# A Note on Traditional Breeding Practices among Maldharis of Banni Region of Kutch District of Gujarat

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## Abstract

The Banni area was known as largest grassland of the Asia spreads over about 3000 sq km. Free grazing based animal husbandry system of Kutch is characterized by its source of fodder. In this system part of fodder supply comes large from pasture land in the form of free grazing. These pasture land is characterized by its very low to negligible slopes. Jat and Mutvas are main communities engaged with this type livelihood system. The maldhari (wealth/animal owners), as the pastoralists call themselves, have over the several centuries developed and conserved one of the best blood lines for the buffalo, in this ecosystem. Maldharies keep 10 to 90 Banni buffaloes. Mostly natural breeding practice is followed in Banni region of Kutch. The Maldharies practice selective breeding. Male buffaloes are selected for breeding purposes based on their true breed characteristics, dam's milk production and body confirmation from their own Vathan. Breeding males are exchanged between nearby villages after 3 - 4 years regularly, to avoid inbreeding. Many pastoral and agro-pastoral communities keep detailed mental records of their animals' ancestry, reportedly up to 3rd to 4th generation back.

**Key words**- Banni, maldharies, conservation, breed, Vathan

## Introduction

Gujarat state is blessed with best germplasm of buffalo in the world. The breeds, Mehsana, Jaffarabadi, Surti and the emerging "Banni Buffalo" have been known for higher productivity, disease resistance, playing a specific role in maintaining vibrant, stable ecosystem, adapted to vagaries of environment and providing rural livelihood security in the state. Banni buffalo, the unique and valuable germplasm of Kutch maintained under typical and locally adapted extensive production system and the only source of livelihood for maldharies (Animal breeders) in Banni region of Kutch. Banni is home to 45 small hamlets of Muslim nomadic pastoralists and Meghwal Hindus. The Banni area, once upon a time, was known as largest grassland of the Asia, spreads over about 3000 sq km area. The soils of Banni are sandy to silt loam with lenses of clay. On account of high silt and clay content, the overall permeability of the soil is low and as a result the vertical and lateral movement of surface and sub surface water is considerably inhibited causes surface water logging and flooding during rainy season which restrict the cultivation of land and since time immemorial the land is kept for grazing purpose only. Large number of grass varieties, from sweet grasses to salt tolerance grasses and short to tall grass, grow in the Banni area after the rainy season. Such rich and diverse grassland supports buffalo rearing occupation in area.

Free grazing based animal husbandry system of Kutch is characterized by its source of fodder. In this system part of fodder supply comes from pasture land in the form of free grazing. These pasture land is characterized by its very low to negligible slopes. This system is dominant in the Banni area and sporadically in eastern and western part of Kutch. Rabari, Jat and Mutvas are main communities engaged with this type of livelihood system. The maldhari (wealth/animal owners), as the pastoralists call themselves, have over the several centuries developed and conserved one of the best blood lines for the buffalo, in this ecosystem. The genetic makeup of these unique animal gives it the ability to free graze in the night to avoid the harsh high temperatures of the day; and handle the stress of temperature difference and little fodder in droughts and yet when fed well can produce twice the milk than any other indigenous animal in the country! This made the Banni buffalo gain renowned in white revolution, and sold all over west India. Today, it commands amongst the highest price in the country. Well bred animals are sold for 50,000 to 75,000/- rupees. National Bureau of Animal Genetic Resources (NBAGR), Karnal and Sardarkrushinagar Dantiwada Agricultural University (SDAU) genotyping work

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confirms that the Banni buffalo is a distinct breed. It will soon be recognized as the 11th distinct buffalo breed in India, paving the way for the Banni pastoralists to further realize benefits for their conservation efforts.

A pilot survey was conducted by Sahjeevan AHKC unit to know the general management practices of Banni maldhari to rearing the Banni buffalo. We have more focus on breeding practices of Banni buffalo in its native tract. In breeding practice we have cover the care and management of buffalo calves for rearing, health status of breeding bulls, selection criteria of bull for breeding as well as market facilities. For that we have develop one questionnaire form to know the current situation of breeding practices of Banni maldhari. Questionnaire include feeding and care of newly born calf, criteria for selecting bull, care and management of bull in breeding season, selling of male and female animal in a year, selling of milk and other health related matter.

## Experimental

One survey form was prepared to know the husbandry practices of Banni buffalo in this area (Table 1). The form includes detail of care and management, health status, breeding practices and marketing facilities. Survey was done with participatory methods through informal interviews, talks with local experts and group discussions which are important to record the local terminology used to describe the breeds and to understand local breeding goals.

## Results

Buffalo type in this system is Sindhi which are locally known as Banni (Due to the name of area) or Kundi (Due to its coiling horn shape). This buffalo is good milk yielder if fed well and hence has high demand in dairying activity of the south Gujarat and Mumbai. As per the maldharies survey well maintained animals fetches price Rs. 50,000 to 75,000. The average milk yield of this animal is ranging from 12 to 18 L per day.

***Origin***

Basically Banni buffaloes are coming from Sindh area (Kadhan and Luhari) of Pakistan before partition of India-Pakistan. After that these buffaloes are adapted to local condition of Kutch (repeated droughts, low availability of water, high ambient temperatures and low humidity etc.). Now they have identify as Banni which does not having any similarity with Murrah or any other Indian buffaloes.

***Characteristics***

*Physical*

Banni buffalo is mostly black (95%) in color as well as brown (5%). They have got elongated and straight wide forehead with no slop towards horn base.

Table 1 Maldharies included in the survey and their herd size

| Name of maldharie | Village | Animals | | | |
|---|---|---|---|---|---|
| | | Male | Female | Calf | Total |
| Vaydhana Amad Hingorja | Nani Daddhar | 1 | 9 | 2 | 12 |
| Bhachaya Majana Node | Moti Daddhar | 1 | 9 | 5 | 15 |
| Alim Gulmamad | Moti Daddhar | 1 | 7 | 8 | 16 |
| Amad Juma | Vadhura | 1 | 18 | 21 | 40 |
| Bhachubha Ismail Sumara | Dedhiya | 1 | 15 | 14 | 30 |
| Maherali Bhachaya Halepotra | Maherali Vandh | 2 | 66 | 22 | 90 |
| Haji Adu Haji Abdulla Mutava | Gorevali | 2 | 38 | 10 | 50 |
| Mamdali Nurbhai Mutva | Mithadi | 1 | 12 | 12 | 25 |
| Malukbhai Hasam Mutva | Nani Mithadi | 1 | 12 | 3 | 16 |
| Bhimkhan haji Majid Mutva | Adyang | 1 | 17 | 7 | 25 |
| Haji Mamad Sumara | Sargu road | 1 | 13 | 6 | 22 |
| Haji Musa Haji Abbas Node | Ludiya | 2 | 25 | 23 | 50 |
| Alana Mukim Rayshipotra | Hodko | 1 | 10 | 2 | 13 |
| Hasam Idrish Halepotra | Hodko | 2 | 40 | 18 | 60 |
| Sau Suleman | Vadhura | 1 | 7 | 2 | 10 |

Horns are tightly coiled vertically with single to double coiling. The neck is thin and medium in the female and thick and heavy in the male. Forelegs are short and heavy and hind legs are medium and equally placed. The udder is well developed and bowel to round shaped. Teats are conical with round/pointed tips. Chest is deep with narrow brisket and shoulders are well blend with body. The tail is medium, almost touching the hock joint or little big. Banni buffalo is thinner anteriorly while broader and well built posterior and well built body barrel (Table 2, 3).

Table 2 Morphological (cm) traits of Banni buffalo

| Traits | Mean ± S.E. |
|---|---|
| Body length | 153.70 ± 0.37 |
| Heart girth | 205.53 ± 0.58 |
| Height at withers | 136.68 ± 0.17 |
| Face length | 53.66 ± 0.16 |

*Cytogenetic*

Number of Chromosomes (2n) = 50 (48 XX/48 XY), Autosomes pairs = 24

Sex chromosome pairs = 1 (Female XX or Male XY).

Morphology: Submetacentric (autosomes) first 5 pairs and next 19 pairs acrocentric (autosomes), X chromosome acrocentric (largest) and Y chromosome smallest acrocentric.

*Management*

Banni buffaloes are kept as loose in Vathan or personal Vada of Maldharies in villages of Banni area. Maldharies never tied their animals. The animals are brought up on a free grazing model where they leave, along with the other animals of the village in the evening and only return in the morning. They feed on the rich diversity of grasses and shrubs in the open grasslands of Banni and can cover up to 10-12 km in a single night. In monsoon when grasses are in ample amount then they can cover only 3-4 km, in winter animals can cover 5-6 km and in summer season they might have to cover about 10-12 km to gain their feed requirement. During milking they are given certain amount of concentrate feed additionally. In day time animals stay and rest near owner houses or under trees in the villages. In noon they also mud in the water area near water source to maintain body temperature.

Animals are fed concentrate in early morning during milking time. This is one of the reasons for that animal came back to villages in early morning conditionally to get concentrate feeding. A mature bull and heifer are also went for grazing.

Table 3 Comparative parameters of Banni buffaloes

| Key productivity parameters | Breeds of buffalo | | | | |
|---|---|---|---|---|---|
| | Banni | Jafarabadi | Mehsani | Surti | Murrah |
| Age at First Calving (Years) | 3-3.5 | 4 - 4.5 | 3.5-4 | 3.5-4 | 3.5-4 |
| Calving Interval (months) | 12-14 | 18-24 | 15-16 | 15-18 | 16 |
| Lactation Yield (L) | 2500-2700 | 2000-2400 | 1600-1800 | 1500-1800 | 1700-2200 |
| Lactation Length (days) | 290-295 | 302-310 | 352 | 350 | 300 |
| Fat (%) | 7-8 | 9-10 | 7 - 7.5 | 7 - 7.5 | 6.9 |
| Service Period (days) | 60-70 | 180 | 140-160 | 170 | 160-180 |

Table 4 Fodder source in Banni area

| Fodder Source | Good Rainfall Year | | | Bad Rainfall Year | | |
|---|---|---|---|---|---|---|
| | M | W | S | M | W | S |
| Green grass from wasteland | ■ | | | | | |
| Dry grass from wasteland | ■ | ■ | ■ | | | |
| Rainfed produce direct | | | | ■ | | |
| Green fodder purchased | | | ■ | | ■ | |
| Short distance migration | | | | | ■ | ■ |
| Long distance migration | | | ■ | | | |
| Putting animal in cattle camp | | | | | | ■ |

M= Monsoon, W= winter, S= summer

Table 4 explains the fodder source of this system. Free grazing starts after good rainfall year in the area and up to the summer it is continuing. Now a day the shortage of grasses takes place in early summer even in good rainfall year. In such cases the maldhari migrates in nearby irrigated belts where they get fodder against dung and/or providing labor from his family to the farm. The duration of migration depends on next year rainfall. If the next rain is good then he returns to his native village along with animals but if the next rain is failed he will continue with this arrangement.

During drought condition they are migrating in nearby area of Kutch (internal) where the grasses are available for grazing. If grasses are not available in Kutch district then they do external migration towards the southern Gujarat and even out of Gujarat also.

*Care and Management of buffalo calves*

Maldharies are taking care of newly born buffalo calves. As per discussion with maldharies they said that they provide milk to male calf up to 6 month to 1 year @ 3-6 L/day as per capacity and interest of Maldhari (one-two teats). When a calf is born its rumen will not be developed and it will take a few months until rumen is fully developed and start functioning. Until then the calf is similar to a simple-stomached animal nutritionally. They also provide milk to female calf up to 2 month to 6 month @ 3-6 L d-1 (one - two teats). After 3-4 month they are providing certain amount of palatable roughage to the calves. After that they are going to grazing with herd. They also offer concentrate from 4 month as per consumption capacity of calves from 0.5 to 1 Kg d-1. Some of the maldharies also give ghee to the calves.

*Breeding practices*

Breeder: - "A person, who practices the vocation of mating carefully, selected specimens of the same breed to reproduce specific, consistently replicable qualities and characteristics".

After study it came to know that maldharies keep 10 to 90 Banni buffaloes. For breeding of their herd (buffaloes) they keep one good breeding bull within the herd. Mostly natural breeding practice is followed in Banni region of Kutch. So in banni all maldharies play an important role as a breeder himself.

In this area people do not knowing the sign of estrus (heat) in animals because they do not need to notice due to natural breeding. Also animals went to grazing in grassland of Banni during early morning and in night hours, so this is very difficult to know that when and where animal come in heat. In Artificial Insemination (AI) technique owner must have knowledge of estrus sign and proper time of insemination. If timed AI is not occur than maldhari lost one month income because animal remain unproductive 1 month extra. AI technique is most useful and effective tool for quick breed improvement programme. In AI technique qualified person is required and also need to take certain hygienically steps. All the requirement of this technique is very difficult to maintain in this region. The preliminary studies on the key productivity parameters reveal that the Banni buffalo is much above the other buffalo breeds of India, especially in view of the harsh, dry environmental conditions in which they live! In addition to that Banni buffalo is yet not recognized hence semen for AI is also not available of Banni buffalo. So in this area natural breeding is much suitable in this extensive animal husbandry system. One saying is very popular in animal husbandry that "Bull is half of the herd". Hence in breeding programme selection of bull is one of the major task for maintaining purity and improvement of any breed.

The maldharies practice selective breeding. Male buffaloes are selected for breeding purposes based on their true breed characteristics, dam's milk production and body confirmation from their own Vathan. Breeding males are exchanged between nearby villages after 3 - 4 years regularly, to avoid inbreeding. Many pastoral and agro-pastoral communities keep detailed mental records of their animals' ancestry, reportedly up to 3rd to 4th generation back.

Some of the criteria they keep in mind while selecting a bull are:

- the health and strength of the animal
- the horns are equal in shape and size,
- information on the pedigree of the animal,
- weather its ancestors have ever fallen ill or died due to disease,
- beauty of the bull is well defined amongst the breeders and plays an equally important role in the selection of an animal. Some pastoralists have a fetish for a white mark, often on the forehead or around the hoof,

- they also consider the behavioral aspects of the animal such as complacency, good mothering instincts, ability to be part of a large herd (team work), etc.
- ability to walk long distances.

**Note:** - some of the maldharies doesn't use bull of their own Vathan but they select the bull from nearby area for breeding their animals. They also noticed that if they use homegrown bull, their progeny may be deteriorated (probably due to inbreeding).

*Health status and awareness*

Due to loose housing system in Vathan, animals remain in one common place. So there are more chances of spreading infectious diseases in animals e.g. outbreak of sheep pox is recently occur in Banni as well as in Nakhatrana, Mundra and Abdasa talukas of Kutch. Mastitis is also one the major infectious disease appears in large scale. Maldhari does not take hygienic care of their animals or not aware regarding importance of hygienic condition. Even ectoparasitic problem is also in considerable amount in such area due to lack of hygienic condition in Vathan/Vada. Respiratory diseases are also appearing may be due to dust and smoke of charcoal business. All the maldharies knowing commonly occurring diseases and they also have certain traditional knowledge for treating such diseases. Veterinary facilities are not so good because Banni is a remote area and distances between villages are far away. A few interested maldharies are aware regarding vaccination for important infectious diseases of the region (e.g. FMD, HS) and they vaccinated their animals regularly by their own extra efforts. They do not have knowledge regarding brucellosis. They are not aware that due to such diseases abortion can take place in pregnant animal. They just know that abortion can occur only due to polluted water (detergent mixed water), high temperature or due to certain injuries (falling on ground, fight with other animals etc.). So in this area, awareness programme on such area is necessary to save this valuable germ plasm of Gujarat.