

Enhancing the productivity of grassland and wasteland through management in hills

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Introduction

Total area available for grazing in the country is about 40% of the land area. Pasture lands constitute the main grazing resources of the country, available over an area of 12 million ha (3.94% of the geographical area). An idea of the meager fodder availability can be had from the fact that about 50% of the cattle population, depending largely upon free rangeland grazing in forests, pastures, village commons and the like, end up getting only about 1.5 kg of dry fodder/ day/ ACU (Adult Cattle Unit) as against the healthy fodder requirement norm of 3% body weight. The grasslands and pastures not only form the major source of forage for the livestock but also provide habitat to a large variety of wild animals and birds and are home to a myriad species of plants, many of which are 'threatened'. Any further degradation of these habitats is likely to put many more species under threat. Hills and mountains are distributed all over the country covering 29 states. Constraints which are responsible for the low production of fodder in hill states can be broadly grouped in agro eco-system constraints, management constraints and social and policy constraints. The major strategies to raise the fodder production could be sustainable management of fodder producing eco-systems, improvement in fodder productivity, expansion of area under fodder sources, improvement in cattle, system management: and policies. The fodder cultivation and management in this region has been always neglected, though livestock rearing is an important occupation of farmers in the area (Bisht *et al.*, 2009). Therefore in the present study several management techniques for the improvement and enhancing the fodder productivity natural grassland and wasteland have been studied.

Materials and Methods

The study was carried out at Vivekananda Parvatiya Krishi Anusandhan Sansthan, Almora (29° 36' N longitude and 79°40' latitude at 1250 m above msl). The technologies used were management of natural grasslands, production of improved grasses under pine and deodar trees and sloping and degraded lands, utilization of terrace risers by growing erect growing grasses, planting fuel-cum-fodder trees by improved pit methods, fodder production from marshy lands, energy plantation and silvi-pastoral system.

Results and Discussion

Growing improved grasses on the sloping and degraded lands and under pine and deodar trees in hills is an important conservation measure for stabilizing these lands and to increase fodder production. Several grasses were tested under these conditions and Hybrid Napier was found to be the best. These includes introduction of improved grasses and legumes, fertilizer management, cutting management and grazing management. Apart from this fodder production can be done from other areas like, forage production on wetlands and fodder production in degraded grasslands through modified contour trenching. In future we have to look into, varietal development, sustainable crop production, integrated farming system approach, mission on forage seed production, and post harvest management of forages.

In case of grassland management it was found that two years of effective closure increase forage production up to four folds (38.3 q/ha vs. 9.7 q/ha) in control. Introduction of improved grasses such as *Digetaria decumbense*, *Cynodon plectortachus*, *Panicum coloratum*, *Chloris gyana*, *Panicum maxicum*, *Setaria kazungula* can successfully enhance the fodder yields. Application of nitrogen and phosphorus on natural pastureland can increase the forage yield. Stage and frequency of cutting significantly influenced the quantity and quality of forage. *Brachiaria mutica* gave the highest yield 210.0 q/ha with four cuttings than the single cut (56.0 q/ha). Hybrid napier showed best performance in different sites (Fig.1).

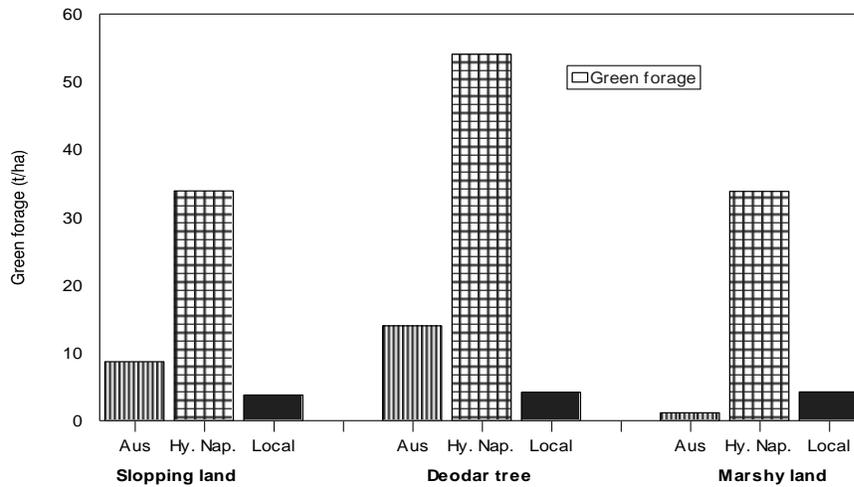


Fig1: Productivity in hilly area

In hills during winter months green fodder availability is a major problem due to sub-zero temperatures and heavy frosting. *Lolium parene*, *Festuca arundinacea*, and Grassland Manawa gave encouraging yields ranging from 210 to 350 q/ha.

Conclusion

From these studies it may be concluded that the forage production situation in the hilly region is very alarming and corrective measures have to be taken to improve the same. In order to improve the grasslands, the grassland management needs to be considered holistically promoting the interaction between grassland, livestock and the grazing communities. Thus, the production of fodder from the waste lands will be able to reduce the gap between demand and availability and well fed livestock will help ensure higher productivity and income to hill farmers in addition to ensuring environmental security of the hills.

References

Bisht, J. K., A. K Srivastava and H. S. Gupta. 2009. *Sustainable fodder production management in NW Himalaya*. Tech. Bull. 32 (2/2009) VPKAS, Almora. pp 1-62.