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GENETIC VARIABILITY IN KODOMILLET (*PASPALUM SCROBICULATUM* L.)

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ABSTRACT

Twenty six genotypes of kodomillet were used to study the genetic variability for seven economic attributes. The genotypic coefficient of variation was high for straw yield. Plant height, basal tillers, panicle length and 1000-grain weight had higher heritability estimates. Straw yield recorded the highest genetic advance, indicating that it is controlled by additive gene action. Therefore, phenotypic selection on the basis of these traits may be effective for its yield improvement.

Key words: Kodomillet, variability, heritability, genetic advance.

The present investigation has been carried out to study the natural variability occurring in genotypes collected from different sources. In addition, heritability and genetic advance of seven characters have also been estimated.

Twenty six genotypes of kodomillet were raised during in randomized block design with three replications at 22.5 x 10 cm spacing was adopted. At maturity, five plants were chosen at random and observations recorded on plant height, basal tillering, nodal tillers, earhead length, 1000-grain weight, straw yield, and grain yield.

The phenotypic and genotypic variances (PCV, GCV) and genetic advance (GA) were calculated according to Johnson et al. [1]. The methods suggested by Burton [2] was used to compute PCV and GCV. HEritability in broad sense was estimated based on the formula of Lush [3].

The variances due to genotypes for all the six traits were significant. The data on range, phenotypic and genotypic variances, PCV, GCV, heritability and GA are presented in the Table 1. The highest GCV was observed for straw yield (30.5), which is in agreement with the earlier findings [4, 5]. Very low GCV estimate was observed in the present material for panicle length.

Table 1. Estimates variability, heritability and genetic advance in kodomillet

Character	Range	Variance		GCV	PCV	Herit-ability	Genetic advance	GA (% of mean)
		geno-typic	pheno-typic					
Plant height (cm)	47.6–77.6	70.0	73.2	13.1	13.4	96.1	16.9	26.4
Basal tiller	10.0–17.7	9.7	10.5	22.8	23.7	92.9	6.2	44.8
Nodal tiller	13.2–25.0	5.0	8.8	10.4	18.1	37.9	3.4	26.4
Panicle length (cm)	6.2–8.1	0.4	0.5	8.8	9.5	86.3	1.3	16.8
1000 grain weight (g)	2.5–5.2	0.5	0.6	17.9	19.8	90.2	1.1	34.0
Grain yield (g)	5.9–10.4	2.1	3.5	19.7	25.1	61.0	3.7	29.8
Straw yield (g)	9.0–35.0	30.5	42.0	30.5	39.0	71.8	10.1	58.5

Plant height exhibited the highest heritability estimate of 96.1, followed by basal tillering, 1000-grain weight and panicle length. Selection for these characters is likely to be effective, whereas selection for nodal tillering, the least heritable trait, is bound to be ineffective. Heritability estimates along with genetic gains are more important for improvement than heritability alone [6]. The GA as per cent of mean was high for straw yield (58.5). This indicates that straw yield is controlled by additive gene action and phenotypic selection for the improvement of this character may be effective. Kandasamy et al. [5] in kodomillet and Manoharan and Sivasubramanian [7] in prosomillet also reported that straw yield could be improved through phenotypic selection. Grain yield had moderate heritability and genetic advance. Plant height and panicle length, though gave high heritability values, had low genetic gains, indicating involvement of nonadditive gene action.

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