



## STUDY OF GENETIC PARAMETERS FOR YIELD AND QUALITY TRAITS IN SUGARCANE (*SACCHARUM OFFICINARUM*)

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**ABSTRACT:** Thirty-two genotypes were evaluated in a randomized block design at Crop Research Centre, G.B. Pant University of Agriculture and Technology, Pantnagar in 2010-2011 to estimate phenotypic and genotypic coefficients of variation, heritability and genetic advance for fourteen characters in sugarcane (*Saccharum officinarum* L.). Analysis of variance revealed highly significant differences between genotypes for all the characters studied. Genotypic variance was higher than environmental one for the germination %, number of tillers and number of millable canes. Number of tillers, number of millable canes, cane height, cane diameter, single cane weight, CCS yield and cane yield had high genotypic and phenotypic coefficients of variation. High heritability estimates were recorded for number of tillers and cane diameter. Maximum genetic gain as percent of mean was observed for the number of tillers. Number of millable canes, single cane weight, ccs yield and cane yield.

**Keywords:** Genetic advance, genetic variability, heritability, sugarcane

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Sugarcane clones in commercial cultivation are complex polyploidy with variable chromosome

number. The heterozygous and polyploid nature of this crop have resulted in generation of greater genetic variability. The estimation of the nature and magnitude of genetic variability present in the genetic material is of prime importance for a breeder to initiate any effective breeding programme. Study of genetic parameters along with nature of heritability as well as genetic advance are very essential to improve any trait of sugarcane because this would help to knowing whether or not the desired objective could be achieved from the material (Tyagi and Singh, 1998). The present study was, therefore carried out to know the nature and extent of genetic variability, heritability and genetic advance in some important sugarcane yield and quality characters.

### MATERIALS AND METHODS

The experimental material for the present study consisted of 32 genotypes of sugarcane namely as (CoH 7261, Co Pant 84212, CoH 5266, Co Pant 3219, Co Pant 7221, UP 9530, Co Pant 6224, Co Pant 7224, Co Pant 96219, UP 5233, Co 1148, Co 8436, CoS 96268, Bo 91, Co Pant 4222, CoS 767, CoPant 6221,

Coj 64, CoPant 99214 and Co Pant 2218, Co Pant 97222, CoPant 5224, Co Se 96436, Co Pant 42338, CoPb 5211, K 14/05, Co Pant 84211, Co Pant 90223, CoS 97264, Co Pant 3220, Co Pant 5222, Co pant 1215) (Annexure1). Sugarcane was planted in furrow method with three replications at the Crop Research Center of G.B. Pant university of Agriculture and Technology, Pantnagar. All agronomical practices were adopted during the entire crop season. Data were recorded on germination percentage, number of tillers millable cane number, cane height, stalk diameter, single cane weight, Juice brix percent, juice sucrose %, ccs percent, ccs yield and cane yield. Analysis of variance was used for calculating genotypic, phenotypic and environmental characters. The broad sense heritability was estimated according to the method suggested by Johnson et al. (1955) and the expected genetic advance was calculated by the method given by Robinson et al. (1949).

### RESULTS AND DISCUSSION

The analysis of variance for all the characters showed that clones included in the experiment differed significantly with respect to all characters studied (Table 1). This indicates that there was significant amount of phenotypic variability and all the clones were