

SOUTH AFRICAN SUGAR INDUSTRY  
AGRONOMISTS' ASSOCIATION

Title: POTASH/PHOSPHATE TRIAL 6300/6

Cat No.: 1310

Object : To measure responses to potash and phosphate in a severely deficient sandy loam soil.

This crop : First ratoon AGE : 12,2 months (16.10.80 to 21.10.81)

Location : Section 3, Field 9A, Hippo Valley Estates

Soil type : P.2 sandy loam derived from gneiss.

Design : 3 x 3 factorial with three replications

Variety/spacing ; NCo 376 in rows 1,5 m apart

Irrigation : In-row furrow

Fertiliser (kg/ha) :

	<u>N</u>	<u>P<sub>2</sub>O<sub>5</sub></u>	<u>K<sub>2</sub>O</u>
P	140	Nil	Nil
1R	180	Nil	Nil

Treatments :

Levels of P<sub>2</sub>O<sub>5</sub> (first digit)

0. No P<sub>2</sub>O<sub>5</sub>
1. 100 kg P<sub>2</sub>O<sub>5</sub> /ha
3. 200 kg P<sub>2</sub>O<sub>5</sub>/ha

Levels of K<sub>2</sub>O (second digit)

0. No K<sub>2</sub>O
1. 75 kg K<sub>2</sub>O/ha
2. 150 kg K<sub>2</sub>O/ha

CONDUCT : No potassic or phosphatic fertilisers were applied to either the plant or first ratoon crops in order to deplete the trial area to a level where responses could be anticipated from applied treatments.

RESULTS :

Relevant first ratoon harvest data, together with foliar analysis results and residual soil P<sub>2</sub>O<sub>5</sub> levels after harvest for plant and first ratoon crops plus trial means are attached. As no treatments were applied to either crop, results have been interpreted by uniformity analysis in order to assess changes in variability of the trial site.

PLANT AND FIRST RATOON HARVEST DATA

	<u>P</u>	<u>1R</u>	<u>Mean</u>
Cane yields t/ha	128,64	132,88	130,76
ERC % cane	14,79	13,85	14,32
TERC/ha	18,81	18,40	18,61

RESIDUAL SOIL LEVELS AFTER HARVEST

	<u>P</u>	<u>1R</u>
P <sub>2</sub> O <sub>5</sub> ppm (Resin extract)	14,7	11,1
K ml %	0,32	0,26

FOLIAR ANALYSIS AT ± 22 WEEKS

	<u>P</u>	<u>1R</u>
N% (on DM)	1,93	1,92
P% " "	0,21	0,21
K% " "	1,08	1,09

Cane yields. The yield range in the 1st ratoon crop was greater than that shown in the plant crop viz; 1R 103,52 t/ha to 160,67 t/ha; P 101,63 t/ha to 148,11 t/ha, but the overall variability was slightly lower (1R C.V.% 7,90%, P C.V.% 8,56%) indicating that the trial area has been more uniformly depleted. The increase in yield from plant to 1st ratoon should not be regarded as a real increase, but as an indication of a poorly established plant crop, which suffered from erratic germination and severe weed competition early in the growth cycle.

ERC % cane. The data from the 1st ratoon exhibited a smaller range and less overall variability than that recorded in the plant crop, again indicating a greater degree of uniformity of depletion of the trial area.

TERC/ha. The lower variability shown by the yield and quality parameters was exhibited by the TERC data viz; C.V.% P 10,18%; 1R 7,60%.

Foliar analysis. Foliar analysis data were variable, and not generally consistent with a deficient situation, although there was a trend towards slightly depressed potassium figures, indicating that this is becoming the more limiting nutrient.

Soil analysis. Cane yields in the 1st ratoon crop did not correlate with residual soil  $P_2O_5$  and K figures obtained after the plant crop, although this correlation data also appeared to indicate that potassium was the limiting nutrient. It is hoped that the drop in nutrient status shown by trial mean residual  $P_2O_5$  and K data after the first ratoon crop will be reflected by a significant depression in cane yields in the 2nd ratoon crop.

## CONCLUSION

The second ratoon crop will be grown with only added nitrogen, in the hope of applying treatments to the third ratoon crop.

JJR/Jan '82.

rw