

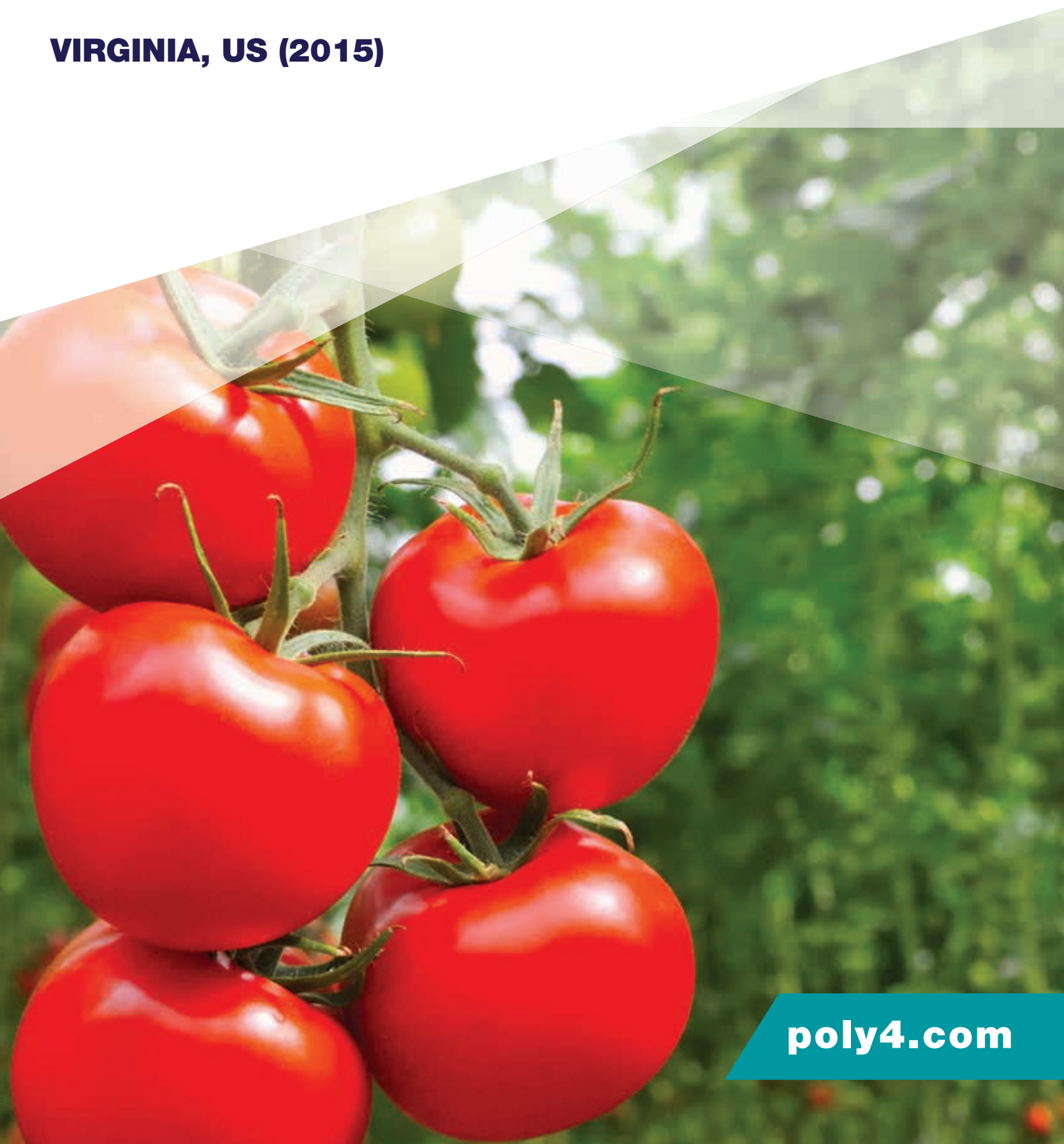


POLY4
A SIRIUS MINERALS PRODUCT

TRIAL RESULTS

TOMATO

VIRGINIA, US (2015)



poly4.com

TRIAL OBJECTIVE

To investigate fresh market tomato's response to POLY4 blends compared to MOP blends with or without Ca and/or S.

HIGHLIGHTS

UP TO 13% INCREASE IN YIELD

6% INCREASE IN US\$ RETURN PER HECTARE

BRIX, VITAMIN C CONTENT, TOTAL ACIDITY AND pH IMPROVED OR MAINTAINED

UP TO 62% IMPROVEMENT IN NUTRIENT UPTAKE

LEAF IRON, ZINC, COPPER AND MANGANESE CONTENT INCREASED BY 7%, 9%, 21% AND 23%

POST-HARVEST SOIL ANALYSIS FOR Ca AND Mg WERE 11% AND 24% HIGHER

TRIAL DESIGN

PARTNER: VIRGINIA TECH

LOCATION: VIRGINIA, US

YEAR: 2015

- Virginia is the third largest fresh market tomato producer in the US.
- Production in the coastal plains is limited by soil potassium and sulphur.
- The use of NPK blends containing MOP in Virginia is standard practice but blends are missing calcium, magnesium and sulphur.



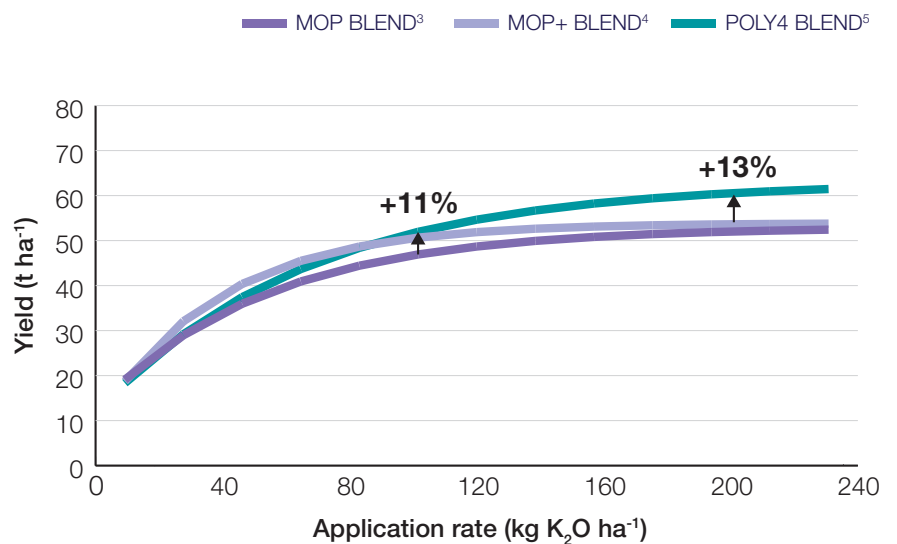
TREATMENT TABLE (kg ha⁻¹)^{1,7}

TREATMENTS	AVERAGE NUTRIENT APPLIED IN TRIAL (kg ha ⁻¹)				
	K ₂ O	MgO	CaO	S	Cl
Control	0	0	0	0	0
MOP blends ⁴	130	0	0	0	104
MOP+ blends ⁵	130	0	102	118	104
POLY4 blends ⁶	130	37	104	119	47



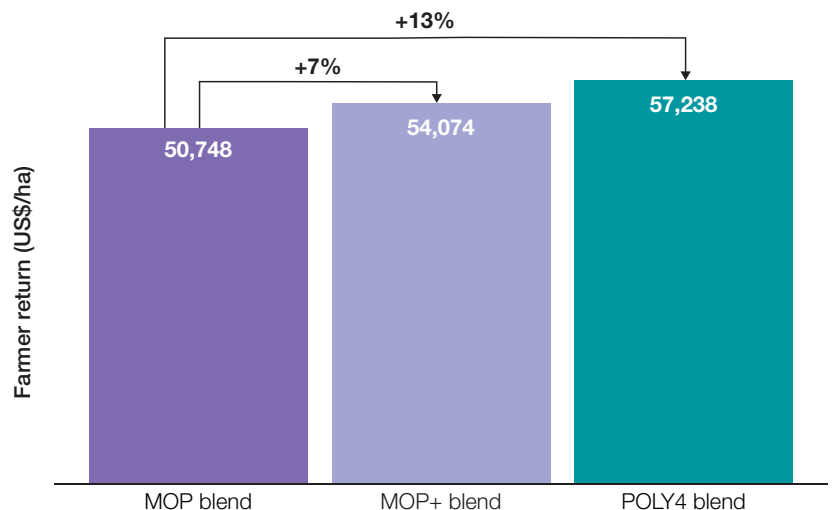
YIELD RESULT ^{2,3}

- The addition of calcium and sulphur in the MOP+ and POLY4 blends improved yield over the MOP blends.
- Tomato yields were improved by 8% and 11% for MOP+ and POLY4 blends at an application of 100 kg K₂O ha⁻¹.
- At the higher rate of 200 kg K₂O ha⁻¹, the value of magnesium in POLY4 differentiates yield from MOP+ blend with a 13% yield increase achieved.



ECONOMIC SUMMARY (US\$/ha) ¹⁻⁸

- Use of simple MOP blends provides the least return for tomato growers due to a lack of calcium, magnesium and sulphur being applied.
- The inclusion of gypsum and ammonium sulphate to supply calcium and sulphur increases returns by 7% compare to the MOP blends.
- The lower chloride POLY4 blends also include magnesium and beneficial micro nutrients that increase return by a further 6% over the MOP+ blends.



Notes: 1) Blend treatments 6:3:12 and 11:4:17 applied separately to provide 40% and 60% of the K_2O required respectively as a K rate response to deliver 40,80,160,240 kg K_2O ha^{-1} ; 2) Blends and fertigation delivered 224 kg N ha^{-1} to all plots except control where only fertigation was used; 3) P_2O_5 was not recommended but was applied in blends for good agricultural practice; 4) MOP blends were made with Urea, DAP and MOP; 5) MOP+ blends were made with AS, Urea, DAP, MOP and gypsum; 6) POLY4 blends were made with Urea, DAP, MOP and POLY4; 7) Initial soil analysis: pH 6.2, P 122 $mg\ kg^{-1}$, K 78 $mg\ kg^{-1}$, Ca 403 $mg\ kg^{-1}$, Mg 43 $mg\ kg^{-1}$, CEC 3.3 meq $100g^{-1}$; 8) Fertilizer prices based on US Mid-West 2016 annual prices: Urea (US\$219/t), AS (US\$223/t), DAP (US\$311/t), MOP (US\$214/t), POLY4 (US\$200/t), Gypsum (US\$25/t).

Source: Virginia Tech (2015) 23000-VIR-23011-15.

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