



## Effect of Different Cultural Practices and Fertilization on the Regeneration of Degraded *Lasiurus sindicus* Grassland in Extreme Arid Conditions of Jaisalmer, India

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**Abstract:** A field trial was conducted in factorial randomized block design with three cultural practices of till, no-till and burning in the main plot and two levels of fertilization viz. control and 40 kg N + 20 kg P ha<sup>-1</sup> in subplots on the degraded *Lasiurus sindicus* (Sewan) grassland to ascertain the regeneration behavior of the grass at Jaisalmer, Rajasthan during the summer 2010. The results of the study revealed that cultural practice of no-till recorded 94.46 and 100.47 higher green and dry fodder yield than the tilling practice. The root volume, dry weight of rhizome and roots were also 38.63, 92.89 and 49.57% higher with no-till practice than the tilling practice. Application of fertilizer increased the fresh and dry fodder yield, dry crown weight, dry root weight and fresh root volume per tussock by 85.93, 125.63, 75.51, 67.36 and 63.02% more than the control, respectively. The practice of no-till recorded maximum numbers of tillers/tussock, tiller height, nodes/tillers, leaves/tussock and spikes/tussock compared to till and burning practices. The tussock diameter of Sewan grass was double in size at all the stages under no-till compared to till treatment. The effect of fertilization was more on tillers/tussock that was 93.16, 83.91, 77.37 and 78.49% higher than the control at 15, 30, 45 and 60 days after treatment of cultural practices and fertilization, respectively application. The protection of the degraded grassland and supply of nutrients sufficed for the revival of Sewan grassland in the Jaisalmer conditions.

**Key words:** Burning, fertilizer, regeneration, Sewan, till.

The agriculture of seventies in the hot arid zone of India (western Rajasthan) was chiefly towards subsistence farming involving rearing of livestock in association with rainfed cultivation of clusterbean, moth bean and pearl millet. Grassland covers dominate among different land use systems and provide main support to the huge livestock population of the region (Kar *et al.*, 2009). *Lasiurus sindicus* Henr locally known as Sewan is one of the dominating grass of the Jaisalmer, Bikaner, Barmer and Jodhpur districts of the western Rajasthan where it provides fodder to the livestock. Extensive patches of this grass can be seen in Jaisalmer district from Lathi onwards on Pokran-Jaisalmer route and from Devikot to Jaisalmer on Barmer-Jaisalmer route. Hummocky sandy plains of Bikaner district also supported extensive Sewan grasslands (Gupta and Saxena, 1970). It is endemic to dry regions of north-west India (Bor, 1960)

and is capable of resisting extreme drought conditions as is evident by its distribution. The climatic conditions prevailing in the zone of Sewan grass lands are arid, roughly following an isohyete of about 250 mm and in terms of aridity index the number of physiologically dry days in Barmer, Bikaner and Jaisalmer are 250 (Gupta and Saxena, 1970), while the Thornthwaite's moisture index is below -40. The soils of Sewan rangelands are generally light textured and belong to the desert soil group (Roy and Sen, 1968). A well-established stand of *Lasiurus sindicus* lasts for 8-10 years with proper management (Yadav and Rajora, 1995). Studies conducted on the productivity of *Lasiurus sindicus* at Jodhpur showed that under a total rainfall of 178.80 mm, the production of dry matter was 3.99 g plant<sup>-1</sup> day<sup>-1</sup>, which later decreased to 2.74 g unit<sup>-1</sup> day<sup>-1</sup> in 60 days time (Gupta and Saxena, 1970). If calculated on a carrying capacity basis it comes to about three hectare per adult cattle on year long basis (Ahuja *et al.*, 1968). Unfortunately,

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