



Relationships between methods of variety adaptability and stability in sugarcane

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ABSTRACT. The identification and recommendation of superior genotypes is crucial for the growth of industrial crops, and sugarcane breeding performs a vital role by developing more productive cultivars. The study of genotype x environment interaction has been an essential tool in this process. Thereby, the purpose of this study was to investigate the relationship between methods of adaptability and stability in sugarcane. Data were collected from trials using a randomized block design with three repetitions and 15 clones of sugarcane in nine environments in the State of Minas Gerais, Brazil. Methodologies based on analysis of variance, linear regression, multivariate analysis, nonparametric statistics, and mixed model were used. The methods of Lin and Binns, Annicchiarico, and harmonic mean of relative performance of genotypic values (MHPRVG) were similar in their classification of genotypes. The additive main effect and multiplicative interactions (AMMI) and Wricke methods tended to select the most stable genotypes; however,

genotypes were less productive, coinciding with the stability parameter of Eberhart and Russell. The MHPRVG method is preferred over the methods of Lin and Binns and Annicchiarico because it includes the concepts of productivity, adaptability, and stability, and it provide direct genetic values of individuals. The use of the MHPRVG and Eberhart and Russell methods is recommended because the combination of these methods is complementary and leads to greater accuracy in the identification of genotypes of sugarcane for different environments.

Key words: Genotype x environment interaction; Sugarcane breeding; Mixed model; Multi-environment trials; *Saccharum* spp