Annals of Arid Zone 27 (1): 75-77 : 1988

RELATIVE PERFORMANCE OF *PANICUM ANTIDOTALE* RETZ. CULTIVARS UNDER RAINFED CONDITION

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Panicum antidotale Retz., the Blue panic grass, is drought resistant and well suited to arid and semi-arid regions in our country. Five high yielding cultivars (S-29, S-333, S-335, S-340 and S-341) were evaluated for 2 years at Indian Grassland and Fodder Research Institute, Jhansi for their potentiality in comparison with Agra local, Chandrapur and Jhansi.

The soil was sandy clay loam, neutral and contained 0.434% organic carbon and 11.20 kg/ha available phosphorus. The above 8 cultivars were established through seedlings in August 1975. Seedlings, 1½ months old, were transplanted in rows 50 cm apart, keeping plant to plant distance 30 cm. The cultivars were replicated 4 times in 4 m x 3 m plots in a Randomised Block Design. A basal application of 40 kg N and 20 kg P_2O_5/ha was given every year at the onset of monsoon just after the interculture operations. The total rainfall recorded during 1975, 1976 and 1977 were 876.2, 1105.4 and 1053.4 mm with 58.65 and 60 number of rainy days.

During 1975, all the plots were uniformly harvested at the end of November and production studies were undertaken during 1976 and 1977. Two and three cuts were taken during 1976 and 1977 'respectively' according to growth of the plants. The data on plant vigour were also recorded at the time of first cutting in both the years. The herbage samples of first cut of both the years were analysed for nitrogen by microkjeldahl method. The samples of 1976 were also analysed for calcium and phosphorus by oxalate and photo-caloric methods (Jackson, 1967). At the end of the experiment, soil monoliths (Dabadghao et al., 1962) were also taken to estimate the underground biomass and these values were compared with the average above-ground biomass production for two years.

Data on plant height showed significant variations in these cultivars (Table 1). The maximum plant height was recorded in S-341 and the minimum in Agra local. The number of tillers and tussock diameter recorded during 1977, did not show significant variations. However, S-335 exhibited higher tiller production and tussock diameter than other cultivars.

Data on dry matter yield revealed significant differences in these cultivars (Table 1). S-29 gave significantly higher yield as compared to others except S-341. The minimum yield was recorded with cv Chandrapur, significantly lower than others.

Table 1. Growth attributes, nutrients and biomass production in 8 cultivars of *Panicam antidotale*

Cultivars	Mean plant height (cm)	No. tillers/ plant (1977)	Tussock dia (cm) 1977	Nutrients content (%)			Biomass produced (q/ha)		Biomass ratio (Above-ground: Below-ground)
				Crude protein	Calcium	Phos-phorus	Above ground (forage)	Below-ground	
Chandrapur	178.3	26.2	18.4	7.97	0 52	0.16	27.2	38.6	0.70
Jhansi	172.4	27.5	21.1	7.61	0.68	0.10	36.8	52 6	0.70
Agra local	151.0	30.5	22.0	7.97	0.71	0.13	44 7	46 5	0 96
S — 29	187.1	33.7	20.1	7.65	0.45	0.11	69,5	60.8	1.14
S — 333	179.7	26.2	18.0	7.17	0.55	0.14	49.6	53.1	0.93
S — 335	178.7	40.0	22.2	6.06	0.90	0.09	51.5	51.3	1.00
S — 340	167.1	27.2	21.6	7.49	0.92	0.13	49.6	72.1	0.69
S — 341	189.7	31.2	21.2	5.10	0.65	0.12	57.8	64.2	0.90
SEm ±	4.9	6.5	1.9				4.9		
CD at 5%	14.6	ns	ns				14.5		

The crude protein (CP) content varied from 5.10 to 7.97% (Table 1). Mandal and Chakravarty (1968) reported the higher CP Content (8.65 to 16.25%) in this grasls in western Rajasthan. The low CP content in this study might be due to late harvesting of the cutting. Calcium and phosphorus contents greatly varied in these cultivars. Such variations in calcium and phosphorus contents were also reported by Sen and Roy (1971) in this grass.

The maximum below-ground biomass (Table 1) was obtained with S-340 (72.1 q/ha) followed by S-341 (64.2 q/ha) and S-29 (60.8 q/ha). These cultivars were compared on the basis of their average forage production and above-ground/below ground biomass ratio. The relative proportion of biomass by the above - and below-ground parts is an important character of cultivar for assigning its role in different habitats. Chandrapur and Jhansi collections with low ratio and low production were not found suitable for forage production and soil conservation. Jhansi collection could be utilised in highly eroding area for the soil binding value. A cultivar with low biomass ratio and average production e.g., S-340, could be ideal for soil conservation. The cultivar with high biomass ratio and average production (S-29) can be taken up for higher forage production in pasture condition. The cultivar with average ratio and average production (S-29) can be taken up for higher forage production in pasture condition. The cultivar with average ratio and average production (S-333, S-335, S-341 and Agra local) have suitability for both forage production as well as for soil conservation.

Thus, for higher quality forage production, S-29 was the most suitable cultivar while S-340 could be ideal for soil conservation besides forage yield.

The authors are grateful to Director, Indian Grassland and Fodder Research Institute, Jhansi for providing necessary facilities.

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