

Variability pattern in cultivar x species progenies of sugarcane

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SUMMARY

Variability pattern of the progenies (30 per mating group) of the Indian commercial hybrids crossed with *Narenga*, *Erianthus* and *Saccharum spontaneum* were studied. The *Erianthus* genotypes were superior for cane yield and quality characters except number of millable canes. The *Erianthus* mating group had clean advantage over *Narenga* and *spontaneum* for both cane yield and quality traits. The maximum genetic variability was observed among the *S. spontaneum* progenies for all the characters except cane yield. The *Erianthus* mating group was found to have advantages for obtaining promising clones compared to other groups. It is suggested that a more extensive use of advanced breeding material could be made in a deliberate breeding programme of bridging crosses among the progenies of three mating groups for the genetic base broadening among the existing genotypes.

Key words : Variability, Mating groups, Genetic base broadening

Crossing of clones of closely related genera and *Saccharum* species to a commercial hybrid forms a dependable and quick method of incorporation of new and varied germplasm into a genotype selected for adaptation to a particular environment. More over, this practice hastens the gain in performance and steps up the variance among commercial hybrids which at present is diminishing to that of experimental error level in the commonly adapted inter varietal crossing programme. Little Published information was available to understand the variability existed in crossing commercial hybrids with closely related genera and *Saccharum species* for various quality and quantitative characters. This work was a long felt need by many workers (Daniels, 1965, Walker, 1972, Ethirajan, 1987, Heinz, 1987 and Krishnamurthi *et al.*, 2006) to design a new cycle of nobilisation using diverse clones of *S. spontaneum* and wild relatives *viz.*, *Erianthus* and *Narenga*.

MATERIALS AND METHODS

The present study had been under taken at M/s E.I.D Parry (India) Ltd., Sugar factory, R and D farm Nellikuppam, Cuddalore District, Tamil Nadu, during the month of March 2007. The experimental material comprised F_1 progenies from crosses involving commercial hybrids and *Erianthus*, *Narenga* and *S. spontaneum*.

Eight clones each of *Erianthus*, *Narenga* and *S. spontaneum* were used in hybridization. The progenies at seedling stage were subjected to selection pressure, so as to surpass the threshold limits set up for each group for number of millable canes for *S. spontaneum*, cane diameter, single cane weight and quality characters in the *Erianthus* mating group to bring down the number to a manageable level. Hybridity of the progenies was ensured by the distinct economic characteristic of each type. Thirty progenies in each mating group were taken at random. The progenies along with two Checks, *viz.*, Co 86032 and COC 671 were evaluated in randomized block design with three replications. Each F_1 clone was grown in a single row plot, 6 meter long spaced at 90 cm. Seventy two, two budded setts were planted in a plot at equal distance. The trial was harvested after 360 days and the data on nine characters were recorded.

The genotypic and phenotypic coefficient of variation (GCV and PCV) (Burton, 1952), broad sense heritability (Hanson, 1963) and genetic advance (Allard, 1960) were computed.

RESULTS AND DISCUSSION

The analysis of F_1 genotypes showed significant differences between genotypes for all the traits (Table1). Significant differences were also observed between mating groups for all the characters. This indicated the potential of certain parents involved in the crosses to produce better genotypes. A comparison was made between mating groups. The genotypes derived from *Erianthus* mating group significantly differed from *S. spontaneum* genotypes and genotypes of *Narenga* differ significantly from *S. spontaneum*. Whereas, the genotypes

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