Combining ability studies in a diallel cross of ten selected restorers of pearl millet

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ABSTRACT

Combining ability analysis was carried out in a 10 x 10 diallel set, excluding reciprocals, for yield and 11 yield components in pearl millet. The present study revealed the importance of non-additive gene action in the inheritance of traits viz., grain yield per plant, fodder yield per plant, 1000 grain weight and harvest index; while, additive gene action was preponderant for plant height, ear head length, ear head girth and ear head weight. Both additive and non-additive gene action were found in days to 50 per cent flowering, days to maturity, number of effective tillers per plant and number of nodes. The parents like D-23, J-2480 and J-2467 could be used in hybridization programme to exploit their GCA effects for grain yield and some important attributing traits. The hybrids viz., J-2467 x J-2474, J-2454 x J-108, J-2480 x D-23, J-2475 x D-23 and J-2340 x J-2480 were the most promising having good SCA, coupled with high \textit{per se} performance and heterobeltiosis for grain yield. Analyses of crosses revealed majority of the superior crosses were involved high x high or high x low; and few cases low x low general combiners. The development of new inbred lines with high \textit{per se} performance and good combining ability, through appropriate breeding methodology is suggested.

Key words: Combining ability, Pearl millet, Diallel cross, Grain yield