

## Genetic Variability Analysis of Sorghum [*Sorghum bicolor* (L.) Moench] Germplasm

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**Abstract** Sorghum is preferred over other non-leguminous fodder due to its high yielding capacity, better quality and palatability and its utilization in various forms viz., green fodder, stover, silage and hay. Higher values of both GCV and PCV for panicle branch length (cm), test weight (g), stover yield (g/plant) and grain yield (g/plant) which represent higher variability among characters which make these characters more suitable for selection of procedures. High heritability indicates ample scope for phenotypic selection for the character days to fifty percent flowering. High heritability coupled with high genetic advance as per cent of mean for a char-

acters plant height, stover yield provides the best combination for the selection criteria.

**Keywords** Sorghum, Variability, Heritability, Genetic advance, Selection.

### Introduction

Sorghum constitutes the major source of food, feed and fodder in many warm climatic countries of the world. To meet the demand increase in the production should come from it or even less area in the present situation of shrinking agricultural land [1]. Improvement of the genetic potential of the crop in order to maximize the economic gain per unit of input remains the most possible means of increasing the production [2]. In commercial-farming conditions, sorghum yield could meet or exceed other grain crops [3]. Improvement of grain sorghum productivity by breeding obliges to focus on traits that might affect the grain yield [4].

### Materials and Methods

The experimental material consisted of 98 genotypes of fodder, grain and dual type of sorghum. Experi-

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**Table 1.** Variability and heritability parameters of different characters in sorghum germplasm.

Sl. No.	Characters	PCV [%]	GCV [%]	ECV [%]	Heritability <sub>bs</sub> [%]	Genetic advance	Genetic advance in per cent of mean
1.	Days to 50% flowering	11.978	11.636	2.841	94.4	19.454	23.287
2.	Plant height [cm]	19.355	16.755	9.690	74.9	93.721	29.880
3.	Stem girth [cm]	14.195	4.570	13.440	10.4	0.060	3.030
4.	Number of nodes	19.520	12.120	15.301	38.6	2.197	15.503
5.	Flag leaf length [cm]	22.694	5.268	22.074	5.4	1.21	2.519
6.	Flag leaf width [cm]	23.881	13.887	19.428	33.8	1.052	16.635
7.	Panicle length [cm] w/o peduncle	26.131	19.123	17.808	53.6	7.689	28.828
8.	Panicle length [cm] with peduncle	12.171	5.636	10.787	21.4	4.087	5.376
9.	Panicle length [cm] visible above sheath	23.339	19.407	12.963	69.1	11.045	33.245
10.	Panicle branch length [cm]	44.394	20.741	39.251	21.8	1.625	19.963
11.	Panicle breadth [cm]	24.126	18.315	15.705	57.6	1.667	28.641
12.	Test weight [g]	32.524	25.418	20.292	61.1	6.761	40.919
13.	HCN content [%]	9.177	5.918	7.014	41.6	7.384	7.861
14.	Protein content [%]	12.627	8.270	10.089	42.9	0.775	11.664
15.	Stover yield [g/plat]	36.931	18.861	31.752	26.1	84.893	19.444
16.	Grain yield [ g/plant]	50.529	22.358	45.313	19.6	3.823	20.823

ment was laid out in augmented block design. The observations were recorded on sixteen characters namely, days to 50% flowering, plant height (cm), stem girth (cm), number of nodes, flag leaf length (cm), flag leaf width (cm), panicle length (cm) without peduncle, panicle length (cm) with peduncle, panicle length (cm) visible above sheath, panicle breadth (cm), panicle branch length (cm), thousand grain weight (g), HCN content in ppm, protein content in %, stover yield (g/plant) and grain yield (g/plant).

## Results and Discussion

Grain yield per plant showed high PCV (50.529%), followed by panicle branch length (44.394%), stover yield (36.931%), thousand grain weight (32.524%), panicle length without peduncle (26.131%), panicle breadth (24.126%), flag leaf width (23.881%) peduncle length visible above sheath (23.339%) and flag leaf length (22.694%) (Table 1). Similar finding had been reported by Jain SK and Patel PR [5]. Thousand grain weight showed high GCV (25.418%) followed by grain yield per plant (22.358%) and panicle branch length (20.741%). Grain yield per plant showed high ECV

(45.313%) followed by panicle branch length (39.251%) and stover yield (31.752%), flag leaf length (22.074%) and thousand grain weights (20.292%). Similar finding had been reported by Mallinath et al. [6]. Grain yield and thousand grain weight and panicle branch length showed high value of both GCV and PCV. Similar finding had been reported by Ganapathy et al. [7]. Days to fifty per cent flowering showed almost same value of GCV and PCV along with low value of ECV, which reveals that environment had slight effect on the expression of the character. Very similar result was reported by Sumathi et al. [8] and Maman et al. [9]. High heritability for character days to fifty per cent flowering was recorded, which were similar to the findings of Haradari et al. [10].

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