

## POSTER SUMMARY

**PROPORTION OF ELITE FAMILIES FOR CANE YIELD  
AMONG SASRI BREEDING POPULATIONS**

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**Abstract**

Family selection in sugarcane has been shown to produce higher genetic gains for traits controlled by multiple genes such as cane yield when compared with mass selection. During family selection for cane yield, whole families of seedlings are either selected or rejected based on their family mean. Elite sugarcane families consist of a higher proportion of progenies that produce high cane yield. The objective of this study was to determine the proportion of elite families among South African Sugarcane Research Institute (SASRI) breeding populations. Data were collected from the Midlands humic and sandy soils, coastal short cycle high potential (CSC) and irrigated breeding populations in 2012. Yield components (stalk numbers, height and diameter) were measured from a sample of 20 single stools in each of the three replications per family and used to calculate cane yield. Data were analysed for family effects using SAS mixed models and elite families were defined as those that produced significantly ( $P < 0.10$ ) more cane yield than the population mean. There were highly significant differences ( $P < 0.0001$ ) for family effects for cane yield for all breeding populations, indicating potential for family selection. The humic soils produced a significantly ( $P < 0.05$ ) higher proportion of elite families than the sandy soils, CSC and irrigated areas, whereas the irrigated population produced a significantly ( $P < 0.05$ ) higher proportion of elite families than the sandy soils population. Populations on the humic soils had the greatest potential to increase gains for cane yield using family selection, and the parents will be used in other programmes.

*Keywords:* family selection, yield components, seedling stage, genetic gains