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SHORT COMMUNICATION

PERFORMANCE OF MULTICUT FORAGE SORGHUM [*SORGHUM BICOLOR* (L.) MOENCH] GENOTYPES TO FERTILITY LEVELS

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SUMMARY

A field experiment was conducted during **kharif** season of 2015 at Udaipur, Rajasthan on sandy clay loam soil to assess the effect of fertility levels on multicut genotypes of forage sorghum. Among multicut forage genotypes, CoFS-29 proved most efficient as it gave significantly higher green (74.78 t/ha), dry (23.77 t/ha) fodder yield on the basis of the total of two cuts, net monetary returns of Rs. 66430/ha and B : C ratio 2.15. The crop fertilized with 125 per cent RDF recorded significantly higher green and the dry fodder yield on the basis of the total of two cuts over application of 50, 75 and 100 per cent RDF. The magnitudes of the increases were 35.52, 19.82 and 8.82 per cent in total green fodder, and 45.13, 18.90 and 9.63 per cent in total dry fodder yield, respectively. Application of 125 per cent RDF also fetched highest net returns (Rs. 71814/ha) as well as the maximum B : C ratio (2.23) as compared to lower fertility levels.

Key words : Fertility levels, fodder yield, multicut sorghum genotypes, net returns

In India, there is a short supply of about 40 per cent green fodder especially during summer season. Sorghum is an important crop widely grown for grain and fodder. It is fast growing and warm weather annual which provides palatable, nutritious fodder during lean period and utilizes as silage and hay besides fresh fodder. Genetic factor plays vital role in increasing the fodder production and multicut ability reduces the cost of establishing new crops. During the last few years, a number of high yielding multicut forage sorghum genotypes have been developed. The new multicut genotypes are heavy feeder of nutrients and remove large amount of nutrients from the soil (Sumeriya and Singh, 2014). These genotypes are responding well to high dose of fertilizer. Hence, identification of suitable genotypes for high fodder production at different levels of fertility can be worked out. Keeping this in view, the present investigation was carried out to find out suitable multicut genotype of sorghum for higher fodder production and its nutrient requirement and to assess economic viability.

A field experiment was conducted during **kharif** season of 2015 at Instructional Farm, Rajasthan College of Agriculture, MPUAT, Udaipur (Rajasthan) situated at 24º34' N latitude, 74º42' E longitude and altitude of 582.17 m above mean sea level. The soil of the experimental field was sandy clay loam in texture, slightly alkaline in reaction (pH 8.2), medium in available nitrogen (281.40 kg/ha) and phosphorus (21.46 kg/ha), while high in available potassium (315.45 kg/ha). The experiment consisted of 28 treatment combinations comprising seven multicut forage sorghum genotypes (SPV 2242, SPH 1700, SSG 59-3, CSH 20 MF, CSH 24 MF, MP Chari and CoFS-29) and four fertility levels viz., 50, 75, 100 and 125 per cent RDF, the recommended dose of fertilizers (RDF) worked out was 80 kg N+40 kg P_2O_5+40 kg K_2O/ha. These treatments were tested in factorial randomized block design with three replications. As per treatment, full dose of phosphorus and potassium and one-third dose of nitrogen was applied at the time of sowing. The remaining nitrogen dose was split into two equal parts, the first half was applied at the knee high stage, while second half after first cutting. The sorghum genotypes as per treatment were sown on 28 June 2015 in opened furrows at 30 cm apart using a seed rate of 35 kg/ha. The crop was irrigated at 10-15 days interval as per need developed due to the dry spell. Other agronomic and plant protection measures were adopted as and when crop needed. The 1st and 2nd cuttings for green fodder were taken at 60 days after sowing and 45 days after 1st cutting, respectively.

Effect of Genotypes

Data presented in Table 1 reveal that green and dry fodder yield of multicut sorghum genotypes was significantly influenced by genotypes. The highest green (58.08 t/ha) and dry fodder (17.97 t/ha) yield at the time of 1st cutting was recorded in genotype SPH 1700 which was closely followed by genotype CSH 24 MF, however, this genotype significantly enhanced green and dry fodder yield over genotypes CSH 24 MF, CSH 20 MF, SSG 59-3, SPV 2242, CoFS-29 and MP Chari. While at 2nd cutting, CoFS-29 recorded higher green (29.94 t/ha) and dry fodder (9.70 t/ha) yield which was significantly higher than rest of the genotypes under test except SPV 2242 i. e. at par with CoFS-29. Further genotype CoFS-29 produced highest total green (74.78 t/ha) and dry (23.77 t/ha) fodder yield registering significant increase of 8.72, 11.24 and 17.41 per cent in total green fodder yield and 8.78, 11.28 and 16.80 per cent in total dry fodder yield as over the genotypes CSH 24 MF, CSH 20 MF and MP Chari, respectively but was observed at par with genotypes SPV 2242, SSG 59-3 and SPH 1700. The highest fodder yield of genotype CoFS-29 could mainly be attributed to comparatively higher plant height, stem girth and ratoonability of genotype. Several workers have also noticed the variation among the genotypes of sorghum for fodder yield and growth (Meena *et al*., 2012; Rana *et al*., 2012, Rana *et al.*, 2013). Further genotype CoFS-29 fetched higher net returns (66430/ha) and B : C ratio (2.15), which was found at par with genotypes SPV 2242, SSG 59-3 and SPH 1700. The genotype CoFS-29 registered significant per cent increase of net returns by 17.35, 13.30 and 27.70 and B : C ratio by 13.15, 17.48 and 27.97 per cent over genotypes CSH 20 MF, CSH 24 MF and MP Chari, respectively.

Effect of Fertility Levels

Data (Table 1) further reflect that fertility levels had significant effect on green and dry fodder yield during 1st and 2nd cuttings. The crop fertilized with 125 per cent RDF produced higher green and dry fodder yield which was significantly higher than lower dose of fertilizer during 1st and 2nd cuttings. A significant increase of 35.52, 19.82 and 8.82 per cent in total green fodder and 45.13, 18.90 and 9.63 per cent in total dry fodder yield was recorded with the application of 125 per cent RDF over 50, 75 and 100 per cent RDF, respectively. The significant increase in fodder yield with increase in fertility levels was due to fact that all these nutrients were involved in increasing protoplasmic constituents, root, shoot growth and accelerating the process of cell division, enlargement and elongation which in turn showed luxuriant vegetative growth and resulted in

TABLE 1
Effect of multi-cut forage sorghum genotypes and fertility levels on green and dry fodder yield and economics

Treatment	Green fodder yield (t/ha)			Dry fodder yield (t/ha)			Net returns (Rs./ha)	B : C ratio
	1st cut	2nd cut	Total	1st cut	2nd cut	Total		
Genotypes								
SPV 2242	45.32	28.00	73.32	14.22	8.97	23.19	64528	2.09
SPH 1700	58.08	12.38	70.45	17.97	4.50	22.47	60807	1.96
SSG 59-3	47.30	23.69	70.98	14.79	7.70	22.50	61497	1.99
CSH 20 MF	52.28	14.94	67.22	16.26	5.10	21.36	56608	1.83
CSH 24 MF	52.98	15.80	68.78	16.47	5.38	21.85	58627	1.90
MP Chari	41.25	22.45	63.69	13.01	7.34	20.35	52018	1.68
Co FS-29	44.84	29.94	74.78	14.07	9.70	23.77	66430	2.15
S. Em±	1.47	0.89	1.90	0.45	0.34	0.62	2469	0.08
C. D. (P=0.05)	4.18	2.53	5.39	1.27	0.96	1.77	7001	0.23
Fertility levels								
50% RDF	42.84	16.24	59.08	12.83	4.96	17.79	47519	1.62
75% RDF	46.75	20.07	66.82	14.95	6.75	21.70	56584	1.87
100% RDF	50.74	22.85	73.58	16.01	7.54	23.55	64377	2.06
125% RDF	55.12	24.95	80.07	17.25	8.57	25.82	71814	2.23
S. Em±	1.11	0.67	1.44	0.34	0.26	0.47	1867	0.06
C. D. (P=0.05)	3.17	1.92	4.09	0.97	0.73	1.34	5314	0.18

higher green and dry fodder yield. Similar results were also obtained by Duhan (2013) and Sumeriya and Singh (2014). Thus, when compared to 50, 75 and 100 per cent RDF, the crop under the influence of 125 per cent RDF fetched highest net returns of Rs. 71814/ha and B : C ratio of 2.23 registering significant increase in per cent of 51.12, 26 91 and 11.55 in net returns and 37.65, 19.25 and 8.25 in B : C ratio, respectively.

REFERENCES

Duhan, B. S. 2013 : Effect of integrated nutrient management on yield and nutrient uptake by sorghum [*Sorghum bicolor* (L.) Moench] genotypes. *Forage Res.,* **39** : 156-158.

Meena, A. K., P. Singh, and P. Kanwar. 2012 : Effect of nitrogen levels on yield and quality of sorghum [*Sorghum bicolor* (L.) Moench] genotypes. *Forage Res.,* **37** : 238-240.

Rana, D. S., B. Singh, K. Gupta, A. K. Dhaka, and S. Arya. 2012 : Response of multicut forage sorghum genotypes to different fertility levels. *Forage Res.,* **37** : 251-254.

Rana, D. S., B. Singh, K. Gupta, A. K. Dhaka, and S. K. Pahuja. 2013 : Effect of fertility levels on growth, yield and quality of multicut forage sorghum [*Sorghum bicolor* (L.) Moench] genotypes. *Forage Res.,* **39** : 36-38.

Sumeriya, H. K., and Singh, P. 2014 : Productivity of sorghum (*Sorghum bicolor*) genotypes as influenced by different fertility levels and their residual effect on succeeding wheat. *Ann. Bio.* **30** : 266-275.