XXXVII CONGRESSO BRASILEIRO DE CIÊNCIA DO SOLO 2019
"Intencificação sustentável em sistemas de produção"
De 21 á 26 de Julho de 2019
Centro de Eventos do Pantanal - Cuiabá - MT

INTERNATIONAL POTASH INSTITUTE
SINCE 1952

EFFICIENCY OF POLYHALITE FERTILIZER AS SOURCE OF SULFUR FOR SUGARCANE RATOON

Fabio Vale[(1)]; Danilo Ramos Sério[(2)]
[(1)] International Potash Institute, IPI, Zug, Switzerland, fabio.vale@icl-group.com;
[(2)] ICL Fertilizers, São Paulo - SP

INTRODUCTION

Sugarcane is largely cultivated in dystrophic Latosols and Argisols, with poor levels of nutrients. Despite corrections and fertilizations carried out during planting operations with the nutrient, sulfur deficiency (S) in the ratoons are very common.

Under these conditions the most commonly applied source is the phosphogypsum at a minimum rate of 1 t ha^{-1} due to the operational difficulty of application in smaller quantities, besides that, an extra agricultural operation is needed, since it is impossible to mix with the fertilizers.

OBJECTIVES

Evaluate the effect of Poliahalite as S source, comparing to phosphogypsum, in sugarcane ratoon.

MATERIAL AND METHODS

Location: Catanduva, SP, Brazil. Sugarcane variety RB 86-7515 shortly after second harvest, therefore a ratoon for third.

Soil: 134 g kg^{-1} clay, 769 g kg^{-1} sand, 97 g kg^{-1} silt, soil fertility in 0-20 and 20-40 cm layers presented in Table 1 below.

Table 1. *Chemical properties of the soil before application*

Prof.	O.M.	pH	P_{Resin}	K	Ca	Mg	Al	H+Al	SB	CTC	V%	m%	S
cm	g dm^{-3}	$CaCl_2$	mg dm^{-3}	mmol$_c$ dm^{-3}							%		mg dm^{-3}
0-20	16	4,9	10	1,2	18	9	1	19	28	47,2	59,7	3,4	8
20-40	13	4,8	14	0,7	16	8	7	26	25	50,7	48,7	22,1	12

OM (sodium dichromate 4N and H_2SO_4 10N); P, K, Ca, Mg (Resin); Al (KCl); H+Al (SMP); S (calcium phosphate);

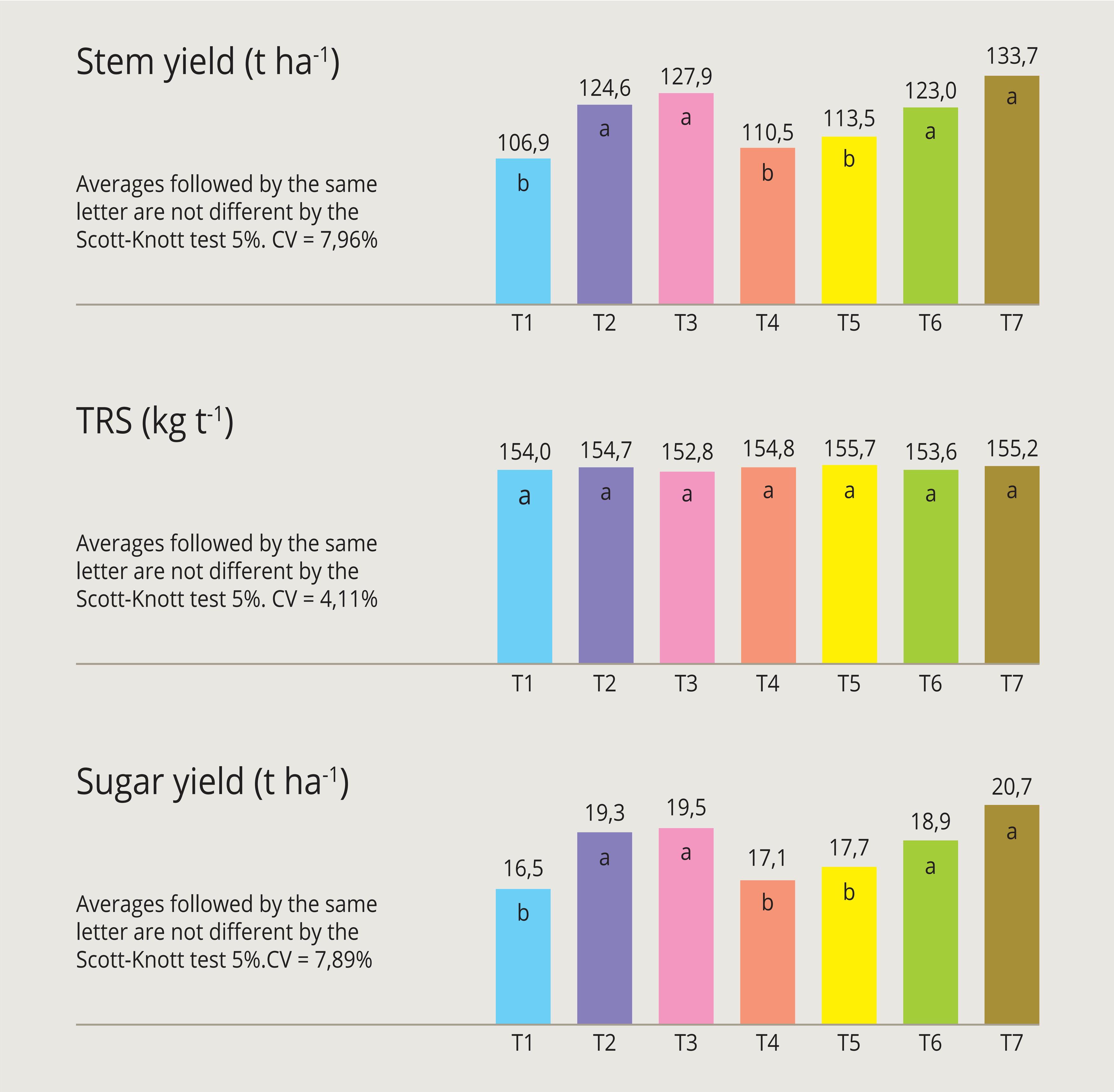
Statistical design: randomized blocks, with 7 treatments in 4 blocks.

Treatments: 120 kg ha^{-1} of nitrogen (N), and 120 kg ha^{-1} of potassium (K_2O). N sources: ammonium nitrate, 33% N (AN) and urea, 45% N (UR). S sources: phosphogypsum, 15% S (PG), ammonium sulfate, 21% N and 24% S (AS) and Polyhalite, 19% S (PH). Sources of K_2O: MOP, 60% K_2O, and PH, 14% K_2O. PH also contains 12% Ca and 3.6% Mg.
The rate of PG was 1 t ha^{-1} (sugarmeal standard management), and with the other sources the rate was 30 kg ha^{-1} of S.
The treatments were:

- **T1:** without N, without KCl, with PG;
- **T2:** AN + MOP;
- **T3:** AN + MOP + PG;
- **T4:** UR + MOP;
- **T5:** UR + MOP + PG;
- **T6:** blend of UR + AS + MOP;
- **T7:** AN, MOP + PH blend.

Evaluations: stem yield, sugar content in stems (Total Reverable Sugars - TRS) and estimated sugar yield.

RESULTS AND DISCUSSION



Responses observed according to N sources, UR with inferior results in yield. The application of PG did not significantly increase the effect of the nitrogen sources AN and UR.

The blend with SA significantly increased the effect of UR.
S supply through the blend of PH and MOP was the one that presented better results in relation to yield of stems and sugar.

CONCLUSIONS

Polihalite is a viable fertilizer as source of sulfur for sugarcane ratoons, suitable for phosphogypsum replacement, even when applied with higher rates.

ACKNOWLEGMENTS

ICL Fertilizers

ICL Brasil Ltda.