GMR Genetics and Molecular Research
Online Journal
ISSN:1676-5680

Genetic diversity and coefficient of parentage between clones and sugarcane varieties in Brazil

B.P. Brasileiro[1], C.D. Marinho[1], P.M.A. Costa[1], L.A. Peternelli[1], M.D.V. Resende[2], D.E. Cursi[3], H.P. Hoffmann[3] and M.H.P. Barbosa[4]

[1]Departamento de Estatística, Universidade Federal de Viçosa, Viçosa, MG, Brasil
[2]Embrapa Floresta, Colombo, PR, Brasil
[3]Departamento de Biotecnologia e Produção Vegetal e Animal, Universidade Federal de São Carlos, São Carlos, SP, Brasil
[4]Departamento de Fitotecnia, Universidade Federal de Viçosa, Viçosa, MG, Brasil

Corresponding author: C.D. Marinho
E-mail: caillet.marinho@yahoo.com.br

Genet. Mol. Res. 13 (4): 9005-9018 (2014)
Received March 11, 2014
Accepted June 30, 2014
Published October 31, 2014
DOI http://dx.doi.org/10.4238/2014.October.31.15

ABSTRACT. The success of the development of new sugarcane varieties is associated with the ability to correctly select the genitor. The aim of this study was to evaluate the genetic diversity between 113 clones and sugarcane varieties using the Ward-modified location model procedure with added information about the coefficient of parentage and endogamy. In this study, data was used from 100 experiments that evaluated clones; the experimental phase was conducted in 70 places between the years 2002 and 2009 on the outlining in random blocks. According to the diversity analysis, 3 groups formed: G1, G2, and G3, which were composed of 58, 8, and 47 genotypes, respectively. The clones of groups G1 and G3 were the most outstanding. Thus, biparental crossbreeding involving clones and varieties of these 2

groups can efficiently obtain transgressive genotypes. Knowledge of the heterotypic groups indicated by the Ward-modified location model method, along with the parentage information, will make it a lot easier to define the desirable and undesirable crossbreeds for public and private breeding programs that develop sugarcane varieties.

Key words: Sugarcane varieties; Genetic diversity; Joint analysis; Coefficient of parentage; Germplasm characterization

