POSTER SUMMARY

NITROGEN USE EFFICIENCY IN SUGARCANE: THE CASE OF UBOMBO SUGAR

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Abstract

Fertilisers constitute one of the most expensive components of sugarcane production, and Nitrogen (N) is the most-used nutrient, in terms of quantity. This study aimed to investigate the Nitrogen Use Efficiency (NUE) across four soil categories at Ubombo Sugar in Eswatini.

The efficiency was expressed as Tons Cane per Hectare (TCH) from a quantity of N used (kgN/ha). The data used in the study were obtained from CanePro. These included the TCH, soil sets classes and fertiliser recommendations from SASRI's Fertiliser Advisory Services (FAS) for the 2018/19 to 2022/23 seasons. The N recommendations of the FAS, which vary according to the soil N mineralisation category and the expected yield, were tested against the Ubombo fertiliser policy, which was fixed at 160 kgN/ha for ratoon crops.

Category 1 and 2 soils showed higher N use efficiencies than Category 3 and 4 soils. Their efficiencies across the study period ranged from 0.61 TC/kgN to 0.66 TC/kgN, while the expected efficiencies, according to SASRI, ranged between 0.60 TC/kgN and 0.81 TC/kgN. The N use efficiencies of Category 3 and 4 soils ranged from 0.57 TC/kgN to 0.75 TC/kgN, which was below the SASRI target line, which ranged from 0.75 TC/kgN to 1.25 TC/kgN for the review period.

The SASRI recommendations present a savings opportunity by reducing the amount of N that is applied, especially on Category 3 and 4 soils. It is recommended that the soil's N mineralisation capacity be considered when making N recommendation policies for improving the N use efficiency and improving the profits; in addition, business entities should consider using other sources of N, like Ammonium fertilisers, which have low N volatilisation losses.

Keywords: Sugarcane, Nitrogen fertiliser, soil category, N mineralisation, N efficiency, N recommendations