

## **Characterization and significance of Raigi camel, a livestock breed of the Pashtoon pastoral people in Afghanistan and Pakistan.**

A.Raziq<sup>1\*</sup>, A. M. Tareen<sup>2</sup> and K. de Verdier<sup>3</sup>

<sup>1</sup>Society of animal, veterinary and environmental Scientists (SAVES) Pakistan.

\*E-mail: [raziq2007@gmail.com](mailto:raziq2007@gmail.com)

<sup>2</sup> Department of Microbiology, University of Balochistan, Quetta, Pakistan

<sup>3</sup>Department of Animal health and antibiotic strategies, National veterinary institute, 751 89 Sweden

### **ABSTRACT**

The Raigi camel in Pakistan and Afghanistan is an indigenous multipurpose breed with considerable milk production potential (6-10 l/day) under ordinary grazing conditions on salt bushes and brackish water. The milk is used locally for drying (Kurth) because of its high total solids. Meat, wool and transport are additional products. Body measures for the Raigi camel are (in average) wither height 164 cm, rump length 139 cm, sternal pad distance from the ground 90 cm, canon bone circumference 20 cm, breast width 43 cm and the estimated live weight is 374 kg.

The Raigi camel represents a valuable genetic resource for present and future food production. Immediate measures are necessary to ensure its survival as a separate gene-pool. These measures include the conservation of the habitat ecosystem and the recognition of the rights of the Pashtoon pastoral people to make their living on livestock keeping in the Khurasan region.

Keywords: dromedary, ecosystem, sustainable, food security.

### **1.0 INTRODUCTION**

#### *Pastoral people*

Pastoral people have developed and preserved unique breeds of livestock and traditional knowledge associated with them. Their pastoral lifestyle has developed the co-evolved ecosystems which they have traditionally conserved and sustainably used. Their spiritual universe is linked to their livestock breeding, and their ethnicity is inextricably intertwined with the animal breeds and way of life. This means that their livelihoods and the survival of their particular breeds are based on access to the lands and forests. In turn, their animals help conserve the biodiversity of the local ecosystems they graze within (Pashtoon Biocultural Community Protocol 2010).

#### *Pastoral animal breeds*

The animal breeds of the pastoral people are multipurpose. Through their interaction with the forests and rangeland, and through selective breeding for generations they have created breeds that are

particularly hardy, able to forage and digest rough vegetation, withstand the dry and harsh environment, walk long distances, highly adapted to the mountainous ecology and resistant to many diseases and parasites – all attributes that “high performance” exotic breeds do not have. The animal genetic diversity they embody enables the pastoral people to respond to changes in the natural environment, important attributes in the context of climate change adaptation and food security and sovereignty. The genetic traits of the breeds and the traditional knowledge associated with them will also be of use in breeding for disease resistance in the future (Pashtoon Biocultural Community Protocol 2010).

#### *Characterization of breeds*

The pastoral people know the important and salient traits of a local breed, so the breed must be characterized in their own perspectives. First, the socioeconomic circumstances in which the breed exists must be documented (Köhler-Rollefson, 2005). The socioeconomic data is also helpful for separating the breed (Simianer, 2005). Characterization of a breed comprises performance traits, adaptation traits, special traits like drought and disease tolerance, and biomolecular studies (Grund, 2004). Local breeds of camels can be categorized similar to cattle into beef, dairy, dual-purpose and racing (Wardeh, 2004), although camels are very rarely reared just for their meat and racing camels are consistent with other camel breeds (Payne and Wilson 1999). For documentation of camel breeds in India, information about socioeconomics and habitat ecology, physical characteristics and productivity, management and production systems were included (Köhler-Rollefson and Rathore, 1996).

#### *The Raigi camel in Pakistan and Afghanistan*

The dromedary camel is one of the major livestock species reared by Pashtoon pastoral people. The Raigi camel breed is found in the Kakar Khurasan region of Killasaifula and Zhob districts of northeastern Balochistan and the nearby Afghan provinces of Paktika, Ghazni, Zabul and Qandhar, and was previously used for salt transportation. It is well adapted to the ecosystems and climatic extremes, the brackish water and the salty vegetation. It is significant in the pastoral economy (Raziq and Younas, 2006) and socio-economic culture (Knoess, 1977), and represents an indigenous animal genetic resource.

#### *Aim*

The aim of this study was to characterize the Raigi camel breed in the context of habitat ecology, socioeconomics, management and production system, and to evaluate its significance for the future.

## MATERIALS & METHODS

The study was performed in 2007-2008. Information was collected by the first author from interviews with 32 herders and from observation. Camels were measured with the method described by Schwartz and Dioli (1992) and Grund (2004).

## RESULTS

*Habitat ecology:*The Khurasan region is an area with arid climate and dryland ecosystem, sandy and mountainous and undergoing progressive desertification. The region is part of Toba Kakar Range (31°12'N, 68°28'E). The altitude varies between 2,500 m and 3,300 m. The area is characterised by dry cold winters (average mean temperature 4°C) and warm summers (average mean temperature 26 °C). Heavy snow often falls in winter and violent thunderstorms and dust storms occur. The soil is composed of fertile loamy clay. Shrub-steppe plant communities dominate the landscape: bunchgrasses, forbs, *Ephedra* sp., *Artemisia* sp. (Tharkha), *Haloxylon* (Shori, Perrki) etc. on the upland slopes and *Cargana* sp. and *Tamarix* sp. where water is available. Trees are scarce but include wild almond (*Amygdalus brahnica*), juniper (*Juniperus macropoda*), and wild pistachio (*Pistacia khinjuk*). (The Balochistan Gazetteer, 1991). Wheat is the major crop and lucerne is cultivated for horse and donkey fodder.

*Socioeconomics* Khurasan has a rich history and is well known for its animal agriculture. Avesta, the holy book of Zoroaster, considers the area which at that time was called Arya Warsha (grazing place). The word Warsh is still in use in Pashto for grazing land. The region is closely linked to the Pashtoon ethnic group; Suleiman mountainous region is their historical home tract. The believed birth place of Kais, the father of Pashtoons, is the famous Kase Mountain in Zhob district. Kharspoon, the grandson of Kais was believed to rule on the present northern Balochistan and Southern Afghanistan (Habibi, 1999). The Khurasan region was divided 1892 by the Durand Line in the Kakar (Pakistan) and Ghilzai (Afghanistan) parts. Today, Pashtoon nomadic and transhumant tribes live in Khurasan region. Some nomads are long traveling (e g Dotani, Akakhail and Umerzai tribes). They cross Khurasan in the summer and reach the Hazarah County in central Afghanistan. In the winter they cross Suleiman mountainous region and reach the Indus river delta. They mainly use dromedary camel (Gaddai breed) for this purpose.

Other nomads are intermediate range traveling (e g Safi, Kakar, Suleimankhail and Babozai tribes). They stay in Khurasan in summer and their winter destination is the Suleiman region. They mainly use donkeys (Shingharri breed) for the transportation of their luggage.

The transhumant (semi-nomadic) people travel inside the Khurasan region either in Pakistan or Afghanistan, but some families travel up to Musakhail district of Balochistan province in winter. They use donkeys for their migration, but some of them also use camel and cattle.

The nomadic people travel south western along with the border on both sides and reach to the Raigi (Raigistan) desert of triangle i.e. Afghanistan, Pakistan and Iran. They stay there in the winter and return to Khurasan in the summer. Khurasani goat and Jiggie sheep are their breeds. In Khurasan, camel is being used mainly as baggage animal by the pastoral people, who travel with their families along with the Durand Line and stay near Kandhar, Hirat, Farah, and Kurrum area of Chaghai district in Balochistan.

### Camel management and production:

The Raigi camel in Khurasan region is used mainly as baggage animal, but also for milk and meat production, and wool for bedding material, tents and rugs netting. Milk is consumed fresh. The surplus milk is fermented (Shlombey) or dried (Kurth). The meat of camel is traditionally dried (Landi) and used during the winter.

Raigi camel like other food livestock is also slaughtered on special occasions in religious rituals like Eid ul Azha and Sadaqa. The markets of the cities like Ghazni, Zabul, Kandahar and other cities of Afghanistan are the main markets for the meat. Some animals reach to the meat market of Zhob in Pakistan. A new

and increasing trend is illegal export of camel to Iran for meat.

The population of the Raigi herders comprises approximately 300-500 households, but the exact figure is hard to find because of the remoteness and inaccessibility of the area and the political situation.

Normally a Raigi camel herd is small (average 13 animals) but the size range is wide (4-150 animals). The estimated population of Raigi camels ranges from 4700 to 7000. Raigi camel is mainly raised under nomadic and transhumant production systems, but are sporadically also kept in sedentary systems where male Raigi camels are used for work and females for milk production.

#### *Physical characteristics:*

The color of the Raigi camel changes from fawn in the summer to brown in the winter. The camel has long eye lashes, dark brown retina and black toe nails (Figure 1). The body is large and barrel like, which indicates its dairy potential.

Body measurements of the Raigi camel are presented in Table 1.

#### *Performance, adaptation, special traits:*

Reproduction and production data are presented in Table 2.

The breeding season is from November to January. Breeding starts at the onset of puberty, for both males and females. The period of receptivity in the female (induced ovulation) ranges from 1- 4 weeks. One vigorous bull is enough for serving 40 females. The service period remains for 5 to 6 days and if conceived, the female changes her behavior at 6<sup>th</sup> day of service by erecting her tail when an animal or a person comes near her. Calving interval is depending upon the availability of foliage and lactation length. Birth weight of the calf is depending upon the sex, nutritional and health status of the dam. Weaning occurs at 9 months of age.

According to the Raigi camel keepers, the special traits of the breed is one of the thickest milk in camel breeds, and the ability to drink brackish water and to eat the bitter plant *Artemisia*. The milk is salty because it entirely grazes on *Haloxylon* and *Artimisia*.

The wool has long staple length with fine fiber, mostly used locally for rug fabrication.

One of the major breeding goals for the camel keepers is thick milk and consistent milk production for longer duration. Another breeding goal is good climbing ability in mountains (wide chest and wide cannon bone) and also long travelling ability.

## DISCUSSION

This characterization of the Raigi camel is based on a context concept (Köhler-Rollefson and Rathore, 1996, Grund 2004, Köhler-Rollefson 2005, Raziq 2009). It is a picture of the breed in its traditional context, influenced for centuries by the ecosystems, the socioeconomic situation, the management and production system. The breeding goals for the camel keepers are part of this context and the genetic present and future potential of the camel depends on the context. The Raigi camel is cross boundary and studies from both Pakistan and Afghanistan are needed for full understanding. Biomolecular studies of the breed also remain to be done, and would add to better understanding of this precious animal genetic resource.

There are many threats to the habitat of the Raigi camel. The political instability, the war like conditions and the human migration and influx in some areas are serious threat. The area is very cold in the winter and the need for fire wood is high. Deforestation of the Tamarisk tree is almost completed and the bushes are being de-rooted. Desertification increases and scarcity of feed aggravates.

The population of Raigi camels is decreasing because of a high slaughter rate. In the near future, the importance of the camel world-wide is likely to increase because of two major trends: the increasing need for animal protein to feed the growing human population, and the global warming and increasing drought and desertification (FAO 2009, Steinfeld et al, 2006). Locally, the importance of the camel is increasing because of the demand for camel meat locally and in the neighboring countries, and the increasing awareness about the camel products. Male camel calves obtain increasing prices.

The Raigi camel is well adapted to its context, it has the ability to cope with extreme weather and can produce milk, meat and wool under ordinary grazing conditions, on salt bushes and brackish water. It is a valuable resource for food security and sovereignty.

## CONCLUSION

The Raigi camel represents a valuable genetic resource for present and future food production. Immediate measures are necessary to ensure its survival as a separate gene-pool. These measures include the conservation of the habitat ecosystem and the recognition of the rights of the Pashtoon pastoral people to make their living on livestock keeping in the Khurasan region.

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Figure 1: Raigi camel. Photo: A Raziq.



**Table 1. Body dimensions of Raigi camel (n=100; 70 female and 30 male camels)**

Parameters	Cm (mean±SE)
Wither height	164.34±0.45
Thoracic girth	175.92±0.22
Abdominal girth	243.81±1.80
Estimated weight	373.99±3.51
Fore foot length	20.00±00
Hind foot length	17.90±0.03
Hip length	31.91±0.15
Sternal pad distance	89.70±0.07
Canon bone circumference	19.87±0.14
Head length	39.25±0.09
Head width	19.85±0.06
Neck length	81.85±0.49
Ear length	10.99±0.01
Ear width	5.98±0.01

**Table 2.** Reproduction and production data of Raigi camel (n=100)

<b>Parameters</b>	<b>Male (n=30)</b>	<b>Female (n=70)</b>
Average birth weight (kg)	30	33
Average weaning weight (kg)	140	160
Age when ready for workload (years)	3	3
Age when heavy duty use(years)	7	-
Age of puberty (years)	3.5	3
Average work life (years)	20	-
Average reproductive life (years)	15	21
Conception rate out of herd (%)	-	50-53
Gestation period (days)	-	375-386
Calving rate out of herd (%)	-	50-55
Calving interval (years)	-	2-3
Average (and range) milk production (kg/day)	-	7 (6-10)
Lactation length (months)	-	10-12
Wool Production (kg/year)	-	3

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