

## Influence of planting layouts on yield and quality of sorghum fodder

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### ABSTRACT

Increasing fodder production is the need of the hour looking to the increasing number of livestock. Dairy industry is indirectly depend on fodder production as prices of feed concentrates are too high. Amongst all the fodder crops, sorghum fodder is one of the important fodder crop. The average green fodder yield of sorghum was significantly more in I cut than in II cut. A variety Phule Amruta has produced significantly more green fodder yield at I and II cut over rest of the varieties. The mean green fodder yield was significantly higher when varieties were sown on broad bed furrows at I and II cut also over ridges and furrows and flat beds.

**Key words :** Planting layouts, Yield, Sorghum fodder

### INTRODUCTION

Development of new fodder cultivars with high yields and improved nutritional composition is gaining increasing importance particularly due to diversion of available cultivable land towards major crops, urbanization and increased cost of feed concentrates. However, a very little research work was done on the effect of planting layouts on sorghum fodder production. Hence, a present investigation was undertaken to study the most suitable planting layout for obtaining maximum quality sorghum fodder.

### MATERIALS AND METHODS

Field experiments were conducted during summer 2004 and 2005 in a Randomized Block Design with four replications at Agronomy Farm, College of Agriculture, Pune. The treatments comprised of four genotypes of sorghum viz., Ruchira, Phule Amruta, SSG. 59-3 and Maldandi 35-1 and three planting layouts viz., flat beds, ridges and furrows and broad bed furrows. Two cuts of the sorghum fodder were taken. Among them, first cut was taken at 60 days after sowing while II cut at 50 % flowering stage. In all eleven irrigations were given to the sorghum fodder crop. The green and dry fodder yields and crude protein content were recorded during the experimental period.

### RESULTS AND DISCUSSION

The average green fodder yield (Table 1) of sorghum was significantly more in I cut (50.80 t/ha) than in II cut (36.40 t/ha) Similar results were reported by Nikam, 2004. The variety Phule Amruta has produced significantly more

green fodder yield at I (53.56 t/ha) and II cut (37.65 t/ha) over rest of the varieties. The mean green fodder yield was significantly higher when varieties were sown on broad bed furrows at I and II cut also (55.61 t/ha and 39.37 t/ha, respectively) over ridges and furrows and flat beds. Similar results were reported by (Somasundaram *et al.*, 2000). Interaction effects between different varieties and planting layouts were found to be significant with respect to green fodder yield. A variety Phule Amruta grown on broad bed furrows has produced the highest green fodder yield over rest of the treatment combinations at I<sup>st</sup> cut (58.44 t/ha) and II<sup>nd</sup> cut (43.03 t/ha) also.

The quality of fodder depends on crude protein content. The crude protein content of sorghum fodder indicated that it was significantly more in I cut than the II cut (Table 1). Manohar *et al.* (1991) and Keshwa and Jat (1992) reported the similar findings.

The variety SSG-59-3 has recorded significantly higher crude protein content (7.37 %) than varieties M 35-1 and Phule Amruta, however, it was at par with variety Ruchira at I cut (7.30 %) and II cut (6.06) also. The results are resembling with Gupta *et al.* (2002) and Singh (2002).

The crude protein content was significantly higher when varieties were sown on broad bed furrows over rest of the planting layouts at I cut (7.26 %) and II cut (6.13 %). However, the crude protein content remains at par with each other on ridges and furrows and flat beds at both the cuts.

The interaction effect was significant only at I cut while it was non significant at II cut. The highest crude protein content was recorded in variety SSG 59-3 when sown on board bed furrows.

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**Table :1 Crude Protein percentage and green sorghum fodder yield (t/ha) as influenced by different treatments**

Treatments	Crude Protein %				Green fodder Yield ( t/ha)			
	2004 -2005		2005 - 2006		2004 - 2005		2005-2006	
	I cut	II cut	I cut	II cut	I cut	II cut	I cut	II cut
Varieties								
Ruchira	7.34	6.08	7.26	6.04	51.00	50.98	36.69	36.65
Phule Amruta	6.70	5.69	6.66	5.63	53.58	53.54	38.37	38.31
SSG 59-3	7.41	6.16	7.33	6.08	47.89	47.86	33.84	33.78
Maldandi 35-1	7.22	6.02	7.16	6.0	50.80	50.76	36.80	36.74
S.E.±	0.03	0.03	0.04	0.04	0.22	0.23	0.23	0.22
C.D. (P=0.05)	0.09	0.09	0.12	0.11	0.65	0.68	0.69	0.67
Planting layouts								
Flat bed	7.08	5.89	7.0	5.81	45.30	45.26	33.18	33.12
Ridges and furrows	7.13	5.92	7.09	5.88	51.56	51.50	36.70	36.64
Broad bed furrows	7.28	6.16	7.24	6.10	55.64	55.58	39.40	39.33
S.E.±	0.04	0.03	0.04	0.03	0.19	0.20	0.21	0.20
C.D. (P=0.05)	0.11	0.10	0.11	0.10	0.56	0.59	0.62	0.59
Interaction								
S.E.±	0.07	0.07	0.07	0.07	0.40	0.38	0.41	0.39
C.D. (P=0.05)	0.21	NS	0.20	NS	1.32	1.29	1.61	1.19
General Mean	7.17	5.99	7.11	5.93	50.82	50.78	36.42	36.37

### Conclusion:

The variety Phule Amruta has produced significantly more green fodder yield at I and II cut over rest of the varieties. The mean green fodder yield was significantly higher when varieties were sown on broad bed furrows at I and II cut also over ridges and furrows and flat beds. A variety Phule Amruta grown on broad bed furrows has produced the highest green fodder yield over rest of the treatment combinations. The crude protein content was significantly higher when varieties were sown on broad bed furrows over rest of the planting layouts indicating the proper planting layout for sorghum fodder.

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