



# Traditional Method of Mithun Production System in Arunachal Pradesh

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## ABSTRACT

Mithun (*Bos frontalis*) is considered as a majestic Gold of Arunachal Pradesh because of its economic, socio-cultural, and religious importance. Three systems of rearing are practiced, free-range, tethering and lura systems. Free range system is the most prevalent method of rearing, followed by tethering system during treatment or introduction into new environment/ place or to tame the mithun. Lura system synchronizes agriculture cultivation system, where mithun are kept inside community-based enclosure to prevent crops raid. No extra shed is constructed for mithun, no provision of health care like vaccination or deworming, except few farmer vaccinated their mithun for FMD, no extra feeds are offered except for common salt. Breeding is done by natural mating under favorable condition in forest. Identification mark is done by ear notching. Fallow jhum is good source of 14 different kind of fodder for mithun, while some farmers practice of rejuvenation of fodder by burning dry biomass of hillock during dry season (November-December). Tenant system of caring mithun is followed, as a dual owner of mithun, the tenants get one calf after every two calves born for absolute owner of mithun. Due to tenants system of caring and exchange of mithun during bridal gift within inter village to inter district practices may reduce inbreeding depression along with conducive, vast grazing forest area. These three factors are the reason for continuous increasing in mithun population in Arunachal, in contrast to decline mithun population in other state. 90.6 per cent of mithun population of India is found in Arunachal. There is need to inculcate the scientific ways to improve production potential of certain Research Centre or Sub Centre on Mithun may be established in Arunachal Pradesh for livelihood improvement of tribal society of Arunachal Pradesh.

**Key Words:** Arunachal, Majestic Gold, Mithle, Mithun, Tenants.

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## INTRODUCTION

Mithun (*Bos frontalis*) is a huge animal with royal looks, has a unique attraction for the tribal people of Northeast India in general and particularly for Arunachal Pradesh. Mithun is considered as most important livestock of Arunachal Pradesh not only because of their royal looks and body size but they are deeply rooted in the socio-culture, economic and religious life of the tribes of Arunachal. It has the highest value on barter table and often the status of a person is ranked based on the numbers of Mithuns the owner possess. Mithun serves as the ready source of hard or soft currency for the rural people because like Gold Coin any time it can be

exchange for movable or immovable property and use for settlement of disputes. So, it also acts as an instrument for peace and understanding amongst tribes. In tradition and customary practices, Mithun is the Choice animal to be sacrificed in the religious, festivals and other auspicious social occasions and most importantly exchange for bridal gift during marriage ceremony. So, for matrix of good reason, Mithun is considered as a Majestic Gold of Arunachal Pradesh.

Mithun can also be considered as a geographical indicator animal because the distribution pattern of Mithun in India is limited to North-East and within Northeast it is restricted to only four states

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viz. Arunachal Pradesh, Nagaland, Manipur, and Mizoram. As per the 20<sup>th</sup> livestock census of India (2019), the total mithun population of India is 3,86,293 which is 90.6% (3,50,154), is present in Arunachal followed by Nagaland 5.98% (23,123), Manipur 2.35% (9,059) and Mizoram 1.02 % (3957). However, a few studies have been done to document the mithun production system of Arunachal Pradesh, despite the highest density of mithun population in India. Considering the above point in view an exploratory study on traditional method of mithun production system in Arunachal Pradesh was undertaken during the period 2019 to 2021.

### MATERIALS AND METHODS

The study was carried out in five districts of Arunachal Pradesh. Ethnographic fieldwork techniques were used during the explanatory survey to gather and record contextual data regarding traditional method of Mithun productions system from mithun rearing farmers, gaon buras of different districts. These techniques included: 1) unstructured informal conversations and taped in-depth interviews with farmers 2) observation, photography, and participation during monitoring mithun in jungle with farmers and 3) a review of literature, including printed material as a secondary source were collected. The data collected from Ethnographic fieldwork techniques and secondary source were analyzed, interpreted and synthesis into complete package of traditional method of mithun production system in Arunachal Pradesh.

### RESULTS AND DISCUSSION

#### Distribution

Mithun has a limited geographical distribution in world; it is mainly concentrated in South- East Asia like Myanmar, Bhutan, China, and Bangladesh. In India, it is found in the tropical rainforest of the four North-East hilly states of Arunachal Pradesh, Nagaland, Manipur, and Mizoram. Changlang district is only district of Arunachal Pradesh, where Mithun population is absent.

#### Habitat

Mithun is generally found at an altitude between 300-3000 m MSL. They are shed loving animals and cannot tolerate strong sun light. They prefer to travel length and breadth of forest in search of favorable feeding and breeding ground. They thrive well in cold-humid and shady area of terrain topography. Often Mithuns share the common territory of yaks at higher altitude and cattle in lower altitude, so sometimes there is out crossing (species hybridization) between mithun, and cattle cross (Fig. 1; Tayo *et al*, 2019).

#### Rearing System

##### Tethering system

In this system mithun are tied with rope locally made up of cane or plastic rope on the neck in female and horn in case of male and other end of rope tied to pole. The animals are allowed to graze on circumscribed distance as per the rope length. In this system extra care and repeated changing of grazing area from time to time is required, which is a laborious and tedious job. Tethering system is usually practiced during health problems or introduction of mithun to new area, from one village to other village or from other districts during exchange in marriage ceremony or other traditional gift exchange in the form of animal (Tayo *et al*, 2014). This system is followed for a few days to couple of months until the health of animal is stable or adapted to newly introduced area (Fig. 2).

##### Free range system

The prevailing rearing system followed by mithun farmers is a “free range system” (Fig. 3), where, the mithuns are let-loose freely in the jungle and allow them to travel in length and breadth of forest in search of favorable place for feeding, breeding, and resting. Mithuns reared in free range system are healthier as compared to tethering system of rearing. However, wild beast– viz. wild dogs, tigers and leopards are main menace in free range system.

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### Lura system

In this system, mithuns are confined in certain community forest area and agriculture plots are kept open without fence. First the community earmarks the best area suitable for rearing mithun under natural habitat, with the main objective of harbouring mithun population of the village together, irrespective of individual ownership. Such an area is chosen, wherein majority of the mithun population of the village are present. Once the area is earmarked, the forest is barricaded with fence and finally closing the area from rest of the forests, with entry points or gates at many locations (Fig. 4). The fencing activities are start as soon as winter season ends, and it takes about 1-2 months to completely fence the area. Every household of the village contribute its share in terms of labour, manpower and finance throughout the fencing operation. The fencing materials are made up of commonly available bamboos and wooden poles of available tree species. After completion of fencing, the Mithun population of the village, irrespective of individual ownership is made mandatory to put or kept in the captivity for certain length of time during a particular season of a year in an enclosed area, particularly, for 4-5 months during June to October (Taba Heli, 2009).

This captivity is synchronized with the cultivation season of the slash and burn practice (Jhum Cultivation) of the land use system prevalent in the area. This serves as an effective measure to control and curb the incidence of damage of crops by the Mithuns.

### Identification Method

Ear notching system is the usual practice for identification of own Mithun. It is done just after birth or within weeks of birth by restraining the calf and with sharp knife either in left, right or in both side of ear, a part of tissue along with skin of ear is removed or split into two, three flaps as per owner practices (Fig. 5). Salt is applied on the cut mark for early healing and prevent from visiting fly. However, body coat colour pattern and horn size

are usually used as aids in identification of own Mithun.

### Feed and Fodder Management

Salt feeding is the only extra supplementary fed to mithun by its owner (Fig. 6) because under free range system of rearing, mithun are let-loose freely in the jungle to feed themselves on natural fodders. Salt act as a binding force for mithun with owner to keep in touch, while for owner it acts as an instrument to tame and remain close contact with mithun. Similar, observation was made by Prakash et al (2007). Otherwise, if the role of salt is nullified between Mithun and owner, the Mithun will remain nothing difference with wild animal. So, salt act as a corner stone in mithun production system, under prevalent rearing system of tribal society of Arunachal Pradesh. It is note that, Mithun prepare coarse salt than fine salt.

Fallow Jhum is one of the good sources of 14 different types of fodder, which grows in high density in subsequent year, once the jhum is left (Tayo *et al*, 2014). Some mithun farmers of lower Subansiri district, they use to put fire on dried grass in hill in the month of November – December, the hill which is entirely devoid of any big tree and usually earmark for fodder grazing area of mithun with precaution to prevent forest fire.

### Tenant System of Management

It is like a thumb rule, mithun are look after by co-owner on 'tenant system', especially for those of the Mithun owners who do not have time to take care of their Mithuns. Reliable persons are chosen as the 'Tenants of Mithun'. In this system tenant will take care of Mithuns from the day of handling over from the owner and in return for his services, owner provides the tenant one calf after every second or two calving as an incentive, i.e., 3<sup>rd</sup>, 6<sup>th</sup>, 9<sup>th</sup> calving and so on will be given to tenants. The tenants have to inform their owner immediately, if mithun has calved and within one week the calf ear have to be notched as an identification mark similar to mother, before calf is too strong to restrain.

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**Table 1. Reproductive Parameters of Mithun**

Reproductive parameters	Range
Estrus cycle	19-24 d
Duration of standing estrus	4-16 hr
Age at puberty	600-720 d
Gestation period	280-320 d
Inter calving period	350-400 d

Source: NRC on Mithun, resource booklet (2006)

In any case, if the Mithun dies, the tenants must inform the owner immediately and produce the body before owner indicating the death of animal. In case of abortion or death of calf just after parturition is not produced by tenant before owner, the number of calving is not counted and it is big blow for tenant because he has to wait for another one year to get his share.

### Breeding Management

Mithun is a polyestrous animal and estrus cycles repeat every after interval of 19-24 days with silent estrous showing mild bellowing and mounting activity of estrus female in herds. The general reproductive parameter of Mithun is given in Table No. 1.

Breeding is done by natural mating only (Fig. 7), without any human manipulations. Artificial insemination (AI) on mithun have not yet introduced, many attempts have been tried by extensional personal to popular the A.I. method, but due to free rang system of rearing, it is very difficult to find the mithun during the time of heat periods. As a result, A.I. method is remained untapped till date.

### Housing

There is not any provision of extra shed for mithun. They remain in the jungle without any man made shed. However, Mithun use shed of big trees for shelter under nature's care.

### Health Management

Health management on mithun is not given due importance unless clinical signs or symptoms

are not manifested. As a precautionary measure like deworming and vaccination were never done, by most of the mithun farmers, except for few farmers in per-urban area. The prevalent diseases are FMD (Fig. 8), Thelazia infestation, Diarrhea and Ectoparasite infestation like ticks (Fig. 9), mites, leaches, biting flies (Tayo *et al*, 2013). Foot and mouth disease (Fig. 8), outbreak is epidemic in Arunachal, every year in one or other district outbreak occur, which is the major source of loss in mithun population. Despite knowing the fact that FMD is endemic in Arunachal, it cannot be ruled out till toady because of many factors.

### Free range rearing system.

- Mithun owner doesn't cooperate much unless FMD outbreaks.
- Hilly terrain topography of rearing area.
- Due to sharing of grazing area with other wild animal like deer, and wild boar.
- Lack of road and telecommunication facilities for veterinarian access.
- Eye worm infection (Fig. 10) is the second most economic important of mithun disease because parasite present in the eye cause constant irritation that leads to lacrimation, opacity and ultimately blindness and in number of occasion result in death due to starvation or fall from cliff.

### Distribution Of Mithun Population

Mithuns are distributed in different parts of 16 districts in Arunachal as shown in Fig. 11. Mithun population density account for the highest in Papum Pare with 14.24% amongst the districts, followed

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**Fig. 1.** Mithle (Mithun cross cattle)



**Fig. 2.** Tethering system



**Fig. 3.** Free range system



**Fig. 4.** Lura system



**Fig. 5.** Ear Notching



**Fig. 6.** Feeding salt



**Fig. 7.** Natural Mating (Male ready for Mounting)



**Fig. 8.** Foot and mouth disease



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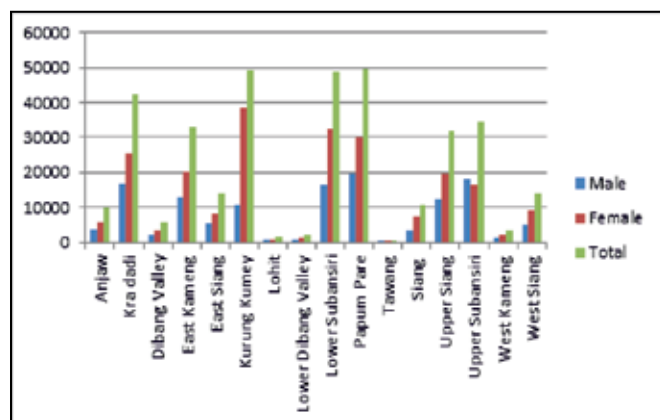


Fig. 9. Tick infestations



Fig. 10. Eye worm (*Thelazia*)

by Kurung Kumey with 14.01%, Lower Subansiri 13.91%, Kra Dadi 12.05%, Upper Subansiri 9.89%, East Kameng 9.35%, Upper Siang 9.10%, West Siang 3.95%, East Siang 3.93%, Siang 3.07%, Anjaw 2.78%, Dibang Valley 1.59%, West Kameng 0.94%, Lower Dibang Valley 6.03%, Lohit 0.52%, and least recorded in Tawang 0.015%. As per 20<sup>th</sup> livestock census 2019, the presence of mithun, are not recorded in Tirap and Changlang district of Arunachal Pradesh.



Source: 20<sup>th</sup> livestock census 2019.

Fig. 11. District wise Mithun population of Arunachal

### CONCLUSION

Mithun plays a pivotal role in livelihood of tribal people in rural area of Arunachal Pradesh, where access to bank, medical facilities and other source of alternative economic activities are limited. Traditional methods of mithun production and management system are very systematically managed based on trial and error methods, especially

tenants' system of caring mithun and three rearing system based on purposed and utility. However, existing traditional method of mithun production can be improved without much manipulation of their current farming system through the following means.

1. Construction of mithun shed in strategic locations in forest areas on community model basis to provide shelter during night and extreme weather conditions.
2. Regular vaccination against FMD and deworming practices should be ensured. Every year or alternate year mithun suffer from FMD, where many of them succumb to disease.
3. Micro-chip implantation as alternative or digital supportive to ear notching as identification mark. Since, lots of owner dispute arise due to confusion of similar ear notching design.
4. Construction of "Salt and mineral licking block" (SMLB) to mitigate mithun tracking time in jungle as drudger reduction strategies. Mithun will come to lick the salt and mineral block constructed at strategic locations and owners have to visit the SMLB spots to look for their mithun (Tayo *et al*, 2019), instead of tracking their mithun in jungle and feed hand full of salt.
5. A research Centre or sub-Centre must be established in the Mithun populated region in Arunachal Pradesh either by Central or State Government for scientific upliftment of tribal people through coordinated research on mithun.

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