

## POSTER SUMMARY

**NITROGEN USE EFFICIENCY OF SELECTED SOUTH AFRICAN SUGARCANE VARIETIES**PATTON AB<sup>1</sup>, MAKHUBEDU ITR<sup>2</sup> AND WEIGEL A<sup>3</sup><sup>1</sup>South African Sugarcane Research Institute, P/Bag X02, Mount Edgecombe, 4300, South Africa<sup>2</sup>P.O. Box 001, Pietermaritzburg, 3201, South Africa<sup>3</sup>Saxon State Ministry of the Environment and Agriculture, Dresden, Germany

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**Abstract**

The assessment of crop nitrogen (N) use efficiency (NUE) to optimise N applications in sugarcane production has been an ongoing research topic. Previous work showed that selected South African sugarcane varieties differed in their NUE. Thus, the objective of this study was to determine the NUE of selected commercial sugarcane varieties and determine whether variety-specific N recommendations are required.

Two field trials, one irrigated (Pongola) and one rainfed (Kearsney), were conducted with selected varieties using incremental rates of N at each site. Concurrently, a pot trial with eight varieties and four rates of N was conducted at Mount Edgecombe. Stalk yield, total dry biomass and N content (%) were used to assess NUE.

There was no yield response to N in the plant crop at both field trial sites. Yield response to N and NUE in the ratoon crops were significantly higher in varieties N41 and N36 at Pongola, and N41 and NCo376 at Kearsney when compared with other varieties. The results from the pot trial showed that N41 was also found to have higher NUE compared with other varieties. Despite the higher NUE of the above varieties, there is insufficient evidence to alter the recommended rate of N based on variety, because responses to N differed from season to season and were characterized by high variability. Variety-specific N recommendations would be difficult to make because environment predominates over varietal variability for NUE.

In addition, there was no significant additional benefit to yield by increasing N from 100% (100-140 kg N/ha) to 150% (150-210 kg N/ha) of FAS recommended N rates.

*Keywords:* sugarcane, nitrogen use efficiency, crop yield, N content