

ROLE OF NON-TRADITIONAL FORAGES IN LIVESTOCK PRODUCTION IN INDIA

Bhag Mal, J.N. Gupta and J.P. Singh

Indian Grassland and Fodder Research Institute, Jhansi-284003, INDIA

ABSTRACT

The paper reports a number of non-traditional forage species which form the life support system for grazing animals in normal conditions as well as scarcity periods like droughts and famines. Such species vary according to climatic and ecological conditions of India. These species play an important role in domestic livestock production as well as providing forage to the game animals. In the arid region the majority of such species are small trees and shrubs; in semi-arid regions majority of such species are shrubs, aquatic weeds and minor millets. In temperate/alpine Himalaya such species range from lichens, ferns, climbers to shrubs and aquatic weeds. The prominent species are briefly described in this paper.

KEYWORDS

Forage, livestock, India, shrubs, non-traditional species

INTRODUCTION

Besides the traditional forages, there are a number of species which cater to the needs of grazing animals. These species are either cut/lopped for stall feeding or grazed/browsed. In different agro-ecological regions of India this system is widely practised but the species vary as per climatic conditions. Their role in livestock production needs to be scientifically evaluated as a sole or supplementary diets for grazing animals. The study reported in this paper is a part of a national effort being made in this direction. A brief account of the prominent species and their role in livestock production is mentioned in this paper.

MATERIALS AND METHODS

The information regarding non-traditional species was gathered through literature survey and field visits. Following this the species collection and field evaluation were initiated at IGFRI, Jhansi and other centres of the ICAR sponsored national coordinated research project on under-utilized plants.

NON-TRADITIONAL SPECIES

Arid Regions: The arid zones have about 10% land area of the country and are largely confined to the western states i.e. Rajasthan and Gujrat. Ecological survey of Indian desert reveals that this area fails to provide the traditional milieu of production in agriculture but it is rich in a number of plant species which are of tremendous economic value (Shankar et al. 1988). Some of the tree and shrub species are a valuable source in providing top feed to cattle, sheep, goats and camels during the lean period (January-June). *Prosopis cineraria* and *Zizyphus nummularia* are the prized trees and shrubs, respectively of the desert plains which provide nutritive bulk of top feed. Other palatable species in the decreasing order of importance are *Ailanthus excelsa*, *Salvadora oleoides*, *Acacia senegal*, *Albizia lebbek*, *Anogeisus rotundifolia*, *A. pendula*, *Calligonum polygonoides*, *Azadirachta indica*, *Grewia tenax*, *Maytenus emarginata*, *Prosopis juliflora* and *Tecomella undulata*. The crude protein content of the leaves of *P. cineraria* and *Z. nummularia* is reported to be 13.9% and 14%, respectively.

Semi-arid Region: The semi-arid zone constitutes 30.56% of the total land area of India and is spread over 10 states. Over 70% of the semi-arid area is confined to the southern states and the remaining 30% lies in north-western states. Due to the shortage of traditional

forage, feed and increasing price of the commodity, rural people of this tract always look for wild plants of forage value for increasing livestock population. A number of plant species used for this purpose viz., *Boerhavia diffusa*, *Borreria stricta*, *Cassia mimosoides*, *Gomphrena globosa*, *Heylandia latebrosa*, *Leptadaenia reticulata* and *Rivea hypocrateriformis* etc. All these plants are considered as weeds of wastelands of this tract. It is also observed that plant parts like stem, leaves, roots of selected trees and shrub species are used as fodder. Some of the important species are *Bridelia crenulata*, *Cereya arborea*, *Cassine glauca*, *Cordia dichotoma*, *Ehretia laevis*, *Ficus arnottiana*, *Flemingia strobilifera*, *Garuga pinnata*, *Grewia polygama*, *G. tiliaefolia*, *Haplanthodes verticillatus*, *Helecteres isora*, *Mitragyna parviflora*, *Pavetta indica*, *Terminalia bellirica* etc. Looking to the key role of rangeland shrubs in pasture based rangeland production, 7 shrubs were identified at IGFRI: *Ehretia aspera*, *Securinega virosa*, *Gymnosporia spinosa*, *Helictres isora*, *Grewia flavescens*, *Zizyphus nummularia* and *Carrisa spinarum*. Crude protein content in leaves of these species range from 15 to 20%.

North- Eastern Humid Region: The north-eastern humid zone constitutes about 7.6% of the total geographical area of India and is spread over seven states. The region represents areas ranging from tropical plains to temperate and alpine hills. High rainfall and humidity combined with acidic soil present a unique agroclimate in the region. Non-traditional forages like tree leaves, shrubs, herbaceous weeds and epiphytic ferns have an important role in feeding of domestic livestock during lean period (December-May). Most of these edible leafy fodders belong to Moraceae, Leguminosae, Verbenaceae, Rubiaceae, Araliaceae, Rosaceae, Liliaceae, Urticaceae and Zingiberaceae families. The plants of genera *Artocarpus*, *Bauhinia*, *Careya*, *Ficus*, *Grewia* and *Vitex* are the most important for providing edible matter to domestic livestock (Verma et al. 1982). Lichens are used by livestock population living in the high altitude areas. Soil lichens are eaten by yak. The important lichens are the species of *Cladonia* and *Cetraria*. In severe conditions lichens may constitute 90% of the total diet of arctic animals.

North-Western Himalayan Region: The whole tract is an assemblage of diverse climate, topography, vegetation, ecology and land use pattern. The annual average rainfall varies from 80 mm in Ladakh to over 200 cm in some parts of Himachal Pradesh. Almost throughout the region, the sub-alpine and alpine pastures are used under migratory, semi-migratory and sedentary systems of animal rearing. In temperate regions foliage from fodder trees are fed to livestock in mixture with crop residues and hay. These fodder trees are *Salix fragilis*, *S. daphnoides*, *Populus cileata*, *P. euphratica*, *Betula utilis*, *Acer candatum* and *Quercus ilex*. In cold desert of Ladakh many non-graminaceous herbs are collected and fed to sheep and pashmina goat. These plants are: *Arenaria foliosa*, *Artemisia sieversiana*, *Glaux maritima*, *Iris ensata*, *Prangos pabularia*, *Thalictrum platycarpum*.

REFERENCES

Shanker, V., S. Kumar and R.K. Tyagi. 1988. Grazing Resources of Semi-arid and Arid regions. In: Panjab Singh (ed). Pasture and Forage Crop Research. Range Management Society of India, IGFRI, Jhansi pp. 63-85.

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, Shillong,
India p. 1-100.