

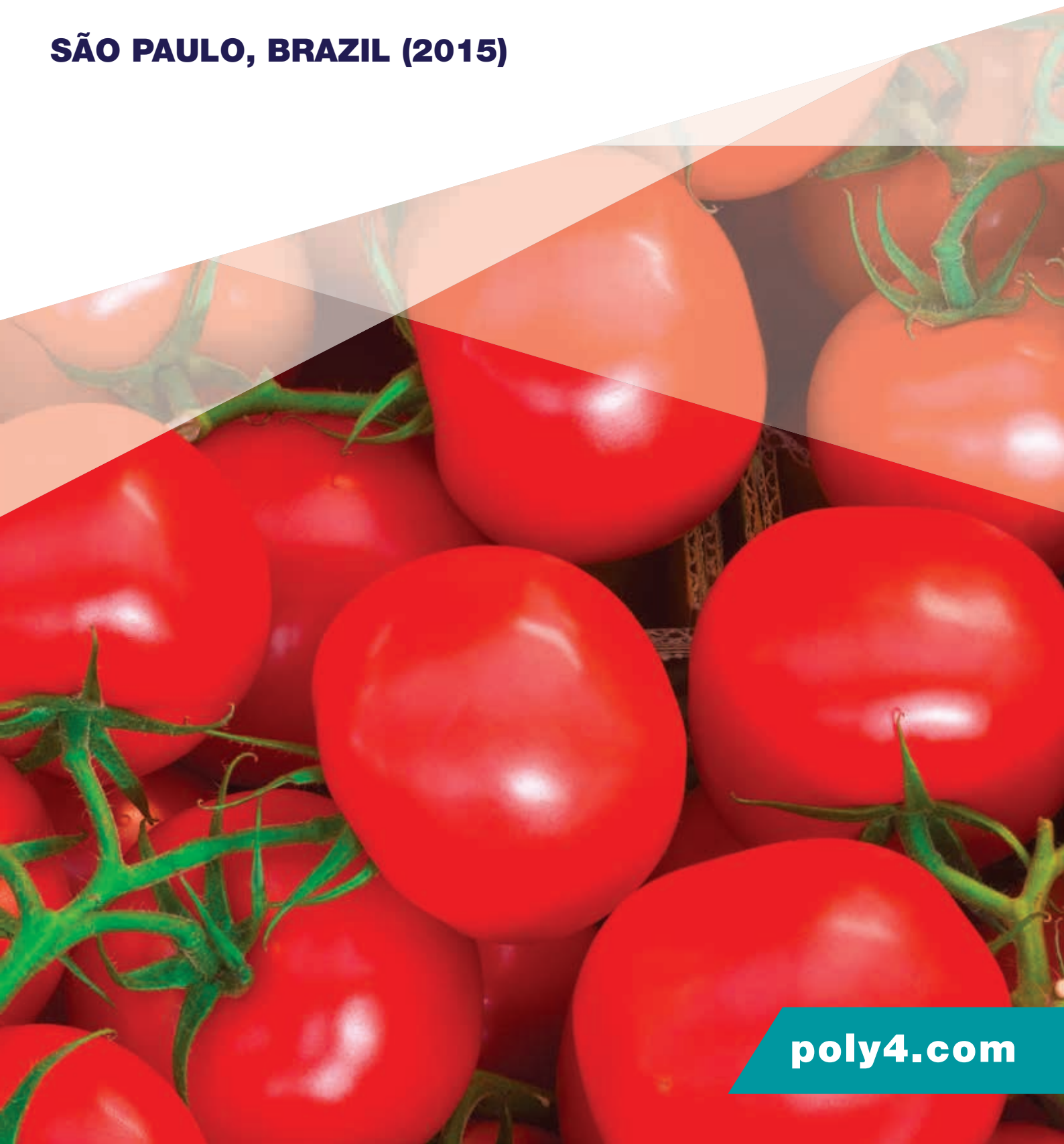


**POLY4**  
A SIRIUS MINERALS PRODUCT

TRIAL RESULTS

# TOMATO

**SÃO PAULO, BRAZIL (2015)**



[poly4.com](http://poly4.com)

## TRIAL OBJECTIVE

This second year trial aimed to evaluate tomato's response to fertilizer practices in a soil environment with low levels of potassium.

## HIGHLIGHTS

**9% INCREASE IN YIELD**

**RETURN INCREASE OF 67%  
AS A RESULT OF POTASSIUM  
FERTILIZATION**

**SIGNIFICANT INCREASES IN  
Ca, Mg AND S POST-HARVEST**

**INCREASE IN YIELD SEEN IN  
ALL SIZE CATEGORIES**

**FIRMNESS, BRIX AND VITAMIN C  
CONTENT MAINTAINED**

**ENHANCED LEAF NUTRIENT  
UPTAKE FOR N, P, K, Mg,  
Ca AND S**

## TRIAL DESIGN

**PARTNER:** UNIVERSITY OF SÃO PAULO

**LOCATION:** SÃO PAULO, BRAZIL

**YEAR:** 2015

- São Paulo state, where this study was conducted, is the largest producer of fresh market tomatoes in South East Brazil.
- This trial was conducted in sandy loam soils with reasonable cation exchange capacity (CEC) but low nutrient status.<sup>1</sup>
- Nutrients were applied at the recommended K<sub>2</sub>O rate.



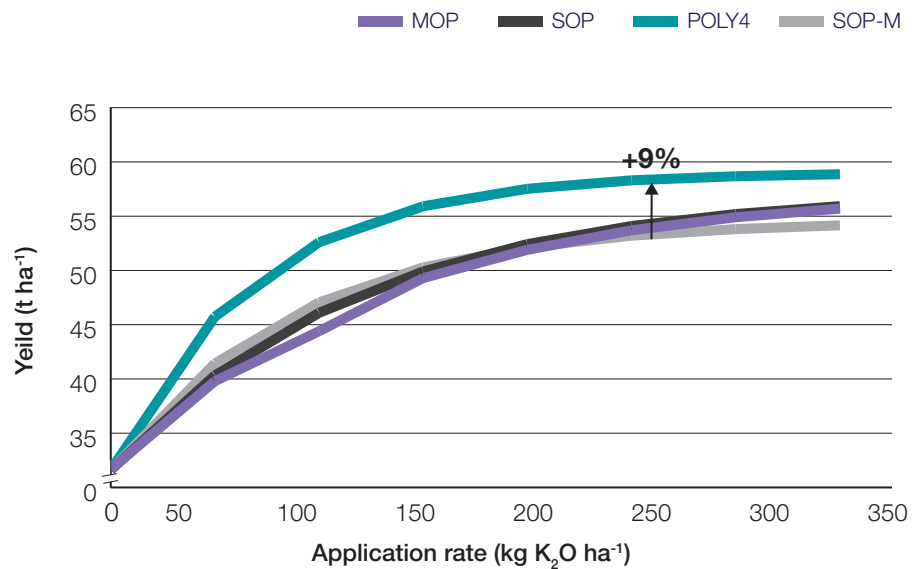
## TREATMENT TABLE (kg ha<sup>-1</sup>)<sup>1</sup>

NUTRIENT	AVERAGE NUTRIENT APPLIED IN TRIAL (kg ha <sup>-1</sup> )						
	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	MgO	CaO	S	Cl
Control	300	500	0	0	0	0	0
MOP	300	500	250	0	0	0	200
SOP	300	500	250	0	0	90	15
SOP-M	300	500	250	202	0	254	0
POLY4	300	500	250	107	297	340	53



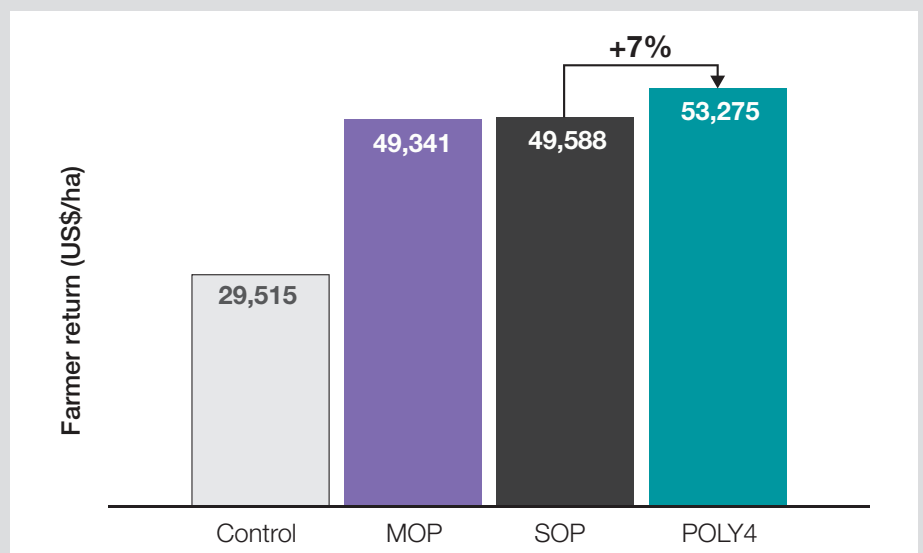
## YIELD RESULT <sup>(t ha<sup>-1</sup>)<sup>2,6</sup></sup>

- The broader nutrient spectrum delivered by POLY4 improved yield by 9% over other potassium fertilizers at the recommended rate of 250 kg K<sub>2</sub>O ha<sup>-1</sup> and 8% over SOP, the commercial standard fertilizer.
- POLY4 was the only fertilizer to supply calcium which drives strong cell wall development and protects fruits from diseases, such as Bacterial Spot, in support of yield.
- Tomatoes are sensitive to chloride so yield increases may also be attributed to balanced fertilization from a low-chloride source.



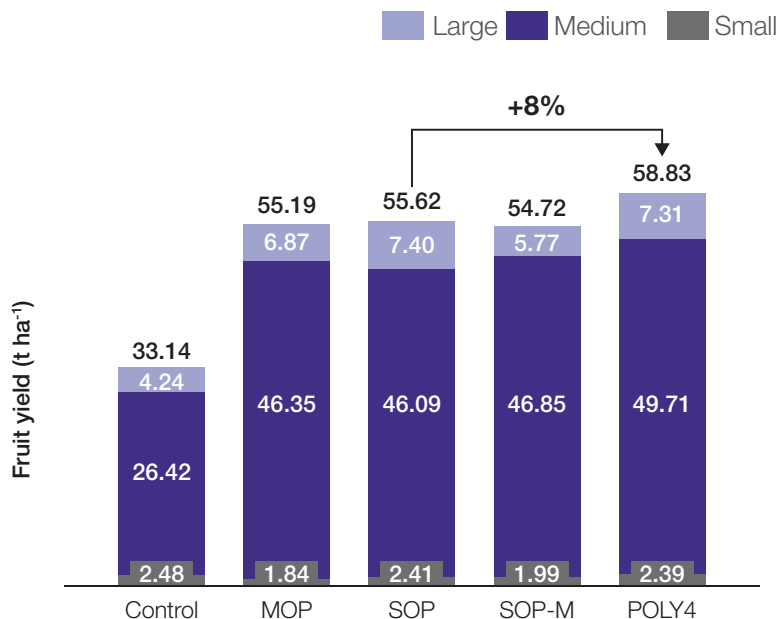
## ECONOMIC SUMMARY <sup>1,4,5,7</sup>

- High value crops, such as tomatoes, can increase returns by a minimum of 67% with potassium application.
- The additional outlay for purchasing SOP only showed marginal improvements in returns over MOP.
- POLY4 increased return by 7% compared to common fertilizer practice.



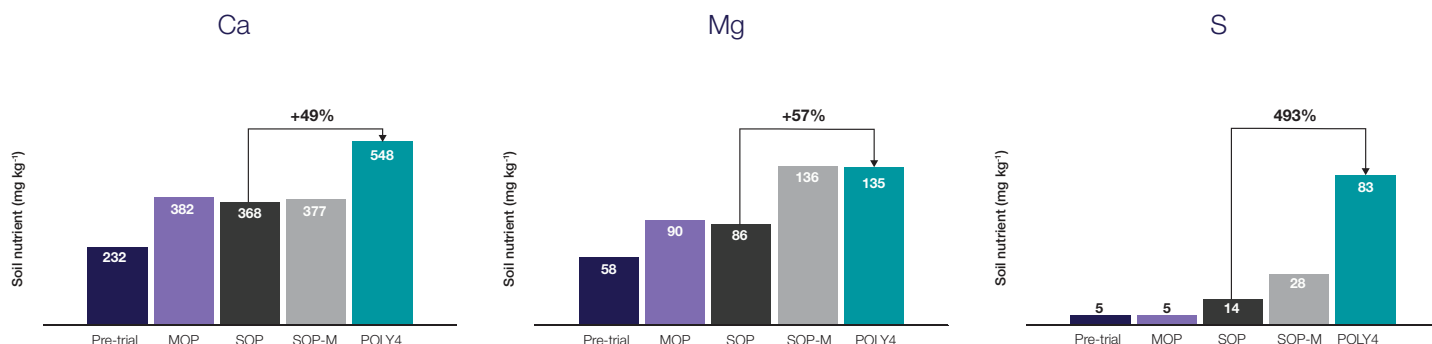
# YIELD BY SIZE CATEGORY (t ha<sup>-1</sup>)<sup>1,3,6</sup>

- Fruit size categories are important for markets that demand a specific size range of tomatoes.
- The inclusion of potassium in fertilizer is essential to cell turgor, nutrient balance, photosynthesis in tomatoes and therefore fruit size, yield and quality.
- The use of POLY4's broader nutrient spectrum improved yield by 8% over SOP, the commercial standard.



# POST-HARVEST SOIL LEGACY (mg kg<sup>-1</sup>)<sup>1,6</sup>

- Significantly higher soil calcium status improves structure, strength and potentially toxic elements including aluminium.
- POLY4 substantially elevates the soil's magnesium status and corrects the soil's sulphur deficiency with a significant 454% increase.



Notes: 1) GENSTAT means 2) GENSTAT Regression Analysis; 3) Small = 40-50 mm diameter, Medium = 50-60 mm diameter, Large = >60 mm diameter; 4) Fertilizer prices based on Brazil Annual 2016 prices: Urea (US\$216/t), MAP (US\$351/t), MOP (US\$231 t<sup>-1</sup>), SOP (US\$476/t), SOP-M (US\$500/t), POLY4 (US\$200/t); 5) US national tomato price 2016 was US\$903.54/t; 6) Initial soil analysis: pH 5.8, P 24 mg kg<sup>-1</sup>, K 24 mg kg<sup>-1</sup>, Ca 232 mg kg<sup>-1</sup>, Mg 58 mg kg<sup>-1</sup>, S 5 mg kg<sup>-1</sup>, CEC 29 mmolc dm<sup>-3</sup>; 7) SOP-M is generally only used for research purposes in Brazil and therefore no regional prices are available for economic assessments.

Source: University of São Paulo (2015) 4000-USP-4016-15.

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