
A REVIEW

Genetic diversity among sugarcane (*Saccharum* spp. complex) genotypes

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Sugarcane is a very useful industrial crop grown in India for its economic importance and various applications of products and byproduct to industry. It has a wide range of genetic diversity which provides a tremendous scope for genetic improvement of economic traits. An improvement in cane yield and quality characters in sugarcane crop is normally achieved by selecting the genotypes with desirable character combinations existing in nature or by hybridization. Hence, the information in a collection of some genotypes of sugarcane in order to formulate a sound breeding plan for its improvement has been reviewed here.

Key words : Sugarcane, Variability, Correlation, Path analysis, Genetic divergence

How to cite this paper : Patil, P.P., Patil, S. S., Shinde, D.A. and Lodam, V. A. (2012). Genetic diversity among sugarcane (*Saccharum* spp. complex) genotypes. *Asian J. Bio. Sci.*, 7 (1) : 106 - 113.

INTRODUCTION

Sugarcane is an important crop in the country economically, politically and sociologically. Its botanical name is *Saccharum* spp. complex and belongs to the family Poaceae. Sugar industry is the second largest agro industry next to textile and is a source of food, fuel, fodders and fibre. It is a tropical crop and is the major source of sucrose. Sugar is still the most preferred sweetener and the most widely used calorific food.

Origin:

Tropical sugarcane originated from Oceania (New Guinea) and Indian cane (*Saccharum spontaneum*) (kans) originated from North Eastern India.

Derivation:

The word “sugar” and “sugarcane” are derived from the Sanskrit word “sharkara” and it indicates Indian origin.

Discovery:

“Co.205” was the first interspecific hybrid which became popular for commercial purpose. It was obtained from the cross of cultivated species with wild species (*S. officinarum* x *S.*

spontaneum) by Charles Alfred Barber in 1912 in India.

Importance:

Sugarcane is an important cash crop in India and plays a crucial role in the economy by contributing 21.4 per cent area and 22.1 per cent production, ranks second (next to Brazil). The sweeteners produced from sugarcane in India are crystal sugar, jaggery and khandsari.

Sugarcane is considered as kulpvrksha because all its plant parts and byproduct of sugar industry are useful for various purposes like food, fodder, fuel, energy, electricity etc

Success of any breeding programme depends much on genetic diversity available to the breeders and the judicious selection of parents. The success of breeding programme is achieved by the efficient utilization of heritability and variability available in a population. Mahalanobis (1936) generalized distance has been used as an efficient tool in quantitative estimation of genetic diversity and a rational choice of potential parents for a breeding programme. Knowledge of interrelationship between cane yield and its components is obvious for efficient selection of desirable plant type. Unlike the correlation coefficient values, which measure the extent of relationship, path coefficient (Wright, 1923; Dewey and Lu, 1959) measure the magnitude of direct and indirect effects of characters on complex dependent characters like cane yield