

Fodder banks can reduce women drudgery and anthropogenic pressure from forests of Western Himalaya

Forests meet 40% of the energy needs of India and about 30% of fodder needs of the cattle population. Agriculture along with animal husbandry is the principal occupation and source of livelihood for over 70% of the population of Western Himalaya. Like with other high-altitude communities, animal husbandry is practised by the locals. Collection of fodder is the first step that turns the wheel of agricultural economy in states across the Indian Himalayan region. Inaccessibility of the area and deprived socio-economic status of the locals is largely responsible for the total dependence of the local inhabitants on nearby forest areas for fuelwood, fodder and other life-sustaining demands¹. Fodder obtained from arable land is not sufficient to maintain the livestock in sound health. Therefore, the inhabitants largely depend upon the forest-based fodder resource. Major part (62.2%) of the fodder is extracted from forests (tree, shrub, leaves and herbaceous ground flora). The remaining part (37.8%) is derived from agroforestry systems, low-altitude grasslands, degraded lands, high-altitude grasslands and crop residues². A large variety of tree species, forest floor phyto-mass and agricultural by-products are used as animal fodder in the region. Women in the hill regions spend a lot of time and energy in procuring fodder for their livestock and this greatly adds to their drudgery (Figure 1). Ecological sustainability of biomass extraction has been a controversial issue for a long time because most of the times extraction activities tend to compromise the aims of biodiversity conservation. In



Figure 1. Women drudgery due to fodder demands.

the present setting, cattle are generally stall-fed, but buffaloes, sheep and goats are also left for grazing in nearby forests, alpine regions and *kharaks* or pastures. With the introduction of stall-feeding, the demand for fodder has increased greatly with subsequently increased workload on women. The present trend shows a regular increase in human and livestock population. Fodder collection is a frequent household activity and almost one female from each household visits the forests once or sometimes even twice a day to collect fodder. Demand for fodder is uniform throughout the year, though unavailability of green forage during winter has always been a serious issue that has added to the drudgery of women and has also created nutrition deficiency in mulching animals. As agricultural and livestock productivity is sustained by inputs derived from forests, continued depletion of forests has started resulting into poor returns from agriculture and dairy farming³. During the rainy season the availability of fodder is in excess of demand, but still there is fodder crisis because farmers are unaware and are ill-equipped for scientific conservation of grasses for lean periods. Despite abundant resources with immense potential for producing quality and quantity fodder, the issue remains unsolved. Wastelands, community lands and terraces offer a solution to these problems. Therefore, we attempt to draw the attention of researchers, local communities and government agencies to consider the idea of developing fodder banks across high-altitude village clusters of Western Himalaya. Planting of high biomass yielding and fast-growing grasses and shrubs suitable for fodder in these areas not only increases fodder availability, but also reduces erosion and landslides that originate in these areas. These fodder banks also help in the preservation and storage of surplus fodder, availability of nutritious fodder during the period of fodder scarcity and enhance nutritive value of crop residue and other cellulosic waste for animal feeding by conventional and nonconventional fodder. Suitable fodder species in order to develop fodder banks in Western Himalaya from 1100 to

3000 m amsl include indigenous local *ringal* bamboo (*Chimnobambusa falcata*, *Thamnocalamus spathiflorus*, *Arundinaria* spp.), indigenous *Alnus nepalensis*, *Quercus glauca*, *Quercus leucotricophora*, *Ficus nemoralis*, *Ficus auriculata*, *Debregeasia salicifolia* and *Ficus subincisa* tree species. Introduced trees include *Celtis australis*, *Morus alba* and *Bauhinia variegata* with introduced grass species *Pennisetum purpureum*, *Bracharia*, *Pennisetum*, *Saccharus*, *Setaria*, *Phasphalum*, Joint star, Makuni, Cox food, Maize, Jabs Tier, Jabs Tier black, Red clover and *Fagopyrum esculentum*. A well-developed fodder bank on > 20 ha of wasteland in a village of 100 households coupled with well-developed agroforests by fast-growing grasses can reduce pressure from nearby forests round the year. The basic idea behind this is to ensure conservation of biodiversity by promoting plantation of indigenous species while providing nutritious fodder to livestock. The Forest Department needs to develop fodder supply zones and proper management methods need to be used to regulate the grazing and consequent damages.

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