

## Gir Cattle: A Champion Dairy breed of India

Mane D.M, Koladiya H.G, Ramani A.L, Nimavat V.R., Ahlawat A.R

College of Veterinary Science & A.H. Kamdhenu University, Anand, Gujarat

Cattle and human beings have established a very close relation from time immemorial for economic and social reasons. India holds great biodiversity in native domestic livestock, among them cattle and buffalo are integral part of Indian rural economy. India stand first in the world with regard livestock population with around 58 percent are cattle and buffaloes. India also ranks first in the world with regards to milk production. India possesses total cattle population of 193.11 million, out of total livestock population of 536.76 million, which shares about 35.97 percent of total livestock population of the country. Total indigenous cattle population of India is 142.11 million out of which Gir cattle is 6.8 million which shares 4.8 % of total indigenous cattle population of India (Anonymous,2019).

The diversity of animal genetic resources is essential to meet the basic human needs for food and livelihood. The Gir cattle in Saurashtra provide milk, manure and draught power. Animal genetic resources of native breeds are largely underutilized in India and indiscriminate cross breeding has degraded local breeds in large number. This is also true with Gir cattle in its native breeding tract. Today, most production systems worldwide depend on native livestock breeds domesticated in the respective region. There are many important requirements and challenges for the livestock sector in the region. The key areas of importance include livestock system intensification that is to intensify animal husbandry system in the region focused on dairy husbandry.

Although it is a well-established fact that animal husbandry provides livestock associated livelihood and employment to economically weaker communities and households, still the enterprise has not reached in the rural households of most areas of the country. Gir cattle rearing in the region has been a traditional occupation of most of the communities like Madharis, Ahir and

Mer etc. This is also directly associated with the rural economy. India with 193.11 million cattle has of this 73.6% i.e. 142.11 million are indigenous. Most of the indigenous cattle are non-descript and only 20% belong to recognized breeds (Anonymous 2014). All most all the Indigenous cattle in India including Gir are robust and resilient and are particularly suited to the climate and environment of their respective breeding tract or natural habitat. Heat tolerance and disease resistance are the important qualities of genetic origin inherited by indigenous livestock. Their ability to perform under extreme stress and sub-optimal nutrition, make them most ideal and suitable to prevailing native conditions. Thus, effects of global warming are likely to be minimal in Indigenous cattle breeds.

*District-wise bovine population:* The breed derives its name from the Gir forest, which is the natural habitat of the breed. Gir is a famous milch cattle breed of India. The native tract of the breed is Gir hills and forests of Kathiawar including Junagadh, Gir-Somnath, Amreli, Bhavnagar, Rajkot, Porbandar, Morbi districts and some parts of Surendranagar district of Gujarat. This breed is also popularly known as *Kathiawari* and *Sorthi* in different parts of the breeding tract. The Gir cattle are well known for their tolerance to stress conditions and resistance to various tropical diseases.

**Table 1: Milk production of indigenous cattle in Saurashtra (000 MT)**

District	year								
	1992-93	97-98	03-04	07-08	08-09	09-10	10-11	11-12	12-13
Amreli	61	64	77	79	80	85	90	95	111
Bhavnagar	68	107	102	122	125	130	134	134	140
Jamnagar	59	66	79	96	98	101	100	97	104
Junagadh	105	112	108	129	139	147	151	169	181
Porbandar			22	26	24	27	25	30	30
Rajkot	88	113	122	140	139	143	134	135	144
Surendranagar	64	79	92	111	117	128	140	151	161
Total	445	541	602	703	724	761	774	811	871

Gujarat	995	1291	1633	1849	1851	1912	1978	2059	2177
% Contribution of Saurashtra	52.2	58.1	63.1	61.9	60.9	60.2	60.8	60.6	60

### Gir cattle

Total cattle population of Gujarat state is 9.6 million out of which 1.6 million belongs to Gir breed. India continued to be the largest milk producing country in 2022-23 with an estimated milk production of 230.58 million tones (Source: FAO). The total milk production of Gujarat is 17.27 million tones which shares about 7.49 percent of total milk production of India (Basic animal husbandry statistics 2023).



Fig: Adult male and Adult Female

### Origin/Breeding Tract

Gir cattle is a well-known milch breed of the country having its origin in Gir forest and abundantly found in districts like Junagadh, Amreli, Bhavnagar, Gir- Somnath and Rajkot, Porbandar and some parts of Jamnagar, Morbi and Surendranagar Districts of Gujarat.

### Synonyms:

This breed is also known as Bhodali, Desan, Gujarati, Kathiawar and Sorthi.

### Morphological Characteristics

The animals are of red color though some animals are speckled red, they are generally mottled with the color ranging from red through

yellow to white, a few with black color. Horns are peculiarly curved. Starting at the base of the crown they take a sideways downward and backward curve and again incline a little upward and forward taking a spiral inward sweep, ending in a fine taper- thus giving a half-moon or sward like appearance. Long and pendulous ears are folded like a leaf. Ears hang all the time and their inside face forward.

Bullocks can drag heavy loads on all kinds of soils, be it sandy, black or rocky. This is a world-renowned breed known for its tolerance to stress conditions. Having faced scarcity for a number of years, it has the capacity of yielding more milk with less feeding and is resistant to various tropical diseases.

### Economic Importance of breed:

Gir animals acknowledged for their tolerance to stress condition and resistance to various tropical diseases. Bullocks of this breed are used to drag heavy loads on all kinds of soil and they are preferred for docility. Average Age at first calving is 3 – 4 years. Parturition Interval is 14.47-19.73 months with average of 16.97 months. Milk Production per lactation is 2000-2200 Kg.

Pure breeding is preferentially practiced throughout Saurashtra region of Gujarat State. The professional breeders viz., Charan, Ahir, Koli, Gosavi, Rabari and Bharwad are the communities mainly involved in traditional cattle breeding.

### Production performance of Gir cattle:

Production and reproduction performance of Gir cattle. A study on survey of production performance of Gir cattles in districts Junagadh, Rajkot and Bhavnagar, revealed that, average test day milk yield in Gir cattles over a lactation were  $7.99 \pm 0.05$  litre/d for Junagadh,  $6.43 \pm 0.03$  litre/d for Rajkot and  $6.71 \pm 0.04$  litre/d for Bhavnagar district. The projected values for 300- days milk yield was 2397, 1929, and 2013 litre for the 3 districts, respectively (Gardharia *et al.* 2000). Similarly, milk fat content was observed as 4.65, 4.60 and 4.55% in Junagadh, Rajkot, and Bhavnagar districts, respectively. For Gir cattle, average milk production per lactation as 1,225 to 2,268 kg with a maximum of 3,175 kg, average lactation length as 240–380 days and average fat % as 4.5 to 4.6 % were documented by Williamson and Payne (1987). Taneja (1999) reported the average milk production of Gir as

1,126 kg to 1,859 kg and lactation length as 230 to 394 days. Dutta *et al.* (2007), in his study of 25 years data on Gir cattles at CBF reported average lactation yield as 2,029 litre in 321 days lactation length and 1843.8 litre milk yield in 300 days. Vataliya *et al.* (2013) reported average lactation yield in Gir cattles at CBF as 2002.6 litre in an average lactation period of 354 days. He also reported 300d LY as 1748.6 litre. Dangar and Vataliya (2015) similarly reported average milk yield as 2,276±171.32 kg, in Gir herd of Junagadh. The lactation yield of Gir cattles maintained at cattle breeding farm Junagadh was evaluated and reported in 1986 and 1987 as given in the Table below:

**Table 2: Lactation yield of Gir Cattles**

Lactation	Milk yield (L)	LL (days)	Source
All Lact	1862.5	334	Gajbhiye et al. (1987)
1st Lact	1904.7	326	Gajbhiye and Dhandha (1987)
2nd Lact	1807	287	Gajbhiye and Dhandha (1987)
3rd Lact.	1834.1	288	Gajbhiye and Dhandha (1987)

**Contribution of Gir cattle to Healthy living:**

As per current research on Panchagavya and Cattle Urine of Gir breed here at Junagadh with Special department of Analysis and Testing by Department of Biotechnology Junagadh Agricultural University Gujarat India. They come to a conclusion with very important useful information with modern science and Laboratory tests that authentic and well mentioned GIR Cattle (with natural grassing habits from open ground) produces very important elements such as Gold, Silver, Calcium, Iron, Cobalt, Zinc and Boron in a very noticeable amount which are naturally helpful to recover very serious diseases like cancer (Blood, bone, lung, almost all type of cancer), Hypertension, Asthma, Renal and Peripheral Circulatory disturbances.

Here are some of the details what they found. Gir Cattle Urine Analysis by Chromatography Mass Spectrometry

**Table 3: Elemental Composition of Cattle urine by ICP-MS**

Element	Gold (Au)	Silver (Ag)	Calcium (Ca)	Iron (Fe)	Cobalt (Co)	Zinc (Zn)	Boron (B)
Content (ppb)	321.00	1.70	2182.386	700.11	5.70	50.32	121.193

#in all 22 elements were detected, only major elements and their content is listed above

**Table 4: Major Compounds Identified in all the Urine Samples and Their Medicinal Properties:**

Compound Identified	Therapeutic/Medicinal Property
Phenol	A Potent antimicrobial agent
Phenol	4mehhyl Antioxidant
Benzoic Acid	Anti-Fungal, Topical Antiseptics and Inhalant decongestants.
Benzene acetic Acid	Treatment of Hyper-Ammonemia
Hydantoin	Anticonvulsants & Treatment of seizure disorders
Phenol,2,4-bis(1,1-dimethylephyl)	An intermediate in synthesis of UV stabilizers or antioxidants
Benzamide	Hypertension, Asthma, Renal and Peripheral Circulatory disturbances
Ethanone 1,2-diphenyl	Intermediate for a hypnotic and anticonvulsant

**Nationwide and Worldwide Contribution:**

It has contribution in developing other indigenous breeds like Deoni, Nimari etc. It was one of the contributors in the development of Brahman breed of North America. Gir is the most important milch breed of cattle. Various countries like Brazil, Mexico, USA and Venezuela have imported Gir animals where they are being bred successfully. The breed has been exported to other parts of the world also. In Brazil, where large herds are found it is known as 'Gyr'. Brazil has also evolved a strain called Indubrasil which is a cross between Gir and Kankrej. Gir has also been exported to USA especially to Texas, Florida and Louisiana states (Prabhakar and Singhal, 2006).

Milk and milk products are obviously the most widely accepted form of animal proteins in India. Milk from Gir cattles fetches premium price in urban market.

Keeping in view, the ability to survive on low quality feed, which is often scanty, better resistance towards certain tropical diseases, better heat tolerance and high fat yields; indigenous breeds of cattle are quite suitable in their respective ecological niches.

Gir cattle in Saurashtra provide milk, manure and draught power. Animal genetic resources of native breeds are largely underutilized in India and indiscriminate crossbreeding has degraded large numbers of local breeds. This is also true with Gir cattle in its native breeding tract. (i) About two-third population is either graded Gir or Gir like and hence not pure Gir, (ii) only one-third population i.e. 7.6 lakh could be 95% towards pure Gir. Hence, it is difficult to obtain large number of pure Gir animals. Since 2003–04 to 2012–13, contribution of Saurashtra to state total indigenous cattle milk yield is 60%.

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