



Screening for drought tolerance in sugarcane families

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The occurrence of drought events has been considered a main limiting factor for crop productivity in sugarcane. Thus, efforts should be made aiming the construction of new plants ideotypes to face increasingly extreme climate events, minimizing its negative effects. The objective of this work was to evaluate the drought tolerance of eight sugarcane families grown under controlled environment. The experiment was conducted in a greenhouse at the experimental station of the Federal University of Paraná, in Paranavaí, PR, evaluating eight families of complete sugarcane siblings, in a randomized complete block design with six replicates. The crosses were carried out by the Federal University of Alagoas, in Murici, AL. The cariopses were sown in trays with substrate and conditioned in a greenhouse. At 10 days after emergence (DAE) the seedlings were individualized in cells with 200 cm³, filled with 95 grams of commercial substrate per cell. At 60 DAE, the drought simulation cycles were started, with three cycles of seven days without irrigation (drought period) with recovery interval of five day (recovery period) between cycle. At the end of the third cycle, chlorophyll content (CPL) was measured using a portable chlorophyllometer (SPAD-502Plus Konica Minolta®) and relative water content (RWC), both on leaf +1. The components of the variance and genetic parameters were estimated by the restricted maximum likelihood (REML) and the genotypic values of the families by the best linear unbiased predictor (BLUP). The heritability values in the broad sense for the selection of individuals were 0.153 and 0.524 for CPL and RWC respectively, while for the average of the families it was 0.642 and 0.802, respectively. The family RB036152 x SP93-3500 presents higher genotypic values for CPL, while for RWC the highest genetic value was observed in the family RB946903 x RB006970. There is genetic variability for drought tolerance in the populations evaluated in a controlled environment.

Keywords: *Saccharum* spp., abiotic stress, selection strategies, mixed models, REML/BLUP