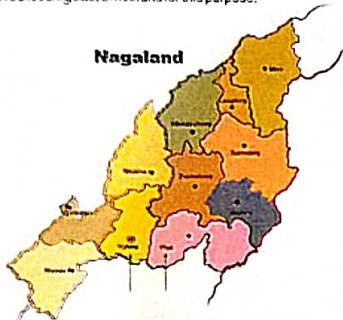


## Development of a nucleus breeding stock of Mithuns for propagation of pure stock for meat and milk – A participatory approach

### Introduction

Mithun (*Bos frontalis*) is a unique bovine species of North Eastern Hill Region of India. Mithun is basically a meat animal like beef cattle and should be efficient to convert grass, forages, and various by-products, plus human edible protein and energy, into highly nutritious and tasty meat. The development of a nucleus breeding stock of Mithuns are taken up for the purpose of conservation as well as genetic improvement of this species through propagation of pure stock for meat and milk with the collaboration with mithun owners in a participatory mode. Two villages viz. Khonoma in Kohima District and Thuvupisu in Phek district of Nagaland are selected in the native breeding tract of mithuns for this purpose.



### Existing Scenario - Importance of the Programme

- Mithun plays an important role in socio-economic life of the tribal populations of the region. The history of this animal with the ethnic and cultural life of tribal people of the North-East hill states is several hundreds years old.
- The animal has got a great potential for quality meat, milk and leather productions and there is a great scope to promote this animal as an organic meat and milk producer.
- Being a meat animal, the growth rate of mithun is the prime concern of farmers. With adequate feeding, the growth rate of this animal varies from 200 to 600 g/day.
- Under free range condition, farmers practice rotational grazing by shifting their animals from one hill to another. Day to day health care and disease prevention measures are not the usual practices in existing mithun husbandry system. Due to denudation of free range along with the biotic and abiotic stress, there is urgent need of scientific intervention for proper management as well as conservation of this beautiful hill animal through implementing an effective conservation and improvement programme.

- The traditional breeding and utilization practices, including the social sacrifices of outstanding mithun bulls, make them more vulnerable. This necessitates an urgent conservation efforts.
- An effective scientific breeding and conservation programme needs to be developed for their potential economic use in the future. With intensive program of conservation and propagation will not only preserve this species of animal but also help thousands of poor farmers to keep themselves away from the protein hunger.
- There is immense scope to increase meat production to meet the demand of the fast growing population by exploiting the rate of breeding and reproductive potential of mithun through judicious application of biotechnology.

Under these backdrops, the following objectives are taken -

### Objectives

- Establishment of nucleus herd of Mithuns in their native tract (Nagaland, Arunachal Pradesh, Mizoram) in association with Mithun owners/rearers under participatory approach.
- Selection of Mithun bulls with high genetic merit and further propagation of improved germplasm for future herd improvement.
- Assessment, refinement and transfer of technologies developed by the Institute (breeding, reproductive, nutritional and health-care intervention) for enhancing reproductive and productive performance of Mithuns.

### Stakeholders

- Mithun owning community, State departments of AH & Vety, SAUs, KVVKs and NGOs of North East Hill Region having mithun populations

### Major constrains facing by the mithun rearers

- Destruction of cultivation by the animal due to lack of barriers/fencing in the area where Mithun are being reared.
- Mithun calves are being attacked and killed by wild animal like wolves.
- Due to denudation of free range there are insufficient jungle forages, tree fodders, shrubs, herbs and natural vegetation for thriving of Mithun.
- Insufficient source of alternative feed resources.
- No proper veterinary support for keeping the animal healthy.

### Major constrains facing by the researchers

- Difficulty in identification of animals.
- Due to non availability of pedigree chart data collection is very difficult.
- Difficulty in monitoring of health and reproductive status due to free range system of rearing in the forest.
- Lack of quality bull and limited population size results poor genetic makeup and inbreeding.

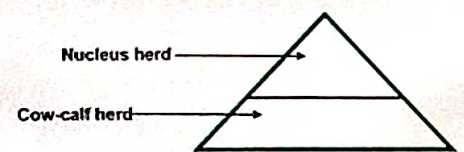
### Scientific Breeding and genetic improvement programme of mithuns

Mithun is mostly a meat animal and that is organic meat due to its unique rearing system in the forests. In cattle, beef industry consists of four general sectors:

- o Seed stock sector
- o Cow-calf sector

- o Grower/finisher sector
- o End-user sector

Out of these four sectors, genetic improvement depends mostly on seed-stock sector and Cow-calf sector. If we prepare a tier, it will be like a pyramid -



Similarly, core of genetic improvement programme adopted for mithuns is :

- o Create and supply of superior genetics through selection of improved bulls
- o Establishing of genetic evaluation system (Breeding Plan)
- o Direction of breeding program for a sizeable mithun population
- o Communication channel with the mithun rearing tribes/stakeholders

### Aim of Mithun breeding programmes

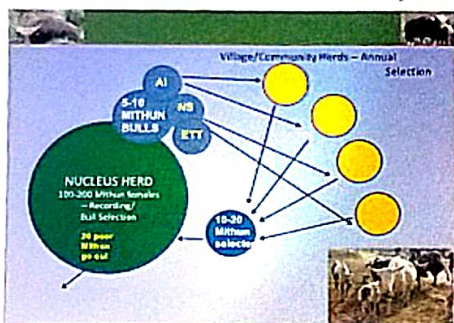
- The primary aim of the breeding programme is to increase the meat and/or milk production and the per capita availability of milk/meat through the increase in number and improving the quality of Mithun
- To bring a sizeable number of breedable age female under breeding programme by making available breeding facilities like bulls for natural service and introduction of artificial insemination in Mithun in the farmers field
- To increase the breedable females under coverage of quality bull service/artificial insemination.

### Breeding Strategy – Open Nucleus Breeding Scheme

- An open nucleus breeding programme, where animals from the general population can be part of the nucleus, has been proposed for faster genetic improvement. Because this scheme is not restricted to animals already in the nucleus (as is the case with a closed nucleus), it allows for greater selection intensity and is often quoted as the preferred method of operation for quick genetic gain.
- This scheme can be recommended as an alternative to the progeny testing scheme, and can be achieved either by grouping high production/growth animals at the farmer level (Group Nucleus Breeding Structure), or by assembling all animals at a highly organized location (Central Nucleus Breeding System).
- As this second scheme is difficult under field condition, first one (ONBS with group scheme) is preferred breeding programme for Mithun.

- Straight (Pure) breeding through selection is desirable to preserve and conserve the unique characters of Mithuns.
- The superior males generated out of nuclear stock should be introduced to the farmers' herds.
- Hence, breeding programme for genetic improvement of this species should emphasize the conservation of its genetic diversity and its unique characters.
- Establishment of a data recording mechanism and systematic breeding programme of Mithuns will be taken up for improving meat and growth traits.

#### Thematic Scheme of ONBS for Mithun under participatory mode with the local community



#### Likely Outcome

- Establishing improved ONBS herds of Mithuns in their native tract along with integrated Mithun based farming system.
- Selection of elite Mithun bulls.
- Production of elite bull-mothers for future bull production.
- Overall genetic improvement of Mithuns.
- Conservation of valuable Mithun germplasm.
- Farmers will be motivated to use scientific procedures for Mithun rearing for a more economic benefits.
- Reduction of morbidity and mortality due to different diseases.
- Use of nutritious locally available sources of feeds and fodder including agro-industrial by products for increasing growth and production of the animal along with reduction of feed cost.

#### Pictorial of the programme



Khonoma Village - Community Programme under TSP



Pledge for participation

1st Mithun AI calf in the field



Mithun Conservation and ONBS Programme site, Khonoma

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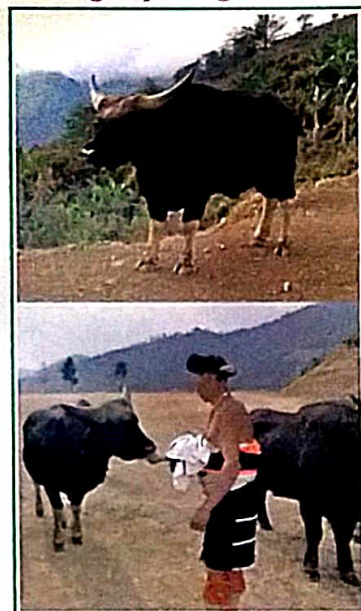
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## Mithun Conservation and Nucleus Breeding Scheme Flagship Programme



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