zizyphus mauratiana*), Ghat-ber (*Zizyphus xylopyra*).
- f. Trees : Neem (*Azadirachta indica*), Babool (*Acacia arabica*), Israili babool (*Acacia tortilis*), Dhavra (*Anogeissus latifolia*), Khejri (*Prosopis cineraria*), Mango (*Mangifera indica*), Fig (Peepal) (*Ficus religiosa*), Khair (*Acacia catechu*)
- g. Others : Sweet oil (Groundnut, Mustard, Sesame, Linseed), gur (jaggery) and common salt.

9. Housing

- a. During nights only : Mostly
- b. Day and night : None
- c. Housed in kutchha : Mostly
- d. Housed in puckka : None
- e. Open house : Mostly
- f. Closed type house : None

10. Water Sources

- a. Ponds (%) : 74.87
- b. Rivers : 14.57
- c. Tube well/ Well (%) : 10.55

11. Management

- a. Semi-intensive (%) : Negligible
- b. Extensive (%) : Mostly

12. Mating method

- : Natural service only
(Breeding season: December to February)

B. PHYSICAL CHARACTERISTICS

1. Coat color

Camel Genetic Resources of India

a. Very Light brown (%)	:	35.90
b. Light Brown (%)	:	59.39
c. Brown (%)	:	05.29
2. Hair on ears and eye lid (<i>Jheepra</i>)		
a. Absent (%)	:	100.0
3. Hair length		
a. Small (%)	:	28.54
b. Medium (%)	:	68.18
c. Large (%)	:	03.30
4. Head		
i. Size		
a. Small (%)	:	50.70
b. Medium (%)	:	20.93
c. Large (%)	:	28.37
ii. Stop (Bony depression above eyes)		
a. Absent (%)	:	100
iii. Fore head	:	
a. Normal (%)	:	100
iv. Supra-orbital fossa	:	Normal (not deep)
v. Muzzle	:	Loose
vi. Lips		
a. Normal (%)	:	98.35
b. Droopy (%)	:	01.65
5. Body size		
a. Small (%)	:	50.95
b. Medium (%)	:	20.93
c. Large (%)	:	28.12
6. Chestpad	:	Developed
7. Hump size		
a. Small (%)	:	51.50

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b. Medium (%)	:	22.50	
c. Large (%)	:	25.80	
8. Udder (females)			
a. Round (%)	:	99.22	
b. Pendulous (%)	:	00.78	
9. Milk vein (Females)			
a. Small (%)	:	05.54	
b. Medium (%)	:	03.54	
c. Large (%)	:	90.74	
10. Temperament	:		
a. Active (%)	:	93.05	
b. Dull (%)	:	06.95	
11. Morphometric characters (cm)			
		Adult Male	Adult Female
i Heart girth	:	215.3 ± 1.60	215.21 ± 0.67
ii Body length	:	153.83 ± 1.47	157.22 ± 0.60
iii Height at wither	:	195.73 ± 1.63	195.89 ± 0.65
iv Tail length	:	51.82 ± 0.72	52.46 ± 0.44
v Neck length	:	99.80 ± 0.99	99.27 ± 0.55
vi Face length	:	46.53 ± 0.54	47.00 ± 0.27
vii Distance between eyes	:	20.43 ± 0.26	20.07 ± 0.12
viii Ear length	:	10.56 ± 0.11	10.56 ± 0.07
ix Fore leg length	:	149.51 ± 1.02	150.45 ± 0.45
x Hind leg length	:	160.63 ± 1.11	160.28 ± 0.44
xi Foot pad	:		
i. Fore leg (Length)	:	19.52 ± 0.22	19.94 ± 0.13
(Width)	:	18.34 ± 0.22	18.85 ± 0.11
ii. Hind leg (Length)	:	17.76 ± 0.23	18.15 ± 0.13
(Width)	:	16.63 ± 0.21	17.00 ± 0.11

Camel Genetic Resources of India

12. Growth of Mewari camel (body weight in kg)

Age	Male	Female
i Birth Weight	: 35.00±0.88 (29)	35.13±0.93 (32)
ii 1 Year	: 237.64±8.72 (25)	231.19±9.90 (26)
iii 2 Years	: 260.19±28.52 (16)	301.40±12.43 (20)
iv 3 Years	: 421.64±13.08 (11)	372.95±14.44 (19)
v 4 Years	: 423.33±14.56 (6)	387.95±29.85 (21)
vi ≥5 Years	: 556.51±12.11(35)	533.55±11.07(78)

C. PERFORMANCE

1. Draught	: Fair
2. Dairy performance	:
a. Daily milk yield	: 4 liters per day (with calf suckling)
b. Lactation length	: 16 months
3. Hair production (Annual)	: ~700 gm per annum
4. Hair Quality	
a. Fibre Length (cm)	: 5.62±0.10
b. Fibre Diameter (μ)	: 40.44±2.14
c. Medullation (%)	: 95.13±0.73

D. REPRODUCTION

	Male	Female
1. Age at puberty	: 4 years	3 years
2. Age at first oestrus	:	2.5 years
3. Age at first mating	: 4.5 years	3.5 years
4. Age at first calving	: -	4 years
5. Inter calving period	:	2 years
6. Gestation period	: -	13 months
7. No. of calving	: -	8-9 in life time

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हर कदम, हर डगर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद

AgriSearch with a human touch

MEWARI CAMEL

'ऊंटा री बाता' अब महीने में दो बार

बीकानेर (ए. पत्रिका)

पत्रिका.com
'ऊंटा री बाता' कार्यक्रम को मिले सम्मान को देखते हुए आकाशवाणी पर इसका प्रसारण अब महीने में दो बार होगा। यह महीने के पहले एवं तीसरे बुधवार को बीकानेर, जोधपुर, उदयपुर एवं बीकानेर के जम्म 5.30 से 6.00 बजे तक प्रसारित होगा।

परियोजना अन्वेषक व राष्ट्रीय उद् अनुसंधान केन्द्र के प्रधान वैज्ञानिक डॉ. एस. सी. मेहता ने बताया कि अब इसमें ऊंटों के

संरक्षणक रोग- कातरा, घमास एवं उपचार पर विशेषज्ञ बताने लगे। इस बारे में डॉ. नितीन घससराण पारित, निदेशक, राष्ट्रीय उद् अनुसंधान केन्द्र, बीकानेर एवं आकाशवाणी बीकानेर के बीच सहायिता पत्र पर वार्ताकार लिखे गए हैं।

कार्यक्रम के तहत डॉ. मेहता ने उदयपुर, पाली, मिराठी, बीकानेर एवं बीकानेर जिलों में हुई कार्यशालाओं में कटावतकों से चर्चा की, उनको समझाए गए एवं कार्यक्रम से जुड़ने का आह्वान किया।

Fri, 03 July 2015
epaper.patrika.com/c/575700

उपयोगी है ऊंटनी का दूध



आहौर में ऊंट पालने को लेकर आयोजित कार्यक्रम में जनकपुरी देते हैं।

आहौर (ए. पत्रिका). कच्चे में राष्ट्रीय उद् अनुसंधान केन्द्र बीकानेर की ओर से ऊंटों के संरक्षण एवं ऊंट पालन को बढ़ावा देने की निरंतर पहलवात को ऊंट पालकों की संखिया का अद्ययजन किया गया। इसमें ऊंटों की महत्ता पर अकतार प्रकाश दिया गया। राष्ट्रीय उद् अनुसंधान केन्द्र बीकानेर के प्रधान वैज्ञानिक डॉ. एस. सी. मेहता ने बताया कि आज के समय में ऊंटों की संरक्षण मिशन बेहद अवश्यक है। इसके लिए उनको उपयोगिता बढ़ाना अनवी है। उन्होंने बताया कि ऊंटनी का दूध औषधीय गुणों से भरपूर है। ऊंटनी का दूध हाथीबटीज, टीबी, मंदबुद्धि,

हृदयकत संयोग विभिन्न बीमारियों में बेहद उपयोगी है। ऊंटनी के दूध में इंसुलीन व विटामिन सी की मात्रा अधिक होती है। उन्होंने ऊंटों के संरक्षण व पालन को बढ़ावा देने पर और किया। इसके लिए उन्होंने पर्यटकों को आगे आने की बात कही। परियोजना परियेकक कल्पेज ऊंटनी में ऊंटों की बीमारियों एवं उनके निदान के बारे में पर्यटकों को जानकारी दी। इस मौके पर भावराव देवसरी, उकरिंह राव, चरवीरय, नरसाराव, रणधीराव, तलसाराव, साराव, कपराव, पैराव, कमाने कई पर्यटकक मौजूद थे।

'ऊंटों री वातां' में चिंता का विषय बनी ऊंटों की गिरती संख्या

राष्ट्रीय उद् अनुसंधान केन्द्र

जनजातीय उपजाऊक में संघाम में दो दिवसीय कार्यक्रम में शिवां लहरील के पाली बाघ में पशु/किसान एवं प्रसार विभाग व ऊंटों री वातां की 97वीं बैठक में ऊंटों की गिरती संख्या में चिंता जताई गई। प्रभाती अधिकारी डॉ. एस. सी. मेहता ने बताया पालन को अनुसंधान करने के लिए शरदान बसारा एवं कक्षा कि अतले जाल इका कार्यक्रम में चकरी चलाने एवं विशेषज्ञ का प्रवास किया जायगा। ऊंटों को उन्नीमें पैदाऊ क्षेत्र में दूध के लिए बहुत सी उपयोगी कलाय एवं कक्षा कि मेवाऊ क्षेत्र में प्रति व्यक्ति दूध उत्पातकक बहुत कम है एवं अवर ऊंट पालन नही होता तो यहां बहुत अधिक नकनी दूध बाजार में आ कता। इसकोर पर्यटकों प्रशिक्षण संस्थान के वरिष्ठ प्रशिक्षण अधिकारी डॉ. सुरेंद्र छुंरकने ने बताया कि राज्य में ऊंट पालन ऊंट की संख्या में प्रदेश अतर पर हो रही गियाऊ चिंता का



विषय है। पालनका 2012 के अनुसार अनुसंधान संख्या मकर 3.25 लाख है। जबकि देश में इनकी कुल संख्या 4.24 लाख है। देश के कुल ऊंटों का 82 प्रतिशत प्रदेश में है, जबकि दूसरे व तीसरे स्थान पर गुजरात व हरियाणा है। जहां इनकी संख्या क्रमशः 30415 एवं 18845 ही है। राज्य में ऊंटों की संख्या में निरंतर कमी होत जा रही है, जो चिंता का विषय

है। राज्य में ऊंटों की संख्या का अनुमान करने की स्पष्ट रीति 1972 की गणना में राज्य में कुल 7.45 लाख ऊंट थे, जो उस समय के राज्य के कुल पशुधन का 1.92 प्रतिशत था। अब पशुधन का 0.69 प्रतिशत ही ऊंटों की संख्या है। निरन्तर रूप से ऊंटों के संरक्षण संघर्षन कल्याण एवं विकास की आवश्यकता महसूस की जा रही है।

ऊंटपालकों तक पहुंचेगी एनआरसीसी

उद् अनुसंधान केन्द्र ने लान किया 'ऊंटों री बातां' कार्यक्रम

राष्ट्रीय उद् अनुसंधान केन्द्र बीकानेर में शुरू किया जा रहा है 'ऊंटों री बातां' कार्यक्रम। इस कार्यक्रम में ऊंट पालकों को ऊंट पालन के महत्व, ऊंट पालन के तरीके, ऊंट पालन के उपकरण, ऊंट पालन के खर्च, ऊंट पालन के लाभ, ऊंट पालन के खतरों, ऊंट पालन के नियम, ऊंट पालन के आदर्श, ऊंट पालन के सफलता के कारक, ऊंट पालन के असफलता के कारण, ऊंट पालन के सुझाव, ऊंट पालन के अनुभव, ऊंट पालन के प्रश्नोत्तर, ऊंट पालन के चर्चा, ऊंट पालन के निष्कर्ष, ऊंट पालन के सारांश, ऊंट पालन के अतिरिक्त विषयों पर चर्चा होगी।

पशुधन विभाग, जोधपुर

राष्ट्रीय उद् अनुसंधान केन्द्र बीकानेर में शुरू किया जा रहा है 'ऊंटों री बातां' कार्यक्रम। इस कार्यक्रम में ऊंट पालकों को ऊंट पालन के महत्व, ऊंट पालन के तरीके, ऊंट पालन के उपकरण, ऊंट पालन के खर्च, ऊंट पालन के लाभ, ऊंट पालन के खतरों, ऊंट पालन के नियम, ऊंट पालन के आदर्श, ऊंट पालन के सफलता के कारक, ऊंट पालन के असफलता के कारण, ऊंट पालन के सुझाव, ऊंट पालन के अनुभव, ऊंट पालन के प्रश्नोत्तर, ऊंट पालन के चर्चा, ऊंट पालन के निष्कर्ष, ऊंट पालन के सारांश, ऊंट पालन के अतिरिक्त विषयों पर चर्चा होगी।

राष्ट्रीय उद् अनुसंधान केन्द्र बीकानेर में शुरू किया जा रहा है 'ऊंटों री बातां' कार्यक्रम। इस कार्यक्रम में ऊंट पालकों को ऊंट पालन के महत्व, ऊंट पालन के तरीके, ऊंट पालन के उपकरण, ऊंट पालन के खर्च, ऊंट पालन के लाभ, ऊंट पालन के खतरों, ऊंट पालन के नियम, ऊंट पालन के आदर्श, ऊंट पालन के सफलता के कारक, ऊंट पालन के असफलता के कारण, ऊंट पालन के सुझाव, ऊंट पालन के अनुभव, ऊंट पालन के प्रश्नोत्तर, ऊंट पालन के चर्चा, ऊंट पालन के निष्कर्ष, ऊंट पालन के सारांश, ऊंट पालन के अतिरिक्त विषयों पर चर्चा होगी।



ऊंटों री बातां कार्यक्रम लान किया

ऊंट संरक्षण पर कार्यशाला

राष्ट्रीय उद् अनुसंधान केन्द्र बीकानेर की ओर से सोमवार को धांता गांव में ऊंटों के संरक्षण के लिए कार्यशाला का आयोजन किया गया। कार्यशाला के मुख्य अतिथि उद् अनुसंधान केन्द्र बीकानेर

के प्रधान वैज्ञानिक डॉ. एस. सी. मेहता ने कहा कि आज के समय में ऊंटों का संरक्षण अति आवश्यक है। इसके लिए उम्की उपयोगिता बढ़ाना जरूरी है। मेहता ऊंटनी के दूध को औषधीय गुणों से भरपूर बताया।

उन्होंने ऊंटनी में इंसुलीन एवं विटामिन सी की मात्रा अधिक होती है। इसलिए इसके दूध को डायबिटीज, टीबी, मंद बुद्धि, हृदयघात के लिए लाभदायक बताया। कार्यशाला का आयोजन देवावाम देवानी ने किया।

केसूली में पशु किसान संगोष्ठी आयोजित

भास्कर न्यूज, सूरी

निकटवर्ती केसूली गांव में स्थित ममाजी महाराज मंदिर प्रांगण में विचार को पशु किसान संगोष्ठी एवं ऊंटों री बातां कार्यक्रम का आयोजन राष्ट्रीय उद् अनुसंधान केन्द्र बीकानेर के प्रमुख वैज्ञानिक डॉ. शरतचंद्र मेहता की अगुवाई में हुआ। इस मौके



पर मेहता ने कहा कि वर्तमान स्थिति में ऊंटों का संरक्षण उम्की उपयोगिता

बढ़ाकर की जा सकती है। ऊंट का दूध मानव के लिए बहुत उपयोगी है। पर्येकक राजेंद्रकुमार ने ऊंटों में होने वाली बीमारियों की रोकथाम के बारे में जानकारी दी। इस अवसर पर केसूली उपमण्डल के गुमानसिंह, वेददाकारा, भंवरसिंह, वेरावाम, भावराव, मोटाराम देवानी, सारावाम राईका, केसाराव चौधरी सहित ग्रामीण मौजूद थे।

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