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Full Length Research Paper

Studies on character association and path analysis of certain quantitative characters among parental lines of pearl millet (*Pennisetum glaucum*) and their f_1 hybrids in a diallel cross.

A[1*]. U. Izge, A[2]. M. Kadams, and D[3]. T. Gungula

[1]Department of Crop Production, Faculty of Agriculture,University of Maiduguri, P.M.B. 1069, Maiduguri,Borno State, Nigeria.
[2]Department of Crop Production and Horticulture, Schoolof Agriculture and Agricultural Technology, Federal University ofTechnology, Yola, P.M.B. 2076, Yola, Nigeria.
[3]Department of Crop Production and Horticulture, Schoolof Agriculture and Agricultural Technology, Federal University of Technology, Yola, P.M.B. 2076, Yola, Nigeria.

*Corresponding author's E: mail: bamsyizge@yahoo.com.

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Abstract

A two-year study was conducted during the cropping season of 2004 and 2005 at Maiduguri (11^0 53^I N, 13^0 16^I E) and at Yola (9^0 8^I N, 12^0 29^I E), Nigeria. The study was conducted to determine the correlation and path coefficients among the yield and yield component characters in 10 parental lines and 45 hybrids of pearl millet (*Pennisetum glaucum* L. R. Br), formulated by a diallel cross excluding reciprocals. Strong and significant genotypic and phenotypic correlations were observed between total grain yield with yield/plant, number of tillers/plant, number of leaves/plant, plant height, panicle length and number of seeds/panicle. The path analysis indicated that, grain yield/plant, days to 50% flowering and plant height had the highest direct effects on total grain yield. The panicle length and the threshing percentage had the least direct effects on total grain yield. The direct effect of yield/plant was greatly reduced by the negative indirect effects through days to 50% flowering and downy mildew incidence, even though it was not significant. Similarly, the direct effect of plant height was very much influenced by the negligible indirect effects of threshing percentage, downy mildew incidence and 100-grain weight. The grain yield/plant, number of seed/panicle, and plant height in this study has been identified as selection criteria for obtaining good parental lines and hybrids in a pearl millet breeding program.

Key words: pearl millet, total grain yield, correlation, path analysis, parental lines, hybrids.