

Evaluation of Promising kharif Sorghum Genotypes for their Yield Potential and Fertility Response

Promising genotypes developed have to be evaluated for their productivity potential across locations with varying soil and climate (Hunshal, 1978). Since, new genotypes vary in their plant type and growth and development pattern, their response to fertility levels may also vary (Palaniappan *et al.*, 1976). Therefore, an attempt has been made to know the yield potential of promising *kharif* Sorghum genotypes and their response to applied fertilizers.

The present investigation was undertaken during the *kharif* season of 2001 at the Main Agricultural Research Station, University of Agricultural Sciences, Dharwad for evaluation of promising *kharif* Sorghum genotypes and their

response to applied fertilizers. The trial was laid out in a split plot design with seven genotypes (SPV1472, SPV1474, SPV1489, CSV13, CSV15, CSH14 and CSH16) in main plot and three fertility levels (0:0, 40:20 and 80:40 N: P₂O₅ kg/ha) in sub plots.

The medium deep black soil of experimental site had 0.59 % Organic Carbon, 160 kg Available N per ha, 26.8 kg extractable P₂O₅ per ha and 310 kg exchangeable K₂O per ha with a pH of 8.0. The rainfall received during the *kharif* season of 2001 (171.3 mm) was 69.2 per cent lower compared to the average of the locality (556.3 mm). The crop was sown on 8th July 2001 and harvested on 5th November 2001.

Table 1. Evaluation of *kharif* sorghum genotypes for their yield potential and fertility response.-main effects of growth and yield components and yield

Treatments	Grain yield (kg/ha)	Fodder yield (kg/ha)	Test weight (g)	Plant height (cm)	50% Bloom(days)
A. Genotypes					
SPV1472	3773	10329	22.42	169	72
SPV1474	3047	9033	22.96	173	73
SPV1489	3862	4650	16.21	123	60
CSV13	4409	8333	20.65	129	72
CSV15	3298	10926	23.21	170	73
CSH14	4671	5926	21.92	146	61
CSH16	4498	5597	25.16	135	68
S Em ±	245	281	0.27	1.8	0.2
CD (5%)	756	867	0.83	5.4	0.7
B. Fertility levels					
(N:P ₂ O ₅ kg/ha)					
0:0 (FO)	3196	7302	20.87	140	69
40:20 (F1)	4193	7738	21.27	151	68
80:40 (F2)	4422	8444	23.23	157	68
S Em ±	137	173	0.18	1.6	0.01
CD (5%)	398	502	0.52	4.6	0.03
CV (%)	16.0	10.2	3.7	4.8	0.7
Mean	3937	7828	21.79	149	69

Table 2. Evaluation of kharif sorghum genotypes for their yield potential and fertility response –Interaction effects of grain and fodder yield

Treatments	Fertility level (N:P ₂ O ₅ kg/ha)	Grain Yield (kg/ha)	Fodder Yield (kg/ha)
Genotypes			
SPV 1472	0:0	3148	9568
	40:20	4028	10247
	80:40	4142	11173
SPV1474	0:0	2127	8765
	40:20	3204	8519
	80:40	3812	9815
SPV1489	0:0	3194	4568
	40:20	4377	5000
	80:40	4015	4383
CSV13	0:0	3269	7346
	40:20	4336	8333
	80:40	5623	9321
CSV15	0:0	2472	10247
	40:20	4105	10432
	80:40	3318	12099
CSH14	0:0	3901	5247
	40:20	4151	5556
	80:40	5960	6975
CSH16	0:0	4262	5370
	40:20	5151	6080
	80:40	4080	5340
Bet G at same F S Em ±		391.4	NS
CD (5%)		1134	NS
Bet F at same G S Em ±		368.3	NS
CD (5%)		1067	NS

Among the genotypes tested CSH-14 recorded significantly higher grain yield (4671 kg/ha) compared to all others, except CSH-16 and CSV-13 (Table 1). CSH-14 being an early genotype escaped the severity of moisture stress in the reproductive stage. In general early

genotypes performed better compared to late ones. However, fodder yield was maximum with CSV-15 followed by SPV-1472. Maximum test weight was with CSH-16 followed by CSV-15 and SPV-1474. SPV-1474 and CSV-15 were significantly taller compared to all other

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genotypes, except SPV-1472. SPV-1489 and CSH-14 matured significantly earlier compared to all other genotypes.

Grain yield differed significantly due to fertility levels, with fertilizer application being superior to control (Table 1). However, fodder yield did not differ significantly between fertility levels. Plant height and test weight increased significantly with increase in fertility level. Fertilizer application reduced the duration for 50 % bloom significantly compared to control. Similar observations were recorded by Madhava Rao and Shankaregowda (1965) and also Karvande (1980).

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Interaction effect for grain yield and other parameters were significant except fodder yield (Table 2). SPV-1489, CSV-15 and CSH-16 responded significantly up to 40:20 kg N:P₂O₅ ha⁻¹. Whereas, CSV-13 and CSH-14 responded significantly up to the highest fertility level tried (80:40 kg N:P₂O₅ ha⁻¹).

From the results it may be summarized that CSV-13, CSH-14 and CSH-16 sorghum genotypes perform better under low rainfall conditions. Genotypes differ in their response to fertility levels.

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(Received: May, 2003)

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