Annals of Arid Zone 57(3&4): 89-96, 2018

Management of Pastures and Rangeland in Arid Western Rajasthan: A Review

N.D. Yadava*, M.L. Soni, V.S. Rathore, G.L. Bagdi, Subulakhsmi, V. and Mahesh K. Gaur#

ICAR-Central Arid Zone Research Institute, Regional Research Station, Bikaner 334 004, India

#ICAR-Central Arid Zone Research Institute, Jodhpur 342 003, India

Received: June 2018

Abstract: Ranges and pastures are the backbone of the animal rearing in arid zone. The climatic adversities, fodder availability for large animal population in the region completely depends on these pastures. Heavy grazing pressure, poor management and poor rainfall conditions are only responsible for poor yield and low carrying capacity (0.68 ACU ha^{-1}) of these ranges and grasslands. The restoration by reseeding and introduction of perennial grasses, shrubs and bushes are the only option for increasing the productivity. Response to 20 kg N ha^{-1} application to grasses appeared to be favorable in arid regions having less than 300 mm rainfall. Growing trees such as *Prosopis cineraria*, *Acacia nilotica* and *Ziziphus nummularia*, and grasses *Cenchrus ciliaris*, *C. setigerus*, *Dactyloctenium scindicum*, *Panicum antidotale*, and *Lasiurus scindicus* together has also been a traditional practice in the Thar Desert. The agri-horti-silvicultural system having fruit trees + fodder crops + fast growing nitrogen fixers tree species providing good fodder for animals is another option for increasing the intensity of crops and increase productivity per unit area. Additionally, grazing management like rotational grazing is most important for maintaining the sustainable production.

Key words: Range management, pastures, grass cover, grazing management.

Range management is, in a large part, applied ecology; it involves managing the environment in which plants and animals live in a way that provides the most favorable habitat for production. Much is known about how productivity can be managed through activities such as soil and water conservation, soil fertility management and plant species manipulation. Though the techniques reported to improve productivity in one region may not be applicable to another due to highly specific differences in the characteristics of the ecosystems.

The grassland area in India consists of 80.51 million ha (535,441 km^2; 17.32%) and the forest area is 768,436 km^2. With only 2% of the world's geographical area, India supports 20% of the world's livestock, with 16% of cattle and 55% of the world buffalo population and the world's second largest goat (20%) and fourth largest sheep (5%) populations (Malviya, 2015). The share of forages in cultivated land, however, has remained <5% in the country for many years.

The grazing lands, considered to be one of the most productive ecosystems in the Indian Subcontinent, have been at the receiving end for long. As per estimates, the country's pastures have reduced from about 70 million ha in 1947 to just about 38 million ha in 1997. The remaining grazing lands have either already degraded or are in the process of degradation with current average carrying capacity of less than 1 adult cattle unit (ACU) per ha. These grazing lands, often considered as 'wastelands' are suffering due to management neglect and are easily diverted for other uses.

The fodder resource from grasslands is also quite small due to denuded grazing lands owing to heavy grazing pressure. Indian grazing lands have a pressure of 3.42 animal units/hectare. Other major threats faced by Indian grasslands that lead to their degradation are (i) conversion to agriculture (or urban areas); (ii) habitats being marginal for plant growth hence vulnerable to climate change; (iii) invasive species of annuals *vs* perennials; (iv) competition for light, water, nutrients; and (v) excessive grazing pressure.

Traditional range management approaches like considering only biological factors and ignoring the social and traditional aspects of range management are changing leading

*E-mail: narendra_yadava@yahoo.co.in