CHARACTER ASSOCIATION AND PATH COEFFICIENT ANALYSIS IN PROSO MILLET (*PANICUM MILIACEUM* L.)

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**ABSTRACT**

Thirty-four diverse genotypes of proso millet (*Panicum miliaceum* L.) were planted in randomized block design with three replications at two locations in Udaipur, India. Maximum direct effect was recorded for main panicle length followed by main panicle weight and 1000-seed weight. These characters contributed towards seed yield/plant directly as well as indirectly. Hence these characters could be effectively used in breeding programme for improving seed yield in proso millet.

Proso millet (*Panicum miliaceum* L.) is an important small millet crop grown in India under dryland, marginal and hilly agroecological situations by tribals/poor farmers for grain as well as fodder. Being a short duration crop with relatively low water requirement, this escapes drought period and offers better prospects for intensive cultivation in dry areas, therefore, ideally suited for relay and catch cropping. In view of its significance, an attempt has been made to determine the direct and indirect effects of the yield attributes though path analysis so as to identify the most important yield contributing characters.

The experimental material for the present study consisted of thirty-four diverse varieties/strains of proso millet sown in randomized block design with three replications in two environments/locations during rainy season (*kharif*, 1998) at Udaipur, India. These environments (E₁ and E₂) are different from each other with respect to physico-chemical soil properties. Each genotype was sown in 3 m long single row keeping spacing of 22.5 cm between rows and 10.0 cm between plants within rows in both the environments. Recommended and uniform agronomical practices as well as plant protection measurements were followed to raise the crop. Observations were recorded on ten randomly selected plants for each genotype in each environment for days to maturity, plant height, tillers per plant, main panicle length, primaries per panicle, main panicle weight, 1000-seed weight, dry fodder yield per plant and seed yield per plant. The mean values so obtained were subjected to statistical analysis for each environment and over pool data. Genotypic and phenotypic correlation coefficients were calculated as per method suggested by Al-Jibouri *et al.* (1958). Path coefficient analysis for eight characters on seed yield was done as per procedure given by Dewey and Lū (1959).

The analysis of variance revealed significant differences among the genotypes for different characters in both the environments and over pool data revealing the presence of sufficient variability. Further, close agreement existed between genotypic and phenotypic correlations indicating that the environmental influences were insignificant. Genotypic correlations were of higher magnitude than their corresponding phenotypic correlation as also reported by Manoharan and Sivasubramanian (1984). Seed yield per plant showed strong and positive correlation with all the characters atleast at genotypic level in both the environments separately and over pool basis. Mutual correlations between different characters like days to maturity, plant height, tillers per plant, main panicle weight, 1000-seed weight and dry fodder yield per plant were also significant and positive at genotypic level in both the environments and over pool.
analysis. This revealed that simultaneous selection for all these traits would result in genetic improvement of seed yield in proso millet.

Path analysis for seed yield in both the environments separately and over pool analysis (Table 1) revealed maximum direct effect of main panicle length as also reported by Panwar and Kapila (1992). Main panicle length exhibited positive correlation and high direct effect on seed yield because of indirect contribution through days to maturity, tillers per plant, primaries per panicle main panicle weight, 1000-seed weight, dry fodder yield per plant and plant height at least in one environment and over pool basis. Further positive direct effects of main panicle weight followed by 1000-seed weight, primaries per panicle, tillers per plant and dry fodder yield per plant were recorded on seed yield. Main panicle weight, 1000-seed weight and primaries per panicle exhibited positive correlation and direct effect on seed yield due to its indirect contribution through one another and also due to main panicle length, tiller per plant, dry fodder yield per plant and plant height.

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Therefore, the study based over two environments and pool analysis revealed that main panicle length followed by main panicle weight, 1000-seed weight, primaries per panicle and tillers per plant contributed to seed yield per plant directly as well as indirectly. These traits also showed strong genotypic correlations with seed yield. Hence these component characters could be effectively used...
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REFERENCES