Mithun (*Bos frontalis*) the pride of north-eastern region of India, also called 'Cattle of Hilly Region' is a unique domesticated bovine species found in Arunachal Pradesh, Manipur, Mizoram and Nagaland and also very meager in Myanmar, Bhutan, and Bangladesh. The animal plays an important role in the day to day socio-economic life of the local tribal population. The animal has got good potential for production of quality meat, milk, leather and also drought power for the hilly terrain if the herdsman adopt improve managemental practices.

Housing: An efficient management of livestock is always incomplete without adequate housing or shelter. All the animals need some kind of shelter to escape from inclement weather, and save themselves from the predators. For mithun under the semi-intensive system, mithuns are provided with a night shelter and animals are let loose for grazing during the day. In the evening, animals are brought back to the shelter and can be fed with supplements like fodder grass, paddy straw with little concentrate. The supervision of individual animals, additional feeding, watering, and medication can be done during late afternoon or early morning. The biggest advantage of this system is that the animals can be monitored by the owner regularly for growth, reproduction, health care, and breeding.

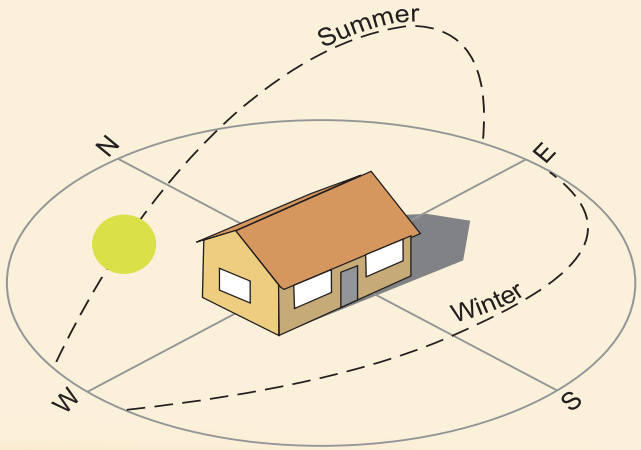


Fig 1. Housing orientation

Disinfection: In order to prevent pathogenic microorganisms from a dwelling place of animals, disinfection should be carried out from time to time in the farm premises. It can be in the form of gas or chemicals.

Name of chemicals	Uses
Boric acid (4-6%), Sodium hydroxide (1, 2 and 5%), Calcium hydroxide (lime water, slaked lime), Phenol (0.5 to 5%) and Sodium carbonate (2.5-4%).	Animal houses or farm buildings
Formaldehyde (5-10%)	Washing floor of animal houses
Glutaraldehyde 2% aqueous solution	Sterilization of farm instruments
Quarternary ammonium compounds; cetavlon; savlon	Removing grease, dirt and other organic matter
Calcium oxide	Burial pits to dispose the carcass

Record keeping: Farm registers or records are an integral part of the improved managemental practices. Farm record always helps the farmers in: *herd and farm management decisions, identifying problems, financial accounting and decision making, planning for the future etc.* For better production the farmer should maintain *Production (livestock register, health register, milking register, feeding register, etc.)* and *Reproduction (breeding register) records.*

Animal identification: It has various advantages than disadvantages for mithun owners such as, mithun stolen or lost can be traced back to the owner easily. Animal can be identified by ear tagging, branding or micro-chipping. The most commonly used is ***Ear Tagging***, a good visible ear-tag on the animal shows ***legal ownership*** and deters thieves from stealing. It facilitates better management and accurate record maintenance of individual animal such as parentage, date of birth, production records and health history.

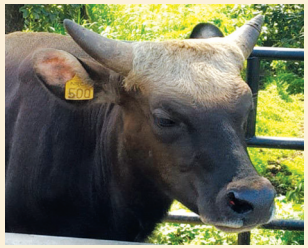


Fig 2. Ear tagging mithun

Deworming: The farmers in field usually do not follow any recommended schedule for deworming. Most of them resort to deworming only when the calf is off-feed or when worms are observed in the faeces. Hence the farmers are required to understand the importance of deworming and should start in first week of their life followed by every month for first 6 months, thereafter once in three months. Three most common endoparasitic problems of young calves are ascariasis, strongyloidosis coccidiosis and ectoparasites.

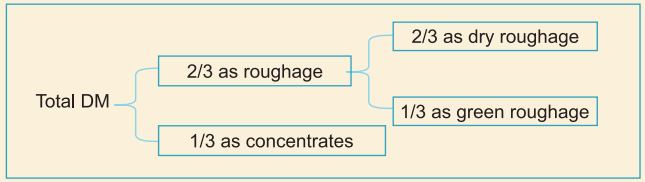
Disease	Symptoms	Treatment
Ascariasis	Indigestion is the main symptom and calves normally pass foul smelling clay colored or watery feces.	Piperazine hydrate (56.3% w/v) is administered orally right from day 3 @ 3-6 ml per 10 kg body weight. Levamisole (7.5 mg/kg body weight orally)
Coccidiosis	Sudden onset of severe diarrhea with foul smelling, fluid feces containing mucus and blood. The perineum and tail are commonly smeared with blood stained feces.	Amprolium and sulphamethazine orally @ 10 mg/kg and 140 mg/kg respectively daily for 3-5 days are useful. Same drugs @ 5mg/kg and 35 mg/kg in feed for 15-20 days are good for prophylaxis.
Ectoparasitism	Itching, irritation, alopecia, anemia and loss of body condition	Cypermethrin need to be sprayed on calves and in the paddock. The dosage for ticks is 1 ml/lit of water.

Vaccination: Animal health is one of the most important factors for better production. Vaccinating will help the mithuns in stimulating their immune system, in turn reducing morbidity and mortality.

Vaccination schedule:

Name of disease	Age at first dose	Booster	Subsequent dose
Food and Mouth Disease	4 months and above	1 month after first dose	Six monthly
Haemorrhagic Septicaemia	6 months and above	-	Annually in endemic areas
Black Quarter (BQ)	6 months and above	-	Annually in endemic areas

Feeding: Proper feeding is the key for a profitable and sustainable farming. It has direct impact on the growth rate, production capacity and health status as well as on the animal's product quality. The feed requirement (Dry matter) of an animal depends on its body weight and status of productivity. In ruminant bulk is essential and the dry (DM) matter allowance is divided as follows:



Note: If the green fodder is legume, the proportion of green fodder may be reuced to ¼ DM of the total roughage component and the remaining ¾ is dry roughage

Quarantine: It is the process of segregating apparently healthy animals (especially animal being newly introduced into a herd. In practice, a minimum period of 30 to 40 days has been generally accepted as the reasonable period.

Isolation of sick animals: It is the process of segregating the affected and in contact animals from the apparently healthy ones, in the event of outbreak of a contagious disease like FMD. The segregated animals should preferably be housed in a separate isolation shed situated far away from the normal animal house. If a separate shed is not available, they should be tied at one end of the shed away from the apparently healthy stock. The utensils used for the sick animal should be disinfected time to time. The attendants should handle the sick animal only after attending the healthy stock. They should bring back Mithun to the healthy herd only after they are fully recovered and the chance of passing the infection is removed.

Biosecurity: It is always preferable to prevent the introduction of disease agents into the farm. Hence, biosecurity protocols should be followed to identify and manage pathogens from recently introduced mithun, people, equipment, feed, wildlife and water.

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MANAGEMENT PRACTICES FOR IMPROVED MITHUN (*Bos frontalis*) HUSBANDRY

ICAR-National Research Centre on Mithun

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