RESEARCH PAPER

Genetic analysis of sugar content in segregating populations derived from cross between grain sorghum x sweet sorghum

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Abstract : The present investigation on inheritance, correlation and path analysis study was undertaken in the segregating populations derived from cross between grain sorghum and sweet sorghum. An intervarietal cross of sweet sorghum was generated during *Kharif* 2010 by crossing the parents (27 B with NSSV 13) which were contrasting for the trait of interest *i.e.,* sugar content. The F_1 generation was raised during *Rabi* 2010 - 11 and F_2, B_1 and B_2 crosses were anticipated. Based on sugar yield, plants were classified into two distinct groups *i.e.,* high sugar and low sugar content. By employing the chi square test, goodness of fit was tested for the segregation ratio and it was evident that sugar content governed by simple monogenic pattern (3High sugar: 1low sugar) of inheritance with high sugar content being governed by dominant and low sugar by recessive allele. Further, correlation studies in F_2 generation revealed significant and positive association of sugar yield with juice yield, total biomass, brix per cent, total soluble sugars, bioethanol yield, fresh stalk yield, grain yield and juice extraction per cent. While path analysis studies revealed maximum positive direct effect of total soluble sugars and juice yield on sugar yield. These correlated traits can be effectively utilized in formulating indirect selection schemes.

Key Words : Inheritance, Segregating populations, Chi-square test, Monogenic, Dominant, Recessive, Correlation, Path analysis

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