

SUGARCANE FAMILIES SELECTION IN EARLY STAGES BASED ON CLASSIFICATION BY DISCRIMINANT LINEAR ANALYSIS

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- **ABSTRACT:** *A major challenge in breeding programs is the efficient selection of genotypes in the early stages. The efficiency of selection in these phases is critical for the program targets, since, due to the particularity of sugarcane, the genotypes selected in the early stages will be assessed in later stages. The objective of this study was to compare selection by linear discriminant analysis with family selection based on estimates of the variable tons of cane per hectare (TChE), defined by the indirect traits number of stalks, stalk diameter and stalk height, as alternatives to the selection of promising sugarcane families. Also simulations were considered in order to augment the training observations before analysis. Five different simulation scenarios were considered: without simulation and with 500, 750, 1000, or 2000 families simulated. The methods were compared and evaluated by the apparent error rate (AER). Linear discriminant analysis indicated a high concordance with the selection based on the measured, or real, TCH (TCHr) and can be used for early selection of sugarcane families. In the simulated scenarios, results from selection based on linear discriminant analysis were better than those of selection for TChE. The AER is minimized when 1,000 families are simulated to augment the training observations.*
- **KEY WORDS:** *Simulation; plant breeding; Saccharum spp.*

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