

EFFECT OF SOWING DATE AND NITROGEN ON THE PRODUCTIVITY, ENERGY RELATIONSHIPS AND ECONOMICS OF SEWAN (*LASIURUS SINDICUS*) GRASS IN HOT ARID ECOSYSTEM OF RAJASTHAN

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SUMMARY

The field experiment was conducted at Bikaner (Rajasthan) during **kharif** season of 2010 to find out the proper time of sowing and optimize the nitrogen requirement of sewan grass (*Lasiurus indicus*) in hot arid region. Results indicated that first date of sowing i. e. first week of July (4th) resulted significantly in higher fresh forage yield (172.2 q/ha), dry matter (59.9 q/ha) yields, CP content (8.71%), CP yield (525.3 kg/ha), net returns (Rs.14,278/ha) and B : C ratio (2.47) over other dates of sowing viz., first week of August and first week of September. While in case of nitrogen, although forage productivity and quality were improved up to the highest dose i. e. 60 kg N/ha and recorded fresh forage yield (98.6 q/ha), dry matter yield (35.4 q/ha), CP content (8.95%) and CP yield (320.8 kg/ha) but significantly increased only up to 40 kg N/ha and maximum values of net returns (Rs. 4,737.0/ha) and B : C ratio (1.51) were also recorded with 40 kg N/ha. Interaction effect of date of sowing and nitrogen on forage and CP yield was significant and data showed that values recorded with first date of sowing under 40 and 60 kg N/ha were at par but significantly higher over rest of the treatment combinations. Maximum values of energy ratio and energy productivity were recorded with the sowing in first week of July (12.7 and 702.8 g/MJ) and nitrogen applied @ 20 kg N/ha (7.3 and 402.8 g/MJ). Overall, it was concluded that for getting higher and economic forage yields, sewan grass should be sown in first week of July and fertilized with 40 kg N/ha in hot arid region of Rajasthan.

Key words : Sowing date, nitrogen, productivity, forage yield, protein, sewan grass

Due to frequent occurrence of droughts, the animal rearing especially small ruminants' production plays an important role in sustenance of rural population of western Rajasthan. As small ruminant animals like sheep and goat are mostly dependent on grazing, but at present pastures of this region are not capable to feed even for the maintenance of animals. It happened mainly because of continuous over-exploitation of grazing lands, erratic rainfall distribution and human negligence. This is also a fact that the improvement in the productivity of animal husbandry in hot arid zone can directly be correlated with the improvement of native degraded pastures and establishment of new grasslands and pastures on the land lying as cultivable wastelands. Sewan (*Lasiurus indicus*) is the most important perennial grass of this region and has good drought tolerance capacity. Like other arable crops, proper time of sowing of grasses is of prime importance and success is dependent on it, whether it is renovation of old degraded pastures or

establishment of new grasslands. Further, due to poor fertility status of arid region soils, nitrogen nutrition plays an important role on the grass establishments and its productivity. Systematic research work on these aspects is still meagre. Hence, this trial was undertaken.

MATERIALS AND METHODS

The field experiment was conducted at Research Farm of CSWRI, Arid Region Campus, Bikaner during **kharif** season of 2010 to find out the proper time of sowing and optimize the nitrogen requirement of sewan grass (*Lasiurus indicus*) in hot arid region. The soil of experimental field was sandy having pH 8.58, EC 0.71 dS/m, low in organic carbon (0.21%), available N (128.4 kg/ha), P (8.20 kg/ha) and K (138.5 kg/ha). Total 12 treatment combinations of three dates of sowing viz., first week of July (D₁), first week of August (D₂) and first week of September (D₃) and four nitrogen levels