

Genetic variability analysis in *rabi* sorghum germplasm

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ABSTRACT

The heritability in broad sense for growth characters 1000 seed weight, grain yield, number of leaves per plant, leaf width internode length, peduncle length and earhead length was highest. High heritability accompanied with high genetic advance was observed for growth traits *viz*; grain yield, 1000 grain weight, number of leaves per plant, earhead length, leaf width, internode length, peduncle length and plant height suggesting additive gene control in the inheritance of their traits and scope per selection in the improvement of these characters. On the basis of superiority of the different genotypes over better check some genotypes were isolated and suggested for further improvement programme of *rabi* sorghum. Sufficient variability was present in germplasm under study for all characters. Magnitude of pcv was found more than gcv all characters.

Key words : Variability , gcv , pcv , Heritability and Genetic advance.

INTRODUCTION

Rabi sorghum is the major cereal crops grown on dryland ecosystem of Maharashtra and parts of Karnataka and Andhra Pradesh. In Maharashtra the crop is grown on area of 33 lakh ha. However, the productively of *rabi* sorghum in Maharashtra is very low. Efforts are being made to develop the varieties resistant to drought particularly terminal stress. Local landraces present in different tracts of sorghum growing areas of Maharashtra are very good source as donor parent to develop the drought tolerant varieties. Presence of genetic variability in the population is prerequisite for the development of varieties by selection and more effective use of plant genetic resources is crucial for the sustainable of the food of the country. Greater efforts are required to characterized the landraces.

MATERIALS AND METHODS

The material for the proposed study consist of 550 different germplasm of *rabi* sorghum landraces available at Sorghum Improvement Project, Mahatma Phule Krishi Vidyapeeth, Rahuri. These germplasm lines were collected from different *rabi* sorghum growing tracts of Maharashtra. The variability parameters were estimated as follows a range, (Panse and Sukhatme 1978), Estimation of coefficient of variation (Burton, 1952), heritability (Hanson *et al.*, 1956) and genetic advance (Allard, 1960).

RESULTS AND DISCUSSION

The analysis of variance for 13 quantitative character is given in Table 1. Variance due to block effect were

significant ($P < 0.5$) for number of leaves, earhead length, 1000 seed weight, grain yield, leaf width, plant height, internode length, peduncle length, days to 50 of flowering, days to maturity, leaf length and number of internodes. Mean squares due to treatments were significant for number of leaves per plant, earhead length, 1000 seed weight, grain yield, leaf width, plant height, internode length, and peduncle length indicating genotypes under study different significantly for these eight traits ($P < 6.1$).

Variability Parameters:

Range of variability:

Wide range of variability was observed in respect of all the characters under study. This indicated ample scope for exploitation of all the above character. Dhimmam and Desai (1978) observed similar, results for earhead length, grain yield, plant height, days to half bloom, days to maturity and 1000 seed weight. Potdukhe *et al.* (1993) observed similar results for plant height, days to 50 % flowering, number of leaves and grain yield / plant. Umakanth *et al.* (2002), Patankar (2003) observed similar results for plant height and days to 50 % flowering.

Genotypic coefficient of variation:

In general, the estimates of pcv were higher than those for gcv , high estimates of gcv were observed for grain yield (24.27), leaf width, (22.76) number of leaves per plant (31.86) and earhead length (38.01), medium (15.30), internode length (12.02) and peduncle length (17.49) while low estimates of gcv were observed for six characters, earhead length (5.26), days to 50 % flowering (4.61), days to maturity (2.51) plant height (8.05), leaf length (4.49) and number of internodes per plant (4.64).