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SHORT COMMUNICATION

Relative Productivity of Important Pasture Grasses and Their Genotypes in Arid Zone of India

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Three separate field experiments on selection of high yielding genotypes of *Cenchrus ciliaris, Cenchrus setigerus* and *Lasiurus sindicus* were conducted at Agricultural Research Station, Keshwana, Jalore, Rajasthan (India) for two years (2010-11 and 2011-12). A wide range of variation has been observed for forage yield among pasture species and their genotypes. Green forage yield of *C. ciliaris* ranged between 256.63 and 345.19 q/ha with an average of 290 q/ha. In *C. setigerus*, forage yield ranged between 210.07 and 292.39 q/ha with an average of 264.84 q/ha. In case of *Lasiurus sindicus,* forage yield ranged between 185.31 and 222.95 q/ha with an average of 204.95 q/ha. The overall pasture productivity of *C. ciliaris* was found 55.32 and 9.50% higher over *L. sindicus* and *C. setigerus*, respectively. Therefore, high yielding genotypes of *C. ciliaris* and *C. setigerus* may be preferred for pasture development programme in district Jalore (Rajasthan).

Key Words: *Cenchrus ciliaris, C. setigerus,* Forage yield, Genotypes, *Lasiurus sindicus*

The adequate supply of nutritious forage and feed is the key for successful animal husbandry, which is providing livelihood support and nutritional security to rural inhabitants (Sharma, 2013). Pasture grasses are most important and cheapest source of perennial forage for grazing animals under rainfed situation (Yadav, 1995). Rootstock of perennial grasses sprouts after onset of monsoon and physiologically matures with the withdrawal of monsoon. In India 12 million hectare is said to be under permanent pastures and grazing lands but biomass production from these lands is very meagre (Singh, 1989). *Cenchrus ciliaris, Cenchrus setigerus* and *Lasiurus sindicus* are drought tolerant and high yielding perennial pasture grasses with wider adaptability in arid zone (Singh and Singh, 1995). Saxena and Singh (1976) reported that sand dunes and sandy undulated aggraded older alluvial and inter-dune plains and sandy undulating buried pediments in the form of dunes and hummocks of district Bikaner may be developed by trees, shrubs and grasses like *C. ciliaris, C. setigerus* and *L. sindicus.* These grasses are found as sole pasture and with woody perennials under silvipastoral system. Forage of the grasses is highly palatable, digestible and nutritious to all kind of animals. In arid zone, the production and productivity of these grasses is highly erratic and varies year after year with the amount and distribution of rainfall. Considerable efforts have been made at national and state level to enhance pasture production by adopting suitable grasses, their high yielding cultivars and technological interventions. The present paper deals with the identification of suitable pasture grasses for district Jalore (Rajasthan).

Three separate experiments on evaluation of high yielding genotypes of *Cenchrus ciliaris, Cenchrus setigerus* and *Lasiurus sindicus* under All India Coordinated Research Project on Forage Crops were conducted at Agricultural Research Station, Keshwana, Jalore, Rajasthan (India). The experimental site is situated at latitude 25º23.115'N, longitude 72º 30.726'E, elevation 149.9 msl and has a tropical arid climate with mean annual rainfall of 421 mm. Soil at the site was clay loam slightly saline in reaction (pH 8.7) and low in organic carbon (0.23 %). In first trial, six genotypes of *Cenchrus ciliaris* were sown on July 11, 2008 in a randomised block design with four replications. In second trial, eight genotypes of *Cenchrus setigerus* and in third trial seven genotypes of *Lasiurus sindicus* were sown on July 8, 2010 in a randomised block design with three replications. One genotype of *L. sindicus* could not get germination. Plot size was kept as 2.5m

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Table 1. Forage yield and plant height of different pasture grasses (Average of two years)

S. No.	*Cenchrus setigerus*			*Cenchrus ciliaris*			*Lasiurus sindicus*		
	Genotypes	GFY (q/ ha)	Plant height (cm)	Genotypes	GFY (q/ ha)	Plant height (cm)	Genotypes	GFY (q/ ha)	Plant height (cm)
1	VTCS-1	274.73	110.91	CE-08-1	293.13	133.75	IVTS-1	185.31	89.67
2	VTCS-2	210.07	101.58	CE-08-2	256.63	118.75	IVTS-2	222.95	100.00
3	VTCS-3	264.33	102.68	CE-08-3	293.16	128.75	IVTS-3	214.25	95.33
4	VTCS-4	246.21	99.22	CE-08-4	345.19	130.00	IVTS-5	197.96	75.00
5	VTCS-5	291.87	108.44	CE-08-5	277.51	118.13	IVTS-6	209.89	91.67
6	VTCS-6	259.93	108.12	CE-08-6	274.38	117.50	IVTS-7	199.34	88.00
7	VTCS-7	292.39	107.44	Mean	290.00	124.48	Mean	204.95	89.95
8	VTCS-8	279.20	97.78	-	-	-	-	-	-
	Mean	264.84	104.52	-	-	-	-	-	-

GFY= Green forage yield

x 4.0 m accommodating five rows at 50 cm spacing. The experiment was managed with standard package of practices under rainfed situation. Data collected on green forage yield and plant height was analysed using standard analysis of variance (ANOVA) through Excel software of Microsoft Office.

Results revealed a wide range of variability among genotypes for green forage yield and plant height in all three pasture species. In *Cenchrus ciliaris*, green forage yield ranged between 256.63 (CE-08-2) and 345.19 q/ha (CE-08-4) with an average of 290 q/ha. Plant height of genotypes ranged between 117.50 (CE-08-6) and 133.75 cm (CE-08-1) with an average of 124.48 cm. In *Cenchrus setigerus*, green forage yield ranged between 210.07 (VTCS-2) and 292.39 q/ha (VTCS-7) with an average of 264.84 q/ha; and plant height of genotypes ranged between 97.78 (VTCS-8) and 110.91 cm (VTCS-1) with an average of 104.52 cm. The green forage yield of different genotypes of *Lasiurus sindicus* ranged between 185.31 (IVTS-1) and 222.95 q/ha (IVTS-2) with an average of 204.95 q/ha; and plant height of genotypes ranged between 75 (IVTS-5) and 100 cm (IVTS-2) with an average of 89.95 cm.

The comparative performance of pasture grasses revealed that maximum green forage yield of 290 q/ha was produced by *C. ciliaris* followed by *C. setigerus* and *L. sindicus* with 264.84 and 186.71 q/ha, respectively. Similar trend has been observed for plant height also; and maximum height of 124.48 cm was attained by *C. ciliaris* followed by *C. setigerus* and *L. sindicus* with 104.52 cm and 89.95 cm, respectively (Table 1). *C. ciliaris* has provided 55.32 and 9.50% higher green forage yield over *L. sindicus* and *C. setigerus*, respectively. Therefore, high yielding genotypes of *C. ciliaris* and *C. setigerus* may be preferred for pasture development programme in district Jalore (Rajasthan). Rao and Singh (1994) reported that under Jodhpur conditions *C. ciliaris* produced higher dry matter yield, water and energy use efficiency than *C. setigerus*.

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