

Bovine Genetic Resources of Gujarat

Joshi R.H, Koladiya H.G, Ramani A.L, Patel, Bhavisha, Verma A.D.
College of Veterinary Science & A.H.
Kamdhenu University, Anand, Gujarat

India is one of the best country having purest germplasm of riverine buffalo and cattles, contribution of Gujarat is also remarkable as Gujarat have three pure breeds of cattles viz. Gir, Kankrej and Dangi which are milch, dual and draught purpose. The livestock sector with its huge Animal Genetic resource (AnGR) base has emerged as the fastest growing sector, contributing substantially in the GDP as well as in the food security of the country. Through the process of evolution of thousands of years and domestication over time through natural selection and some human effort these breeds have evolved and developed to thrive in harsh local climatic conditions and give best production and performance. The native breeds of bovines possess unique genes or combination of genes, which are responsible for disease resistance, stress resistance, quality animal products, feed efficiency. Gujarat is one of the most important state harboring diversity of 18 domestic animal breeds, some of which are on the world map of very important breeds having well differentiated characters that enriched global biodiversity. Gujarat has valuable genetic recourses of Cattle (Gir, Kankrej & Dangi) and also four major buffalo breeds out of total thirteen recognized breeds of India (Mehsani, Jaffrabadi, Surti and Banni)(Anonymous, 2017).

Cattle Breeds of Gujarat

Gir cattle: It is a hardy animal and can survive and produce in difficult environment. Gir is a world-renowned breed known for its tolerance to stress conditions. Having faced scarcity for a numbers of years, it has the capacity for yielding more milk with less feeding and is resistant to various tropical

diseases. It has been imported by **Brazil, USA, Venezuela and Mexico**, and bred there successfully.

Gir cattles are good milk producers. Bullocks can drag heavy loads on all kinds of soils, be it sandy, black or rocky. It is docile in nature. One of the three BEST milch breed of India. It has contribution in developing other indigenous breeds like Deoni, Nimari etc.



Adult Male



Adult Female

- **Synonyms:** Bhodali, Desan, Gujarati, Kathiawar and Sorthi.
- **Breeding tract:** The native tract of the breed is the area around forests of Gir including Junagadh, Bhavnagar, Rajkot and Amreli districts of Gujarat.
- **Age at First Parturition:** 38 -55 months (NBAGR source: 39.47-59.21 Months with avg.-51.05)
- **Milk Production/ lactation:** 2000-2200 Kg (NBAGR source: 800-3300 Kg with avg.-2110 Kg)
- **Parturition Interval:** 14.47-19.73 months with average of 16.97 months (NBAGR source)
- **Milk Fat percentage:** 4-5 % (NBAGR source: 3.9-5.1% with avg.4.4%)

- **Total estimated Population in the state (2022-23):** 6.8 million
- **Morphological Features:** Three strains of Gir cattle can be found, the coat colour of Gir animals varies from shades of red and white to almost black and white or entire red. Horns are peculiarly curved. Starting at the base of the crown they take a downward and backward curve and again incline a little upward and forward taking a spiral inward sweep, Finally ending in a fine taper- thus giving a half moon appearance. Average 500-540 Kg (NBAGR source: 544 Kg) in Males and 300-350 Kg in Females (NBAGR source: 310 Kg) Long and pendulous ears folded like a leaf. Ears hang all the time and their inside face forward.

Kankrej Cattle - Dual Purpose breed of Gujarat (Milch&Draught) : Agricultural operations and road transport in village area are mainly carried out by bullocks of this breed. One of the best dual purpose breed of India. It is known for producing bullocks which are speedy & sturdy. The gait of the Kankrej is peculiar to the breed; the action is smooth, there is hardly any movement of the body, the head is held noticeably high, the stride is long and even and the hind hoof is placed well ahead of the foot print/pug mark of fore hoof. This gait is called 1¼ paces ("Sawaichal") by the breeders. Bullocks of this breed have been exported to Brazil and in some other Latin American countries and southern states of the USA.



Adult male

Adult Female

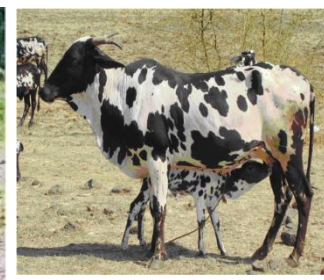


- **Synonyms:** Vadhiyari, Sawaichaal
- **Breeding tract:** It takes its name from the name of Kankrej tehsil in North Gujarat. Breeding tract is southern part of Rann of Kachchh, from southwest corner of Banaskantha District, Kankrej Taluka, Tharparker district (now in Pakistan) to Ahmedabad and from Disa to Radhanpur.

- **Age at First Parturition:** 39 -56 months (NBAGR source: 33.88-55.92 Months with avg.-47.31 months)
- **Milk Production/ lactation:** 1700-1900 Kg. (NBAGR source: 1097-3194 kg with avg. of 1746 Kg)
- **Parturition Interval:** 13.33-21.02 Months with avg. of 16.12 months (NBAGR source)
- **Milk Fat percentage:** 4.7-5% with avg. of 4.8% (NBAGR source)
- **Total estimated Population in the state (2007):** 26,81,764.
- **Morphological Features**
- **Colour:** silver-grey to iron grey or steel grey
- **Horn Shape & Size:** Horn are strong and curved outward and upward in a lyre shaped fashion. They are curved with skin to a longer distance as compared to other breeds.
- **Weight:** Average 550-570 Kg (NBAGR source-525 Kg) in Males and 330-370 Kg (NBAGR source-343Kg) in females. Heaviest breed of cattle. Strong lyre shaped horns, large pendulous and open ears.

Dangi Cattle -Hilly Cattle of Gujarat (Draught Purpose): Dangi breed is well known for their excellent working qualities in heavy rain and in rice fields and also on the hilly tracks. As draft animals they carry heavy weight at the rate 2 to 3 miles per hour depending upon the type of terrain and can cover a distance of 20 to 24 miles per day. In Marathi Dang Means Mountains and these animals are living in mountains. Hence these are called Dangi. Some believe that this originates from the Dang district in Gujarat.

Dangi cattle are extensively used for ploughing and other field operations, and also for carting timber from hilly forest area. The breed is well known for its excellent working qualities in heavy rainfall areas, rice fields and hilly tracts. The animals are adapted to heavy rainfall conditions. The skin exudes an oily secretion which protects from heavy rain.



- **Synonyms:** Kanadi
- **Breeding tract:** Dang district of Gujarat and Ahmednagar and Nasik Districts of Maharashtra
- **Age at First Parturition:** 46 -56 months with avg. of 53 months (NBAGR source)
- **Milk Production/ lactation:** 430- 600 Kg (NBAGR source: 175-800 Kg with avg. of 430 kg)
- **Parturition Interval:** 17-21 months (NBAGR source)
- **Milk Fat percentage:** 3.8-4.5 % with avg. of 4.3 % (NBAGR source)
- **Total estimated Population in the state (2007):** 2,08,862
- **Morphological Features**
- **Colour:** coat colour with red or black spots distributed unevenly over the body.
- **Horn Shape & Size:** Animals with inward and also with downward pointing horn tips are also available in sizable numbers.
- **Weight:** Average 310-330 Kg (NBAGR source: 317 Kg) in Males and 220-250 Kg (NBAGR source:228 Kg) in Females. Uneven distribution of black or red spots over the body. Forehead is slightly protruding.

- **Age at First Parturition:** 41-55 Months with average of 45 months (NBAGR source)
- **Milk Production/ lactation:** 2150-2340 Kg with average of 2238 Kg (NBAGR source)
- **Parturition Interval:** 14-15 months with average of 14.5 months (NBAGR source)
- **Milk Fat percentage:** Average ranges from 7-9% but some animal may yield as high 12-14% (NBAGR source: 6.8-8.5% with average of 7.68%). They yield appreciable quantity of milk, with an exceptionally high butter – fat content.
- **Total estimated Population in the state (2007):** 14,70,004 (2007)
- **Morphological Features**
- **Colour:** Generally Black in colour and also Copper coloured animals in small proportion.
- **Horn Shape & Size:** Horns exhibit wide variation, but usually emerge out by compressing the head, go downward sideways, then upward and inward finally forming a ring like structure. It makes eyes to look small - termed as study eye, especially in males. Horn Shape is peculiar in this breed.
- **Weight:** Average 1000 Kg (NBAGR source) in Males and 800 Kg (NBAGR source) in Females (that's why, also called as " Mini Elephant").

Jaffrabadi Buffalo - Jaffrabadi is the heaviest of all the Indian breeds of Buffaloes.



Adult male

Adult Female

- **Synonyms:** Jaffari, Bhavnagri, Gir
- The main communities for rearing and developing these buffaloes are Rabri, Bharvad, Aher, Mer & Other farmer communities.
- **Breeding tract:** It is named after the town of Jaffarabad, port of Amreli district of Saurashtra. Its breeding tract is in and around area of Gir Forest such as, Amreli, Junagadh, Bhavanagar, Rajkot district.

Mehsana Buffalo - Mehsani is famous as persistent milker and regular breeder: The breed is considered to be a cross between Surti & Murrah.



Adult male

Adult Female

- **Synonyms:** Mehsani, Mehsana
- **Breeding tract:** It is named after the town of Mehsana. Breeding Tract is in and around Mehsana, Banaskantha and Sabarkantha districts of the northern part of Gujarat.
- **Age at First Parturition:** Average 42-48 Months (NBAGR source: 22-54 months with average of 43

- **Milk Production/ lactation:** 1800-2000 Kg.(NBAGR source: 598-3597 Kg with average of 1988 kg)
- **Parturition Interval:** 10-31 months with average of 16 months (NBAGR source)
- **Milk Fat percentage:** Average 7-7.5 % (NBAGR source: 5.2-9.5% with avg. of 7%)
- **Total estimated Population in the state (2007):** 33,70,215 (2007)
- -: Currently Progeny Testing Programme is being run by NDDB at Dudhsagar Dairy, Mehsana.
- **Morphological Features**
- **Colour:** Mostly black, a few animals are black brown or brown
- **Horn Shape & Size:** Horns are generally sickle shaped with the curve more upward than in the Surti breed and less curved than in the Murrah breed. They are generally bent downward and then take a curve like the horns of a ram.
- **Weight:** Average 484 Kg (NBAGR source) in Males and 565 Kg (NBAGR source) in Females
Eyes are very prominent, black and bright bulging from their sockets with folds of skin on upper lids.

Surti Buffalo: The Surti buffalo is lighter in body weight, consume less feed, and produce milk with high fat and SNF content. It is popular with land, small and marginal farmers.



Adult male Surti breed of buffalo and adult Female Surti breed of buffalo

- **Synonyms:** Surti is also known as Charotari, Deccani, Gujarati, Nadiadi and Talabda.
- **Breeding tract:** It is named after the town of Surat. Breeding Tract is in and around Kheda, Vadodara, Anand & Bharuch districts of the middle and southern part of Gujarat.
- **Age at First Parturition:** Average 40-55 Months (NBAGR source: 35-58 months with avg. of 49.43 month)
- **Milk Production/ lactation:** 800-1400 Kg

- **Parturition Interval:** 14-19 months with average of 15.28 months (NBAGR source)
- **Milk Fat percentage:** Average 7-7.5 %.
- **Total estimated Population in the state (2007):** 15,56,856 (2007)
- **Morphological Features**
- **Colour:** Coat colour varies from rusty brown to silver- grey. Skin is black or brown.
- **Horn Shape & Size:** Horns are flat, sickle shaped and are directed down ward and backward, and then turn upward at the tip to form a hook. Medium in size.
- **Weight:** Average 430-440 Kg (NBAGR source-435 Kg) in Males and 400-410 Kg in Females (NBAGR source: 401 Kg) (Smallest among all buffalo breed of India) Medium sized animal, brown colour, two white bands below the neck and sickle shaped horns.

Banni Buffalo: The animals of this breed is raised under extensive management system with night grazing. Banni buffaloes are trained to graze on Banni grassland during night and brought to the villages in the morning for milking. This traditional system of buffalo rearing



has been adapted to avoid the heat stress and high temperature of the day.

Adult Banni Male Adult Banni Female

- **Synonyms:** Kachchhi and Khundhi
- **Breeding tract:** The Name of this breed is evolved from its native tract Banni area of Kutchh District of Gujarat. The breeding tract is in and around Kutch district.
- **Age at First Parturition:** Average 38-45 Months
- **Milk Production/ lactation:** 1800-2000 Kg.
- **Parturition Interval:** 12-13 months
- **Milk Fat percentage:** Average 7-8 %.
- **Total estimated Population in the state (2007):** 5,25,015 (2007)
- **Morphological Features**

Mostly black (95%) in colour as well as. Banni buffalo is mostly black in colour (95%) Copper brown colored (5%) animals are also seen. Forehead is elongated and straight with no slope towards horn base. Horns are tightly coiled

vertically with single to double coiling. The body is medium to large, compact and generally covered with hairs. Dewlap is absent and naval flap is medium. Udder is well developed, round in shape and squarely placed. The hind and fore quarters are uniformly well developed, whereas typically whole udder looks like four equal divisions with teats well attached to each quarter. Majority of animals have conical teats with round and pointed tips

- **Weight:** Average 525-625 Kg in Males & 475-575 in females

References:

- NBAGR source, National Bureau of Animal Genetic Resources, Karnal Haryana, India; c2020.
- Anonymous, Directorate of Animal Husbandry, Agriculture farmers welfare and cooperation department, Government of Gujrat.,2017
- 18thLivestock Census. (2007). Published by Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Government of India