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# Effect of nitrogen on productivity of grasses in sole and intercropping system in arid zone under rainfed condition

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## ABSTRACT

An experiment conducted during 1995 and 1996 on sandy soils in rainfed condition revealed that *Cenchrus ciliaris* L. gave highest dry-matter yield (50.67 q/ha) at 40 kg N/ha with 50 cm × 50 cm spacing in sole cropping, which was at par with grass planted at 100 cm × 50 cm spacing at same level of N. The response of *Lasiurus sindicus* to different rates of N application was not significant (1995) due to low and ill-distribution of rainfall. The highest dry forage yield (32.30 q/ha) of *L. sindicus* was recorded at 50 cm × 50 cm with 40 kg N/ha in 1996. The intercropping of *L. sindicus* with *C. ciliaris* resulted in a highest yield of 45.33 and 47.00 q/ha at 40 kg N/ha with 50 cm × 50 cm spacing and was significantly higher over than that obtained at 100 cm × 50 cm spacing during 1995 and 1996 at same level of N. The lowest dry-forage yield was recorded where no nitrogen was applied at all the spacings.

***Key words*** : Arid zone, Rainfed, Grasses, Intercropping, N fertilization, Planting systems

In arid western Rajasthan, rainfed crop production is very risky and non-profitable due to low and erratic rainfall with onset of long dry spells during the cropping season. The failure of crops leads to poor surface vegetation, resulting in severe soil erosion problems and sometimes more fertile surface layer is washed away from the field through speedy winds. *Cenchrus ciliaris* and *Lasiurus sindicus* grasses are of perennial in nature, having different growth characteristics in relation to their rooting pattern as well as soil moisture and nutrient-use patterns. The uncertainty and poor rainfall in terms of quantity and time the pasture productivity is badly affected. Keeping above in view to increase the pasture productivity, the present investigation was started in 1993 with the objectives to study the dry-matter productivity per unit area, nitrogen response of these 2 grasses in sole and intercropping configurations under rainfed condition of arid region.

## MATERIALS AND METHODS

In the present investigation grasses, i.e. *Cenchrus ciliaris* and *Lasiurus sindicus*,