POLY4
A SIRIUS MINERALS PRODUCT

TRIAL RESULTS

TOMATOES

FLORIDA (2014)

poly4.com

TRIAL OBJECTIVE

To determine the response of POLY4 (straights and blends) on tomatoes against MOP, SOP and blend options.

HIGHLIGHTS

UP TO 56% IMPROVED K UPTAKE INTO LEAVES COMPARED TO STRAIGHTS OR BLENDS

LOWER DISEASE INCIDENCE THROUGHOUT GROWTH

UP TO 53% HIGHER TOTAL YIELD WITH STRAIGHTS

74% IMPROVEMENT IN TOTAL YIELDS IN BLENDS

HIGHER PULP:JUICE RATIO IN BOTH STRAIGHTS AND BLENDS

TRIAL DESIGN

PARTNER: UNIVERSITY OF FLORIDA

LOCATION: US

YEAR: 2014

- Most of the tomato crop is field grown with 62% of the world supply produced by China, India, Turkey, Egypt and the USA.
- The global tomato industry is worth US$91 billion grown on a total of 4.9 million hectares in 2013[1].
- Tomatoes consume approximately 0.6 Mtpa of K_2O globally which is equivalent to 4.3 Mtpa of POLY4[2].
- Field trials were conducted on very gravelly loam with a shallow profile that drains well.
- Nine beds of 1m width by 110m long by 0.1m high divided into plots with 18 plants per plot.
- Drip lines were installed before the beds were covered with plastic mulch.
- Straight and blend treatments were applied at three rates 100, 175 and 250 kg K_2O ha^{-1} with a control of N+P only.

TREATMENT TABLES

STRAIGHT TRIAL

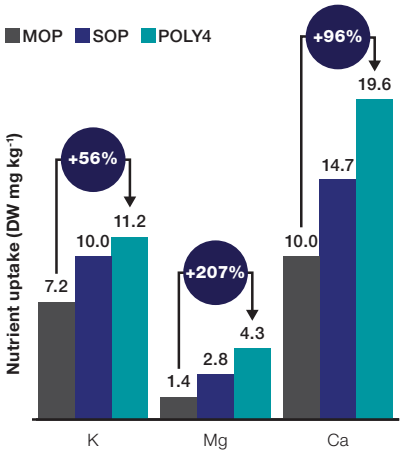
TREATMENTS	AVERAGE NUTRIENTS APPLIED IN TRIAL (kg ha^{-1})						
	N	P_2O_5	K_2O	CaO	MgO	S	Cl
Control	225	168	0	73	0	0	0
MOP	225	168	175	73	0	0	140
SOP	225	168	175	73	0	25	11
POLY4	225	168	175	285	75	238	38

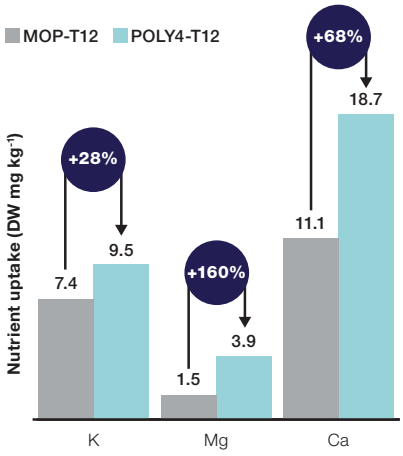
T12 TRIAL

TREATMENTS	AVERAGE NUTRIENTS APPLIED IN TRIAL (kg ha^{-1})						
	N	P_2O_5	K_2O	CaO	MgO	S	Cl
MOP	175	175	175	76	0	0	140
POLY4	175	175	175	285	75	239	37

LEAF TISSUE NUTRIENT UPTAKE – 45 DAYS (DW mg kg^{-1})[3-6]

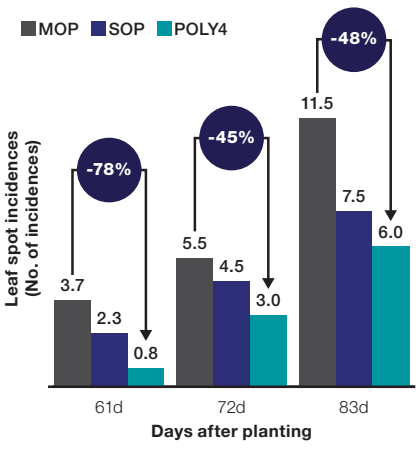
- POLY4 as a potassium source is supportive of significantly greater tissue levels of K than MOP indicating a greater fertilizer use efficiency at the same application rate.
- Despite adequate soil supply POLY4 fertilizers encourage a significant increase in calcium.

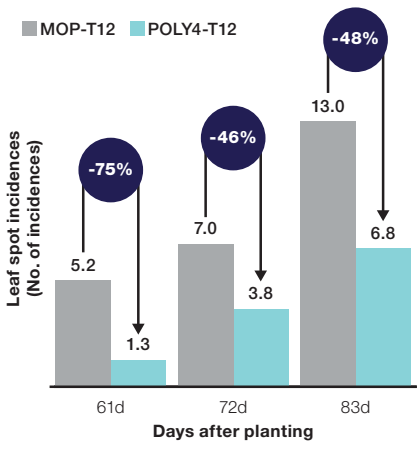




TOMATO LEAF SPOT INCIDENCE (No. of incidents)[3-7]

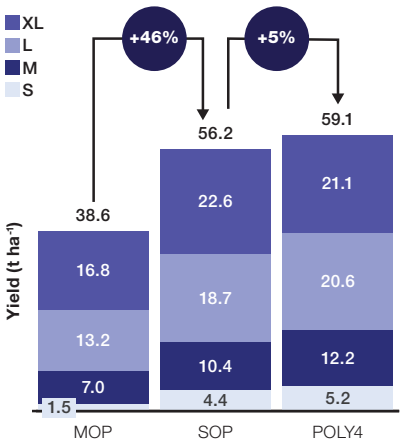
- Tomatoes fed by POLY4 blends and straights have significantly lower early and final disease incidence.
- POLY4 appears to help the crop combat disease infection throughout the crop's life.
- Supporting a healthy crop with the broad spectrum of nutrients available from POLY4 contributes towards disease defence enabling the plant to use vital resources to build yield.

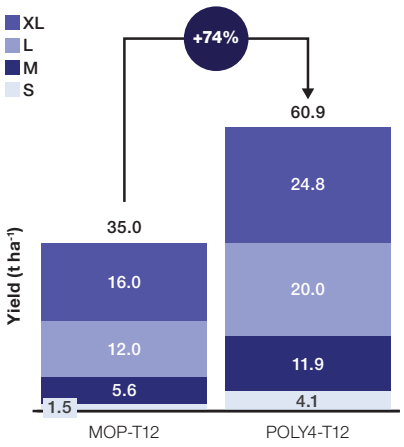




TOMATO YIELD (t ha^{-1})[3-6]

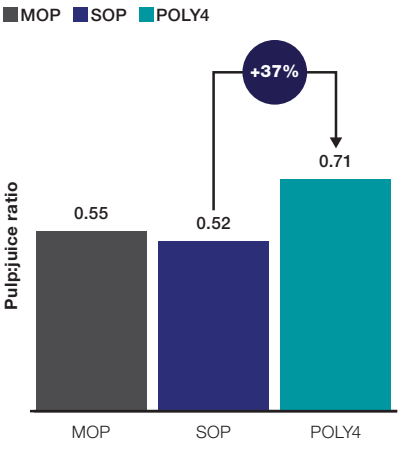
- Additional nutrients from POLY4 lift the ceiling on the K_2O rate-yield response.
- Market target for this variety are large/ extra large fruit categories.
- POLY4 shows improvements of 39% over straight MOP and 60% improvement over MOP-T12 for the large/extra large fruit categories.
- The additional nutrients of POLY4 consistently improve total yields over MOP or SOP based treatments by up to 74%.

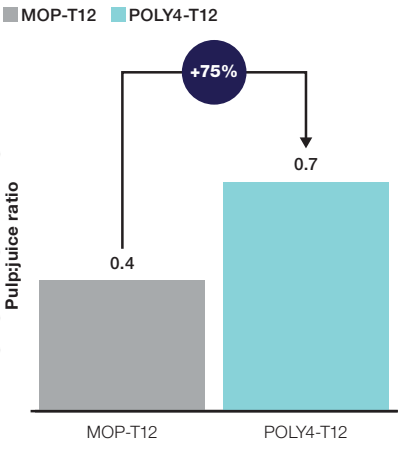




TOMATO QUALITY (pulp:juice ratio)[3-6]

- Crop fed on a POLY4 straight or blend results equally in a significantly greater pulp:juice ratio.
- Pulp is indicative of longer shelf life and greater suitability for pasta sauce processing.
- The overall result is a premium due to yield and quality making a very positive impact on farmer economics.





Notes: 1) FAOSTAT 2017; 2) Roland Berger 2011 data; 3) GENSTAT mean; 4) Straight treatments received 220 kg N ha^{-1} and 168 P_2O_5 ha^{-1} from urea and TSP; 5) MOP Triple 12 blends were made with urea, TSP and MOP; 6) POLY4 Triple 12 blends were made with urea, TSP, MOP and POLY4; 7) Disease causal organism by *Xanthomonas campestris pv. vesicatoria* and early blight caused by *Alternaria solani*. Initial soil analysis pH 7.3, P 92.8 mg kg^{-1}, K 102.6 mg kg^{-1}, Ca 21123 mg kg^{-1}, Mg 177 mg kg^{-1}, SO_4 31 mg kg^{-1}, EC 98uS/cm.

Sources: University of Florida (2014) 1000-UOF-1016-13

siriusminerals.com | +44 1723 470 010 | commercial@siriusminerals.com

Registered Address: 3rd Floor Greener House, 66–68 Haymarket, London SW1Y 4RF, UK

Company Registered Number: 4948435

SIRIUS MINERALS PLC