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Genetic variability, association and path coefficient studies in two interspecific crosses of finger millet [*Eleusine coracana* (L.) Gaertn]

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SUMMARY

The interspecific hybrids between cultivated species *Eleusine coracana* involving three different popular varieties *viz.*,HR 911 and PR 202 with *E. africana* for assessing genetic variability, path and correlations among yield and yield components in segregation population. Results indicated that the hybrid showed intermediate for productive tillers, finger length, finger number and days to 50 % flowering and exhibited reduced pollen fertility. The F_2 populations of two crosses registered high PCV and GCV values were observed for grain yield per plant and finger width and low for plant height and days to 50 % flowering whereas low moderate for all other characters. Plant height, finger length, test weight and grain yield per plant reported high broad sense heritability accompanied with high genetic advance. The correlation studies of these crosses showed grain yield per plant exhibited highly significant positive association with finger width and test weight. The path analysis in F_2 populations indicates that productive tillers per plant had the highest positive direct effect followed by finger width and test weight on grain yield in these two crosses while finger number exerted low positive direct effect on grain yield.

Key words : Interspecific hybrids, Finger millet, Genetic variability, Correlation coeficient, Path analysis

Finger millet (*Eleusine coracana* L. Gaertn.) commonly called as ragi in India, ranks fourth place after pearl millet (*Pannicum glaucum*), foxtail millet (*Setaria italica*) and Proso millet (*Panicum miliaceum*) with an approximate 8 per cent of the area and 11 per cent of the production in the world. About 4.5 million tonnes of grains are produced annually on 5 million hectares of land throughout the world (Rao , 1989). India alone produces 40-45% of the total world production with 2.70 million tonnes grains on two million hectares of land with a productivity of 1225 kg per hectare and rest of finger millet is produced in East and Central Africa. In India, the south eastern area of Karnataka and adjoining regions of Andhra Pradesh and Tamil Nadu states produce the bulk of the total crop. Karnataka alone contributes 55 per cent of total India's area and production of finger millet with a productivity of 1335 kg per hectare (Anonymous, 2004).

As a rainfed crop, finger millet is routinely subjected to moisture stress whose intensity varies across the seasons / regions. In addition to drought stress, various diseases especially blast and leaf blight causes considerable yield loss. Crop improvement work in finger millet during the last three decades has been directed to improve yield and agronomic attributes and considerable progress has been made by way of releasing superior varieties suitable to various regions. The variability available in cultivated species is limited in respect of certain important characters like finger length, straw quality, tillering ability, drought tolerance and resistance to several kinds of biotic stresses. In order to overcome above limitations, introgression of desirable genes from wild relatives into cultivated varieties which is required for sustainable agriculture.

In general, variability is the basic material for any crop improvement programme. So quantification of the extent of variability created in grain yield and its contributing traits by segregation after hybridization and the knowledge of heritability, genetic advance for the yield components and their correlations with yield in the segregating populations are the prerequisites for selection of desirable segregants in any crop breeding programme. The path analysis is an effective measure to find out direct and indirect effects of component characters contributing to yield. *Eleusine africana* is close relative of cultivated

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