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Traditional Use and Knowledge Validation of Fodder Trees and Shrubs in NEH Region of India

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A B S T R A C T

Sustainable production of livestock usually involves efficient utilisation of locally available resources i.e. feed and remedies. Smallholder farmers rely on their visual observations and experiences in feeding and health management of livestock. The aim of this study was to identify and evaluate farmers' knowledge on the utilisation of fodder trees and shrubs as livestock production resources. The ethnobotanical survey using a semi-structured questionnaire and focus personal discussions was conducted among livestock owners and keepers in the urban and rural areas of NEH Region, India. Cattle were predominantly kept, followed by pigs, goats, mithun, buffaloes and sheep. The study found that non-traditional forages like tree leaves, shrubs, herbaceous weeds and epiphytic ferns have an important role in feeding of domestic livestock during the lean period in NEH Region. Most of these edible leafy fodders belong to Moraceae, Lauraceae, Fagaceae, Euphorbiacea, Ulmaceae, Verbenaceae and Symploaceae families.

Introduction

North Eastern states of India particularly in NEH Region livestock rearing were being considered as one of the important homestead activities in the farm household. In the rural household economy, livestock is considered as an inseparable component in the whole farm business, as the production of milk and meat as well as manure, draught and transportation depends on it. It provides nutritional security to farm family and stabilizes farm income too.

As a major source of animal feeds in NEH Region, fodder trees and shrubs are highly valued by farmers. They have deep root systems enabling the extraction of water and nutrients from deeper layer in the soil profile (Teferi *et al.*, 2008). Most of these plants have high crude protein content, ranging from 10 to more than 25% on dry matter basis (Moleele, 1998). Farmers have an impressive knowledge of browsed species. Involving farmers in the process of data collection is important because as potential users of new technologies to be developed, their knowledge and preferences are critical (Haugerud and Collinson, 1990). However, some of the knowledge is liable to be

distorted or lost completely if transfer is not done continuously.

In the present study knowledge on utilisation of trees and shrubs as feed for livestock in NEH Region has been described.

Materials and Methods

The information regarding indigenous knowledge was gathered through literature survey and field visits. Individual interviews were conducted among livestock owners and keepers. Issues related to the knowledge on trees and shrubs such as availability and acceptability by the animals were discussed during the interviews. Plant samples which were utilised as fodder were collected from each farmers and identification was done at the CAU, Imphal and confirmed with the help of plant taxonomist from Manipur University.

Results and Discussion

Different fodder trees and shrubs contribute to the ration of livestock during different seasons. The farmers in the study area identified six seasons based on local feeding. In general, there are two seasons of scarce feed resources reported in the study area: the dry summer season covering a period from early March to mid-May, and winter from early December to the end of February. Fodder trees contribute to livestock rations, especially during these scarce seasons.

The use of some fodder trees extends beyond the typical scarce season. Some of the shrubs are being freely browsed throughout the entire year, whereas others are lopped and provide foliage for intensive feeding during the scarce seasons. Table 1 summarizes the availability, their habitat, favoured plant part, animal species consume on it and loping cycle during different seasons. Moraceae has appeared to be the dominant family, followed by Lauraceae and Fagaceae. The identification of more fodder trees is important since, trees have two characteristics, which make them useful particularly during drought. Firstly the trees able to draw as moisture and mineral from deeper layer of the soil which are out of reach for grasses, secondly, the leaves of most trees retain their nutritive value even when they are mature. Trees and shrubs provide fodder which is of great importance during period of nutritional stress in the dry season when the nutritional value of dormant grasses is low. In addition to tree and shrub leaves, cattle and goats consume the fruits of many trees like *Quercus glauca*, *Myrica esculeta*, *Ficus palmate*, *Ficus benghalensis*, *Celtis tetranda* and ripe fruits of *Meyna spinosa*. So far the lopping cycle is concerned; it varies from species to species. Plant species belonging to Ficus, Artocarpus and Bauhinia had greater importance in providing more edible biomass (Verma *et al.*, 1982). Most of the fodder species have the lopping cycle throughout the lean period (October-May).

Majority of the species have longer lopping cycle and higher palatability, which are taken as positive attributes of the fodder trees by the breeders. The main impact of feeding such fodder during lean period as supplementary item has been observed to have maintained the sustainable production of cattle product in NEH Region. In the traditional farming system of the NEH Region of India, different types of fodder trees and shrubs are found and used differently by various landowning and landless social segments. The landless herders, who annually rear thousands of cattle, sheep and goats, are at risk because of decreasing lowland grazing areas and fodder availability along trekking routes and resting sites. This paper demonstrates that indigenous tree and shrub species have a high potential in sustaining a pastoral system in need of alternatives to shrinking grazing areas. It is also imperative that indigenous knowledge is documented and evaluated before it is lost.

Table.1 Important fodder trees and shrubs of NEH Region, favoured plant part, animal species feeding on it and their lopping cycle

Plant species	Family	Plant parts used	Animal species	Lopping Cycle
Alnus nepalensis D.Don	Betulaceae	L	Cattle goats	April – May
Alternanther philoxeroids Griseb	Amaranthaceae	Whole part	Cattle	Jan-Dec
Antidesma acidum Retz	Euphorbiaceae	L, F	Goats, cattle	Oct – May
Ardisia cororala Roxb	Myrsinaceae	L	Cattle	March-May
Artocarpus chaplasa Roxb.	Moraceae	L	Cattle	Oct - May
Artocarpus gomezianus Wall. Ex Trecul	Moraceae	L, F	Goats, cattle	Oct - May
Artocarpus heterophyllus Lamk.	Moraceae	L	Cattle	Oct - May
Averrhoea carambola Linn	Oxalidaceae	L	Cattle, Goat	April-Sept
Bambusa olivereina Gamble	Poaceae	L	Cattle, Goat, Sheep, Mithun	Jan-Dec
Betula alnoides Buch.-Ham.ex D.Don	Betulaceae	L	Cattle	Dec - May
Bridelia pubecens Kutz	Euphorbiaceae	L, F	Goats, cattle	Jan - May
Buddleja asiatica Lour.	Loganiaceae	L	Cattle	Oct - May
Callicarpa arborea Roxb.	Verbenaceae	L, F	Goats, cattle	Jan - May
Castronopsis indica A. DC.	Fagaceae	L	Goats, cattle	Feb - May
Castronopsis kurzii (Hance) S.M. Biswas	Fagaceae	L	Goats, cattle	Feb - May
Castronopsis tribuloides (Sm.) DC.	Fagaceae	L	Cattle	Oct - May
Celtis tetranda Roxb.	Ulmaceae	L, F	Goats, Cattle, Mithun	March - May
Celtiscinua australis	Ulmaceae	L	Cattle, Goat, Sheep	May-Sept
Cinnamomum bejolghota (Buch.-Ham.) Sweet.	Lauraceae	L	Goats, Cattle	Oct - May
Cinnamomum gladuliferum (Nees) Meissn.	Lauraceae	L	Goats, Cattle	March - May
Cinnamomum pauculorum Nees.	Lauraceae	L	Goats, Cattle	Oct - May
Emblica officialis Gaertn.	Euphorbiaceae	L,F	Goats, Cattle, Mithun	April - May
Ficus auriculata Lour.	Moraceae	L,F	Goats, cattle	Oct - May
Ficus benghalensis Linn	Moraceae	L, F	Goats, cattle	Oct
Ficus bhotanica King ex Hook.f.	Moraceae	L	Cattle, goats	Oct
Ficus fulva Reinwardt.	Moraceae	L	Goats, cattle	Oct
Ficus hispida Linn.f.	Moraceae	L	Goats, cattle	March - May
Ficus oligodon Miq.	Moraceae	F, L	Cattle, goats	Feb - May
Ficus palmata Linn	Moraceae	L,F	Cattle, Goat, Sheep	April-Sept
*Ficus religios*a Linn.	Moraceae	L	Cattle	April - May
Ficus semicordata J.S. Sm.	Moraceae	L	Cattle, goats	Oct - May
Ficus virens Ait.	Moraceae	L	Cattle	Oct - May
Fraxinus floribunda Wall.	Oleaceae	L	Goats	March - May
Glochidion assamicum Hook.f.	Euphorbiaceae	L	Cattle, goats	Oct - May
Glochidion sphaerogynum Kurz	Euphorbiaceae	L	Cattle	March - May
Leucaena glauca Benth	Mimosaceae	L	Cattle, Goat, Sheep	April-August
Litsea monopetala (Roxb.) Pers.	Lauraceae	L	Cattle, Goat	Oct - May
Mallotus phillipenssis (Lam.) Muell.-Arg.	Euphorbiaceae	L	Cattle	Dec - May
Meyna spinosa	Rubiaceae	L, F	Cattle, Goat, Sheep	May-Oct
Morus australis Poir.	Moraceae	L	Goats, cattle	March - May
Morus serrata Roxb.	Moraceae	L	Goats, cattle, Mithun	March - May
Persea bombycina (King ex. Hook.f.) Kosterm.	Lauraceae	L	Cattle	Oct - May
Persea kingii (Hook.f.) Kosterm.	Lauraceae	L	Cattle	Oct - May
Persea odoratissima (Nees.) Kosterm.	Lauraceae	L	Cattle	Oct - May
Phoebe cuminate (Nees.) Nees.	Lauraceae	L	Cattle	Oct - May
Quercus glauca Thunb.	Fagaceae	L	cattle	Jan - May
Quercus griffithii Hook.f. & Thoms. ex DC.	Fagaceae	L	Cattle, goats	April - May
Quercus serrata Thunb.	Fagaceae	L, F	Cattle, goats	April - Sept
Spondias Mangifera	Simaroubaceae	L	Cattle, Goat, Sheep, Mithun	April-August
Symplocus paniculata	Symploaceae	L	Cattle, Goats	March - April
Trema cannabina Lour.	Ulmaceae	L	Cattle, Goats	March - May
Trema orientalis (Linn.) Bl.	Ulmaceae	L	Cattle	Oct - May
Vitex penducularis Wall. Ex Sch.	Verbenaceae	L	Cattle	April - May

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References

Chetri, RB, 2010 Some fodder yielding trees of Meghalaya, Northeast India, Indian Journal of Traditional Knowledge, 9(4) 786-790.

Haugerud A and Collinson M P 1990 Plants, genes, and people: Improving the relevance of plant breeding in Africa. Exploration Agriculture 26: 341-362.

Moleele NM 1998 Encroacher woody plant browse as feed for cattle. Cattle diet composition for three seasons at Olifants Drift, south-east Botswana. Journal of Arid Environments 40: 255-268.

Terefi A, Solomon M and Lisanework N 2008 Management and utilization of browse species as livestock feed in semi-arid district of North Ethiopia. Livestock Research for Rural Development, 20.

Verma, A., B.P.S. Yadav, K.T. Sampath and D.J. Roy. 1982. Livestock feed and feeding habits in north-eastern hills of India. Res. Bull. 17, ICAR Research Complex for NEH Region, Shilong, India p. 1-100.

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