
RESEARCH PAPER

Character association and path analysis in pearl millet [*Pennisetum glaucum* (L.) R. Br.]

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A set of 60 genotypes comprising of 45 F₁s along with fertile counter parts of five male sterile lines, nine testers and one standard check hybrid (GHB-744) were utilized to study the correlation and path analysis for nine quantitative characters in pearl millet during *Kharif* season of 2011-2012. Correlation studies revealed that the characters *viz.*, ear head weight, number of nodes per plant, fodder yield per plant and harvest index exhibited significant positive correlation with grain yield indicated major role of these traits in contribution of grain yield. Path co-efficient analysis showed that ear head length, harvest index, number of nodes per plant and fodder yield per plant were the most important characters manifesting large positive direct effects on grain yield. The high association of fodder yield per plant, harvest index and number of nodes per plant with grain yield and their inter-associations and also their large direct effect on grain yield suggest that these traits merit maximum emphasis in selection for improvement of grain yield in pearl millet.

Key words : Correlation co-efficient, Path analysis, Pearl millet, Grain yield

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INTRODUCTION

Yield is the most economic character in almost all of the crops. Yield is a complex entity and inheritance of yield depends upon a number of characters which are often polygenic in nature and are highly affected by environmental factors (Nadarajan and Gunasekaran, 2005). Knowledge of genetic system controlling yield and its components is useful in understanding the prepotency of the parents and thus help to select parents possessing in-built genetic potential. For efficient selection, programme interrelationship between yield and its components is inevitable and mutual association of plant characters, which is determined by correlation coefficient and is used to find out the degree (strength), mutual relationship between various plant characters and the component character on which selection can be relied upon the genetic improvement of yield. But information on the relative importance of direct and indirect effects of each component characters towards yield is not provided by such studies. Path coefficient analysis is helpful in partitioning the correlation into direct and indirect effects so that relative

contribution of each component character to the yield could be assessed (Singh and Narayanam, 2007). Therefore, the present investigation was undertaken to determine the mutual association among nine selected traits in pearl millet and their direct and indirect effects on yield by using path coefficient analysis.

RESEARCH METHODOLOGY

In the present investigation, five male sterile lines (ICMA-98444, JMSA-20081, JMSA-20091, ICMA-65550, ICMA-841) and nine diverse restorer lines (J-2340, J-2405, J-2433, J-2480, J-2482, J-2495, J-2496, J-2507, J-2526) were crossed in a line x tester mating design during summer-2011. The resultant 45 hybrids along with fertile counter part of five male sterile lines, nine pollinators and one standard check hybrid (GHB-744) were evaluated in randomized block design with three replications at Pearl millet Research Station, Junagadh Agricultural University, Jamnagar, Gujarat, during *Kharif* season of 2011-2012. Each entry was grown in a single row of 5.0 m length each with inter and intra row spacing of 60 cm x 15 cm. The recommended agronomic practices and plant