

## Fodder Production and Livestock Rearing in Relation to Climate Change and Possible Adaptation Measures in Manaslu Conservation Area, Nepal

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**Abstract :** A study was conducted to find out the production potential, nutrient composition, and the variability of the most commonly available fodder trees along with the varying altitude to help optimize the dry matter requirement during winter lean period. The study was carried out from March to June, 2012 in Lho and Prok Village Development Committee of Manaslu Conservation Area (MCA), located in Gorkha district of Nepal. The other objective of the research was to learn the impact of climate change on livestock production linking it with feed availability. The study was conducted in two parts: social and biological. Accordingly, a households (HHs) survey was conducted to collect primary data from 70 HHs, focusing on the perception of respondents on impacts of climatic variability on the feeding management. The next part consisted of understanding yield potential and nutrient composition of the four most commonly available fodder trees (*M. azedirach*, *M. alba*, *F. roxburghii*, *F. nemoralis*), within two altitudes range: (1500-2000 masl and 2000-2500 masl) by using a RCB design in 2\*4 factorial combination of treatments, each replicated four times. Results revealed that majority of the farmers perceived the change in climatic phenomenon more severely within the past five years. Farmers were using different adaptation technologies such as collection of forage from jungle, reducing unproductive animals, fodder trees utilization, and crop by product feeding at feed scarcity period. Ranking of the different fodder trees on the basis of indigenous knowledge and experiences revealed that *F. roxburghii* was the best-preferred fodder tree species (index value 0.72) in terms overall preferability whereas *M. azedirach* had highest growth and productivity (index value 0.77), *F. roxburghii* had highest adoptability (index value 0.69) and palatability (index value 0.69) as well. Similarly, fresh yield and dry matter yield of the each fodder trees was significant ( $P < 0.01$ ) between the altitude and within species. Fodder trees yield analysis revealed that the highest dry matter (DM) yield (28 kg/tree) was obtained for *F. roxburghii* but that remained statistically similar ( $P > 0.05$ ) to the other treatment. On the other hand, most of the parameters: ether extract (EE), acid detergent lignin (ADL), acid detergent fibre (ADF), cell wall digestibility (CWD), relative digestibility (RD), digestible nutrient (TDN), and Calcium (Ca) among the treatments were highly significant ( $P < 0.01$ ). This indicates the scope of introducing productive and nutritive fodder trees species even at the high altitude to help reduce fodder scarcity problem during winter. The finding also revealed the scope of promoting all available local fodder trees species as crude protein content of these species were similar.

**Keywords :** fodder trees, yield potential, climate change, nutrient composition

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