

The Socio-Economic Perspective of Camels in Pakistan

Pakistan possesses 23% of the Asian camel populations (Jasra/Mirza 2004, FAO 1985) and as such occupies the 6th position at global level, after Somalia, Sudan, Mauritania, Ethiopia and India. Asia possesses the second-largest camel population after Africa (Jasra/Mirza 2004). Pakistan has some one million camels, mainly dromedaries, belonging to 20 recognized breeds. They are primarily raised for work, followed by their functions as providers of milk, meat and fiber and for recreation. *Brella* and *Marecha* are well recognized camel breeds for milk and as work animals, respectively.

Camels are the mainstay for the nomadic and pastoral societies of Pakistan. As such they contribute to the country's agrarian-based economy. Their role is significant particularly for the people in the arid and semi-arid areas of the country, where camels and small ruminants are the principal animals raised and camel milk serves as a staple food. Camels provide about 2% of Pakistan's milk supply, with milk production ranging from 5 to 40 liters per day under different conditions. Camel milk products such as lassi (sour milk), cheese, yogurt, pudding (locally known as *Phirri*) are also prepared. In addition, camels also contribute to agriculture in multiple ways. They are raised for subsistence purposes in arid/semi arid regions by people who are often illiterate and fall within the poor economic stratum. Camel hair is used to make rugs, ropes, carpets, blankets etc. Breeding patterns are quite traditional and very much associated with the season and feed supply. Breeding males are usually farm-produced. Bull selection is made on its performance, based on the memories of camel owners. Pakistan is the largest camel market in Asia, with Cholistan (Bahawalpur, Bahawalnagar and Rahim Yar Khan districts), Mangrota camel fair (Dera Ghazi Khan district, Punjab) and the Sibbi fair (Balochistan) probably being the principle trading centers. Camel trading in Cholistan is largely benefited by Saudi Arabia and the Middle East. In general, trading is done in periodic markets, either exclusively for camels or along with other livestock. There are three camel production systems: migratory or nomadic, transhumant/semi migratory, and sedentary or household pastoralist. This article will discuss these production systems and their socio-economic significance.

AN ALL-PURPOSE ANIMAL IN PAKISTAN

Pakistan is basically an agrarian country comprising mainly two components: crops and livestock. The livestock sector contributes approximately 53.2% of agriculture value added and 11.4 percent to the national gross domestic product (GDP). About 30–35 million people are associated with the livestock sector (Pak Economic Survey, 2009–10). God has blessed Pakistan with many promising breeds of different livestock species including camels. The majority of its one million camel population are *Camelus dromedarius* (also called the single-humped or Arabian camel). However, a very small population of *Camelus bactrianus* (the double-humped camel) is also reported unofficially. Camels in Pakistan are reared mainly as draught animals, since they are considered as the cheapest means of transport in the desert and they perform other tasks in different ecological regions of the country, such as running Persian wheels, cane crushing and chaff cutting. Their function as a draft animal is followed by their importance as dairy and meat animals and for recreation and patrolling. They are the mainstay of nomadic and pastoral societies. In summary, camels are termed “*An All-Purpose Animal Species*” among different farming communities.

POPULATION, DISTRIBUTION AND GENETIC DIVERSITY

The population trend of the Pakistan camel population generally shows numbers remaining on an average at one million between the years 1990/91 and 2009/10. About 40% are in Balochistan province, followed by the Punjab, Sindh and Khyber Pakhtoonkhaw. In the Punjab, a large population exists in the Cholistan desert (comprised of the Bahawalpur, Rahim Yar Khan and Bahawalnagar districts of the Punjab). Spread over 480 sq km with an arid/hot to subtropical/monsoonal climate, Cholistan is home to the country's largest camel population. The temperatures may vary between 52° C in summer and 3° C in winter (Khan 1996).

Marecha/Mehra and *Barella* are the two main camel breeds kept in this area (see picture 50 and 51). The *Marecha* is light brown with small pointed muzzle, a long neck, a small head, tight lips, alert, pointed ears and a slim body and long legs. This breed is mainly found in Cholistan and Thar (Sindh). The *Brella* is dark brown to light black, with thick pendulous lips, a Roman nose, round ears, a long slim neck and a muscular body with stout legs. They are very much liked for milking and as beasts of burden and can be found in all irrigated areas of the Punjab.

In general, camel breeds are classified into two categories on the basis of their utility, i.e. riding and baggage camels. There are 20 breeds of camels found in the different provinces of Pakistan (Isani and Baloch 2000):

- a) Punjab: *Bagri (Booja)*, *Brella (Thalochi)*, *Campbelpuri*, *Kala-Chitta* and *Marecha (Mahra)*
- b) Sindh: *Larri (Sindhi)*, *Dhatti (Tharri)*, *Kharai*, *Sakri*
- c) Balochistan: *Lassi*, *Kharani*, *Brahvi*, *Kachhi*, *Makrani*, *Rodbari*
- d) Khyber PK: *Gaddi*, *Ghulamani*, *Khader*, *Maya*

Note: Parenthesis bears local names of camel breeds

SOCIO-ECONOMIC CHARACTERISTICS OF CAMEL BREEDING

The camel breeding system in Pakistan can be described with respect to the different geographical regions of the country.

MOUNTAINOUS AREAS

These harsh areas are characterized by extreme food and water shortages. Camels are usually raised in combination with sheep and goats, with both male and female family members being involved in various livestock activities. The literacy rate among the herders in Pakistan is extremely low. The majority of this rural population is organized in different networks of about 16 ethnic groups, a tribal organization that is considered a key feature of the society. The most prominent tribes are the *Baloch* and the *Pashtun*. Livestock husbandry in many cases can be seen as a joint venture of the family, since the raising of animals is still along traditional lines. This could be attributed to the fact that majority of the camel owners are quite illiterate and have inherited the camel husbandry as a profession from their ancestors.

IRRIGATED AREAS

Farming in the irrigated areas of the provinces of Punjab and Sindh in central and southern Pakistan has a comparatively high socio-economic profile and is well organized on community level. The size of the communities is based on the dimension of the flock/herd it manages, which is highly variable. Camels in these areas are used for a variety of purposes but their main function is transportation and riding.

SANDY DESERTS

The way of life in sandy deserts may be either nomadic or sedentary. Communities are linked to each other through strong social ties. People have quite simple lifestyles. Joint family systems are practiced and have been found very effective as they share the different tasks among them. Usually, different livestock species are kept together in a mixed herd. Camel herds and the size of small-ruminant flocks are considered as status symbols. These communities often lack education and therefore have no easy access to developments that might advance their prosperity. In these sandy deserts the camels' historical role is prominent compared to other animal species. The most plausible explanation of this is the camels' exemplary acclimatization to the arid and semi-arid conditions.

COASTAL AND OTHER AREAS

The coastal areas of Pakistan are part of Balochistan and Sindh province. These are located on the Arabian Sea and are a major sea link between Pakistan and rest of the world. The majority of the population is illiterate and belongs to rather poor communities who have inherited the camel farming from their ancestors. Herd sizes range from four to 200 head. The rather disadvantaged condition of the coastal areas is of great concern for the government and non-governmental organizations (NGOs) so their development needs to be addressed on priority basis. Other areas include *Pothowar* salt range and the northern areas of Pakistan. People here also largely belong to low-income groups and practice camel farming based on traditional practices, with the camel being used as an "all-purpose animal" for dairy and meat products and as a draught animal.

CAMEL HUSBANDRY AND PRODUCTION SYSTEMS

Camel husbandry in Pakistan has been carried out on traditional lines since historical times. Hence the animal, mainly owned and raised by the various tribes, has occupied a prominent position in the socio-economic system of several families of different areas where camel herds are considered as a status symbol. The *Baloch* tribe is most probably most closely associated with camel husbandry.

Winter in Pakistan is the camel breeding season (rut season). One estrous cycle lasts 60 to 90 days and breeding in mature males and females starts on an average at five years of age. Usually, there is a two-year calving interval and the productive life ranges from 20 to 25 years. During the rut season, she-camels are forced into a recumbent (sitting) position by tying one of their forelegs in order to help the male to mount more easily and ensure breeding success.

Breeding activities in coastal areas of *Sindh* are very much restricted to a few local tribes e.g. the *Nizamani*, *Jat* and *Notkani*. Breeding bulls are assisted to make proper contact with the females by the handler. In Cholistan, camels are mainly bred for the use as draught and transport animals, since the *Marecha* breed is well known in this respect for its speed and sharp body features. Similarly, in Balochistan camels are bred as draught animals. Breeding activities are restricted to areas with adequate feeding resources. According to local information, for breeding purposes a fair sized herd, i.e. seven to 100 she-camels along with bull(s) is necessary (Bashir 1996). In Balochistan breeders place great emphasis on the color of the camel, namely dark chestnut. This is also mentioned in a local saying, which states: "Buy a dark chestnut camel without looking at it". In other words, these are regarded as the all-round highest-quality animals.

We find three main production systems in the diverse geographical regions of Pakistan described above:

NOMADIC/MIGRATORY

The nomadic/migratory system is characterized by movement. True nomads can be found in the mountainous camel habitats, i.e Afghanistan, Iran and Balochistan province of Pakistan. Scarce feed resources compel the camel farmers to migrate to areas where there is sufficient support for the animals, moving between Afghanistan and Pakistan or Afghanistan and Iran. They will spend summer in highland of Afghanistan and winter in the warmer lowlands of Pakistan in Balochistan province or adjoining parts of Iran, where they will stay with their animals until March. This migration is linked to pastoralism and trade (Jasra et al. 1999). Under the present circumstances, some herders mix their herds to share the feeding resources. This kind of nomadic system can also be seen in the Punjab.

TRANSHUMANT/SEMI MIGRATORY

This semi-nomadism is seen in the irrigated areas of the Punjab and Cholistan. In the mountainous habitats, movement is on seasonal basis and along specific routes (Jasra/Mirza 2004). In these areas, camel breeders are also farmers cultivating wheat as a main rain-fed crop in the highlands. After the wheat season they migrate with their animals towards the lowlands.

In addition to the highland-lowland migration there is another group of semi-migratory people who are co-owners of common tribal lands and therefore migrate within the limits of these areas.

SEDENTARY/HOUSEHOLD

The sedentary production system occurs in irrigated areas in Thal (Punjab) and Thar (Sindh). To some extent these communities have their own feeding resources throughout the year.

THE ECONOMIC VALUE OF CAMELS IN PAKISTAN

As an “all-purpose” animal camels are especially valued for milk and meat production and for transportation.

MILK PRODUCTION AND CONSUMPTION

Camels contribute 2.2% to Pakistan’s milk supply, worth several billion rupees annually, while camel meat is valued at several hundred million rupees, according to Dawn, Pakistan’s largest English-language daily newspaper, 4 January, 2011. Camel milk serves as staple food for some camel-owning societies, but in all areas the animal is an important economic contributor and resource.

The camels of Pakistan are renowned for good milk production. Lactation length ranges from eight to eighteen months. However, their level of productivity depends on a variety of factors including the breed, feed/water availability, season/climate, parity (number of previous lactations), general management and health. Milk productivity of the Pakistani camel is cited in various research studies. For example, Schwartz (1992) reported a milk yield of up to 12,000 liters per lactation period in heavy Pakistan and Indian camels. Thus Pakistan’s camels rank as the top milk producers in Asia, where lactation yield of she-camels ranges between 650 and 12000 liters per lactation period (Faye 2004). Aujla et al. 1998 reported a daily milk production of four to twelve liters under arid or semi arid conditions in Balochistan, and Qureshi (1986) recorded eight to twenty liters milk yield in camels under intensive management conditions. He further claimed that these intensively managed camels are even capable of producing up to 40 liters a day. A comparison of camel milk production in different countries shows the good results in Pakistan (see table 13).

As far as the milk consumption pattern is concerned, it serves as staple food in camel-owning societies such as Pakistan's, especially among the pastoralists. The camel is a blessed animal for these communities irrespective of the province. Some camel herds are also seen around some big cities, where camel milk is sold very cheaply. Usually, camel milk is mixed with milk from other animals (cattle, buffalo and goats) before it is marketed. In addition, camel milk products (sour milk (lassi), cheese, yogurt or pudding – locally called *Phirri*) are also prepared.

Country	Average daily milk yield in liters	Source
Kenya	21	Field 1979
Pakistan	18.7	Knoess et al. 1986
Saudi Arabia	16.6	Ismail/Al-Mutairi 1990
Pakistan	11.6	Iqbal 1999
India	10.5	Dukwal et al. 2007
Somalia	5	Farah/Fischer 2004
Syria	5	Shareha 1985
China	5	Wei 1979
Ethiopia	4	Zelege 2007
Morocco	3	Araba et al. 1998

Table 13: Milk Production Potential of Camels

MEAT PRODUCTION AND CONSUMPTION

At present the total beef production (including camel meat) in Pakistan is 1655 thousand tonnes (Pak Economic Survey 2009–10). The meat exports (mutton, beef and camel) from July to January (2009–10) was worth \$ 60.2 million while live animal exports were worth \$ 13.95 million. Most recently, Malaysia has shown an interest in importing 60,000 tonnes of meat annually (Pak Economic Survey 2009–10). Camels are also slaughtered for sacrificial purpose on the occasion of religious festivals (*Eid-ul-Azha*) in some Muslim communities. However, very few camels are slaughtered in the general abattoirs (70–75 animals) along with other species of livestock, which are more important with respect to meat consumption (Khan et al. 2003). The gap in meat supply/demand is increasing at the rate of 4.1% annually, which highlights the excellent investment opportunities in the meat sector. Halal food and related products would be a golden opportunity even for non-Muslim communities, including exports to the US and the UK. Moreover, such endeavors will be helpful to narrow the mutton-beef gap in Middle Eastern countries (Sindh Board of Investment 2011).

TRANSPORTATION

Camels are used for transport purposes to varying degrees in different regions of the country – e.g., in the rural areas of Balochistan, each household keeps one or two camels for transport. They are considered to be the cheapest means of transport in the desert. When Hanjra et al. (1980) compared the draught power of camels to that of other animals, camels showed better net work efficiency (29.35%) versus bullocks, donkeys, horses and mules. Heston et al. (1985) have stressed the role of camels as baggage animals. Similarly, according to the Balochistan study of Keatinge et al. (1992) camels are also used in some big cities to transport various commodities and in certain industries.

CAMEL MARKETS AND TRADING

Pakistan's camel trading is performed in animal markets, which are held weekly, monthly, every second month or sometimes annually. These markets may be exclusively for camels or in combination with other species of livestock. Pakistan is the largest camel market in Asia. *Cholistan* (the districts of Bahawalpur, Bahawalnagar and Rahim Yar Khan), *Mangrota* Camel Fair (Dera Ghazi Khan district) and *Sibbi* Fair are probably the main trading centers. Camel trading in Cholistan is mainly done by traders from Saudi Arabia and the Middle East.

There are camel markets in Sindh at at Sajjan Sawai (Badin district), involving all livestock species, and at Oderolal (Hyderabad district), which deals exclusively with camels. In these marketing centers, middle men who do not belong to any specific ethnic group are the main beneficiaries. They have long occupied such a strong position due to the fact that as a whole there is lack of an organized livestock marketing system in the country. They travel long distances from various parts of the country, purchase the animals cheaply and sell them in Saudi Arabia and other Middle East states at very high prices. In one study in the mountainous areas, middlemen were reported to derive 35% to 40% of the profit (Mahmood/Rodriguez 1993). Hence, they are making good deal out of this animal, which originally belonged to the rather poor communities. The prices vary with the type, size, age and breed of the animal. For example an adult breeding male costs about Rs.150,000 (\$ 1786), while a good she-camel can cost about Rs.100,000 (\$ 1190).

HEALTH AND DISEASES

Several diseases have been reported in camels, such as Trypanosomiasis (*Surra*), mange, pox, foot and mouth disease, rabies, anthrax and endo/ectoparasites (Afzal 1996, Cheema 1996). Trypanosomiasis, a parasitic blood disease causing severe anemia, is considered as the number-one killer disease of camels. Similarly, mange is also responsible for substantial losses, especially in the rice and cotton growing zones of irrigated Sindh as well as in coastal areas. In addition, there are some local concepts of diseases:

- *Kapali*: accumulation of pus in frontal and maxillary sinuses, anorexia, reluctance to eat and drink from the ground.
- *Jhooling*: a contagious fungal disease. Its symptoms include swelling of the neck, hind quarters and genitalia followed by intense itching and appearance of wounds.
- *Mora*: causes anorexia, water discharge from eyes and nostrils; the animal stops eating and drinking. Moreover, coughing, fever and diarrhea are also noticed. Animals are mostly susceptible to this problem during winter and it causes high mortality rates.
- *Weil*: paralysis of the hind legs and incapability to feed or water from the ground. A gradual weakness is recognized. This problem seems to be more prevalent in areas where *Haloxylon salicornicum* (locally called *Lana*) was exclusively available for feeding.¹
- *Kumari*: the animal feels difficulty in getting down. Hind legs suffer from fibrillation while sitting.

In remote areas veterinary services are not easily available. Traditional healers and ethno-veterinary medicine are therefore of great significance in these areas. A variety of medicinal plants, cauterization, "fly repellent" etc. are used for the treatment.

During 2010, historically the worst floods in Pakistan caused huge economic losses in the livestock and agriculture sectors of about \$ 2.9 billion. According to the *Express Tribune* (5 January, 2011) over 0.1 million small/large ruminants, equines and camels were lost. In the

¹ For a detailed discussion of the value and dangers of pasture plants for camels see Daniel Variscos discussion of the Arabian context in this volume.

Cholistan area recently, 120,000 camels valued at Rs. 2.2 billion died due to a respiratory problem resulting from severe cold and hot weather.

CONCLUSIONS

Because of their far-reaching economic significance, camels have gradually been gaining popularity with Pakistan's officials. This has become evident through the establishment of specific institutes over the past decades. For instance, the pioneer was the Cholistan Development Authority (CDA), established in Bahawalpur in 1976, with the mandate to improve the conditions of various animal species including the camel. Similarly, the government of the Punjab established the Camel Breeding and Research Station at Rakh Mahni, Bhakkar district, Punjab few years ago. Last year, in February 2010 the Federal Ministry of Livestock and Dairy Development organized a workshop in Islamabad on the establishment of camel breeding and research stations. Furthermore, camels are also addressed in the sciences as a part of the curricula. This step also favors the camel production.

Hence, camels in the present era seem to be changing their status from "ship of the desert" to food security animal in Asian and African countries. Above all, the medicinal value of camel milk is expected to make it even more valuable with respect to human health aspects even in the developed world in the near future. The camel, of all farm animals, may be a model option as a dairy, meat and work animal owing to its superb adaptation in the era of global warming.

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