

Introduction

North-Eastern Hilly region of India is endowed with diverse plant and animal resources. This region is covered with forest and tree leaves/shrubs are available in plenty for feeding of mithun. Tree leaves are cheap source of nutrients like protein, vitamins and minerals. But many tree leaves contain various levels of antinutritional factors that have an affinity for carbohydrate, amino acids and minerals rendering them unavailable for rumen microflora and host animal. However proper scientific knowledge of tree leaves and feeding of tree leaves containing good nutritional composition is the correct steps for best utilization of these natural resources.

Important fodder trees for mithun

1. *Ficus hirta* (Themichedie)

This tree is named as Temechiedie and Heshlak in Angami and Konyak dominated areas of Nagaland, respectively. In Arunachal Pradesh it is called as Nyeihi. It remains green throughout years. Around 3-4 lopping can be obtained a years with an average fodder yield per cuttings is 64-150 kg/tree (fresh basis). Average chemical composition is CP 17.5; EE 1.4; CF 18.3; NFE 56.4 & TA 6.4. It is having good palatability in mithun.

2. *Trema orientalis* (Thedie)

In Nagaland, Arunachal Pradesh and Mizoram the local names are Thedie, Yal and Belphuar respectively. English name of this tree is pigeon wood. In forests it is a straight, slender tree grows up to 18 m. An average fodder yield is around 45-110 kg/tree (fresh basis) and 2-3 lopping can be obtained a year. It is a good source of calcium and the palatability is excellent. The average chemical composition is CP 17.1; EE 2.31; CF 28.3; NFE 45.9; NDF 35.1; ADF 25.0 & TA 6.4.

3. *Ficus hookerii* (Khaboo)

This tree can be easily propagated by stem cuttings and seeds. 3-5 lopping can be obtained in a year

and fodder yield is around 65-135 kg/tree (fresh basis). The palatability is good. The average chemical composition is CP 12.3; EE 1.41; CF 22.2; NFE 58.4 & TA 5.60.

4. *Lagerstroemia* spp. (Thumero)

This tree gives 4-5 lopping a year with average green foliage yield of 80-154 kg/tree (fresh basis). The tree grows very high, about 8-12 m which gives more fodder yield. This tree is very well propagated through seeds. The palatability is good and the average chemical composition is CP 23.1; EE 2.10; CF 18.1; NFE 49.4; NDF 33.0; ADF 21.0; TA 7.30.

5. *Quercus polystachya* (Keromite)

It is also named as Kartoos by the nepali workers. 2-3 cuttings can be obtained with an average yield of 60-95 kg/tree/cut. This tree provides the green fodder during the lean period i.e. October to December. The palatability is good and the average chemical composition is CP 12.9; EE 4.9; CF 26.9; NFE 45.5; TA 9.80.

Strategies for feeding of mithun

Many tree leaves/shrubs in NEH region were found to be rich source of protein. Tao (*Ficus roxburghii*), Tayir (*Litsea cintrata*), Remter (*Mastertia assamica*), Yare (*Piper peticelloseum*), Byake (*Solanum kurzii*), Tatumalu (*Pilea glaberrima*) of Arunachal Pradesh, Thumero (*Lagerstroemia speciosa*), Thedie (*Trema orientalis*), Khusia (*Melia azadiracta*), Tophala (*Borreria hirticulata*), Thenha (*Litsea* sp.), Tambuinei (*Callicarpa vestita*), Medzei (*Spondias pinnata*), Khramhu (*Morus* spp) of Nagaland, Thangsam (*Chromola odorata*), Pangbal (*Manihot esculenta*), Thanrawng (*Gmelina arborea*), Phulrua (*Dendrocalamus hamiltonii*), Vankpuithal (*Bides bidermata*), Theibate (*Ficus auriculata*) of Mizoram and Nake (*Callicarpa arborea*), Vaopa (*Bauhinia hookeri*), Shakhikeng (*Solanum* spp), Lhakhai (*Urtica dioica*), Anthudul (*Herpetospermum* spp), Sheijephlem (*Herpetospermum* spp) of Manipur were found to be rich in crude protein. Similarly

many tree leaves were found to be rich source of energy. Combination of both is essential to make good type of diet for mithun. Fortification with minerals and salt may increase nutritive value further.

Feeding of tree leaves based feed block

Feed blocks were prepared in this institute by incorporating tree leaves, concentrate mixture and paddy straw. Performance of mithun were found to be good when feed blocks were fed to mithun by incorporating *Lagerstroemia speciosa* (Thumero) up to 30 percent. Similarly other tree leaves and shrubs consumed by mithun may be incorporated in the preparation of feed block for mithun.

Feeding tree leaves and mineral mixture/Yeast

The mineral mixtures have been prepared in this institute for meeting the requirement of minerals for mithun. Minerals mixture can be fed to mithun on tree leaves based ration for better growth, production and health. Similarly Yeast (*Sacharomyces cerevisiae*) can be fed on tree leaves based ration for economizing the production and also for improving the overall health status of animals. The dose for yeast feeding is 5 to 6 g of dried yeast.

Vegetative propagation of tree foliages

Seed is the main method for multiplication of fodder tree species under natural condition. Propagation through vegetative means gives an opportunity to shorten the period of multiplication. Stem cuttings is the possible means in the process of fast multiplication and work has been conducted in this area at NRC on mithun. Plant growth hormones like auxins, cytokinins and combination of both have also been tried successfully in NRC Mithun, Nagaland for shortening the process of propagation.



Scientific name : *Lagerstroemia*
 Local name : Thumero
 Crude Protein : 23.1 %
 Yield : 80-154 kg/tree



Scientific name : *Quercus polystachya*
 Local name : Keromite
 Crude Protein : 12.9 %
 Yield : 60-95 kg/tree/cut



Scientific name : *Ficus hirta*
 Local name : Themichedie
 Yield : 64-150 kg/tree
 Crude Protein : 17.5 %



Tree leaves based feed block for mithun

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