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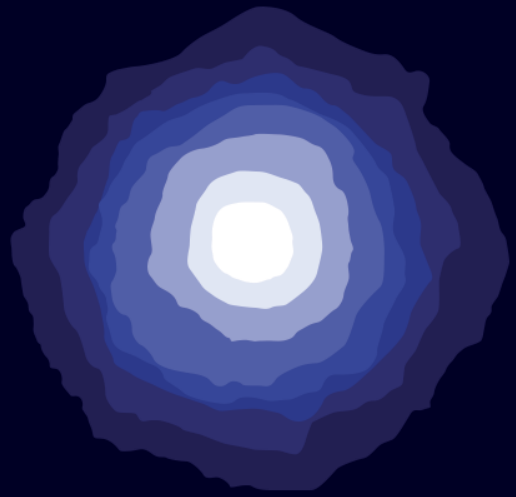

THE FUTURE OF FERTILIZER

Agronomy Update
August 2014

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Major opportunities for POLY4 in the tomato market

Natural single source of macro-nutrients to support tomato yields

POLY4's potential in the global tomato market

- ✓ Tomato market is a large high value market (~US$60 billion per annum) and has a large volume potential for POLY4 – K_2O consumed would be equivalent to 4.3Mtpa of POLY4 [1]
- ✓ POLY4 delivers essentially chloride-free K plus fully available macro-nutrients of S, Mg, and Ca together with a contribution of a number of essential micro-nutrients
- ✓ Dramatic outperformance of MOP as a source of K on every measure of plant health, yield and quality
- ✓ Outperforms SOP as a K source on every measure of plant health, yield and quality
- ✓ Crop study results demonstrate full agronomic value of POLY4 on a high value crop of global significance

POLY4
A Sirius Minerals Product

Four of the six macro-nutrients (%)

Sulphur (19% S)	**Potassium (14% K_2O)**
Magnesium (6% MgO)	**Calcium (17% CaO)**

Trace elements POLY4 (mg/kg)

Boron (169 B)	**Zinc (1.9 Zn)**	**Selenium (<0.5 Se)**	**Iron (<0.5 Fe)**	
Manganese (3.1 Mn)	**Molybdenum (0.3 Mo)**	**Copper (1.1 Cu)**	**Strontium (1414 Sr)**	

POLY4 is a natural source of K, S, Mg and Ca and beneficial micro-nutrients

Notes: 1) POLY4 is a trademark name for polyhalite from the York Potash Project; 2) Based on 90% polyhalite grade; 3) Registered organic with OFMG (Organic Farmers & Growers)

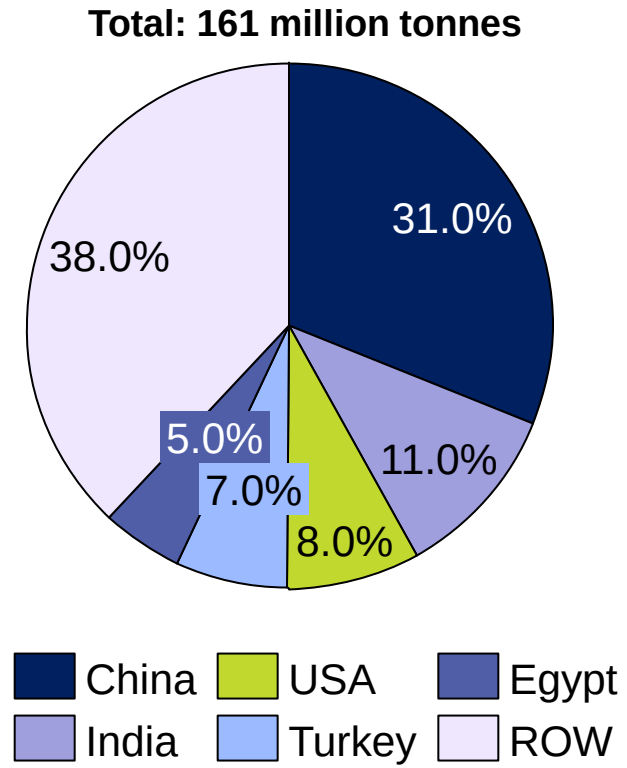
Global tomato market

Key market data

Tomato cultivation insights

- Most of the tomato crop is field grown, 62% of the world supply is produced by China, India, Turkey, Egypt and USA
- The global tomato industry is worth US$60 billion grown on a total of 4.8 million hectares [1]
- Tomatoes in the US represent a 8% of the global production
- Tomatoes consume approximately 0.6mtpa of K_2O globally which is equivalent to 4.3mtpa of POLY4 [2]

Top 5 global tomato producers 2012 (in %)



Tomatoes are an important cash crop in which POLY4 could play a key role

Sources: 1) FAO STAT , 2012; 2) Roland Berger 2011 data

Comprehensive tomato field study

Further global validation of POLY4 effectiveness continues

Tomato cultivation insights

- After California, Florida is the second largest tomato producing state in the United States
- University of Florida, well known for research on tomatoes, was commissioned to conduct field research on whether POLY4 is a suitable fertilizer for tomato plants by comparing POLY4 directly, with MOP as a straight and as a blend[1], based on a variety of application rates
- Depending upon yield and soil nutrient levels, demand can be as great as 200–300kg/ha K_2O, 30–50 kg/ha MgO and 100–160kg/ha CaO

University of Florida

Tomato – Field study

POLY4 field study on tomatoes in the US

Notes: 1) POLY4 was used a potash source in a 12:12:12 (NPK) blend in comparison to a current commercial option; a) One hundred (100) Kg of MOP 12:12:12 was prepared by mixing 26.09 Kg of Urea (46-0-0), 27.91 Kg of Triple Super Phosphate (0-43-0) and 20 Kg of MOP (0-0-60); b) One hundred (100) Kg of POLY4 12:12:12 was prepared by mixing 26.09 Kg of Urea (46-0-0), 27.91 Kg of Triple Super Phosphate or TSP (0-43-0), 12.04 Kg of Muriate of Potash or MOP (0-0-60) and 33.96 Kg of POLY4 (0-0-14); Source; University of Florida

Nutrient uptake efficiency in tomato field study

POLY4 improves uptake of critical crop nutrients

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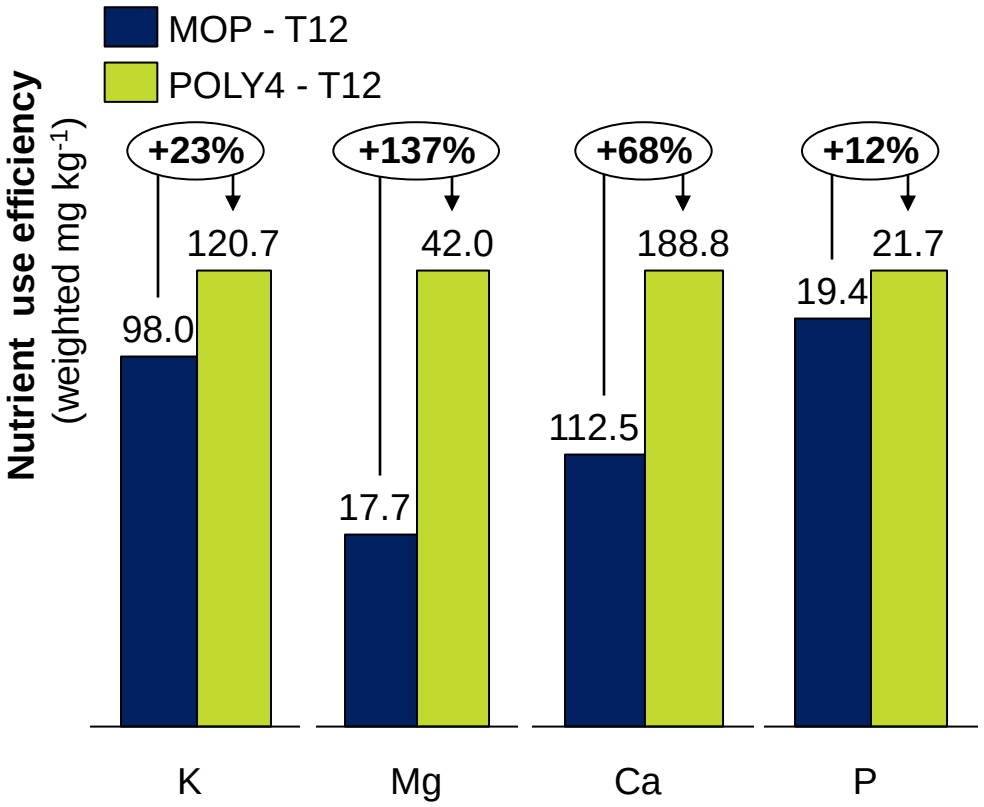
1 Nutrient use efficiency[1] (weighted mg/kg)



2 Key findings

- Improved nutrient use efficiency for potassium from POLY4 blend fertilizer
- Despite high magnesium levels in the soil additional magnesium from POLY4 greatly improved plant uptake
- Although calcium levels in the soil are high additional calcium from POLY4 leads to enhance tissue calcium and disease defence
- Key biochemical functions supported by these nutrients including water relations, control of gaseous exchange, photosynthesis and cell wall strength
- Improved growth rates, water use efficiency, plant physical strength and disease resistance are functions commonly associated with these nutrients

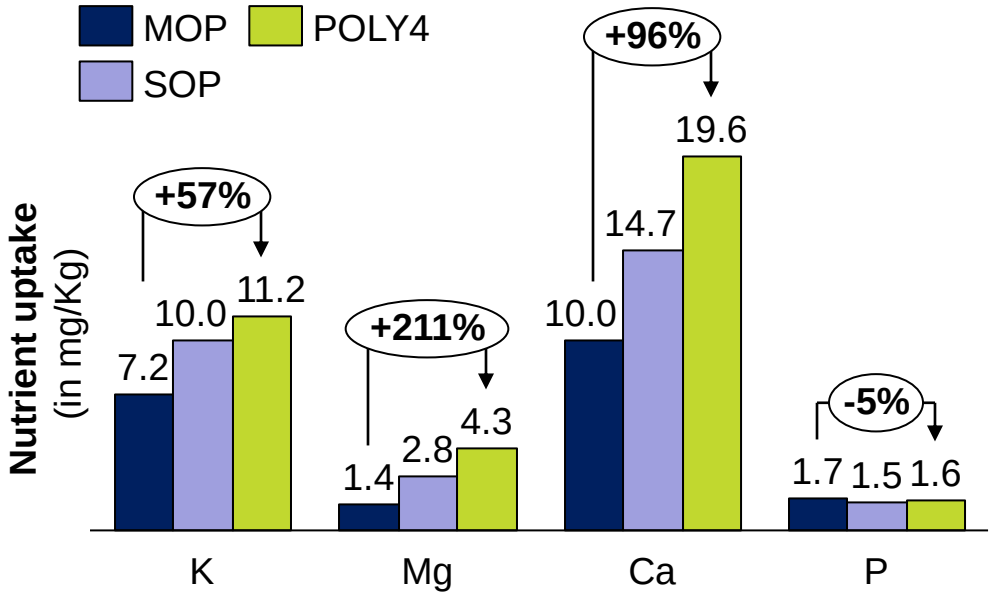
POLY4 improved nutrient use efficiency for K, Mg and Ca

Notes:1) Uptake data from fruit and leaf analyses; Initial soil analysis pH 7.3, EC 98uS/cm, Ca 21123 mg/Kg, K 102.6 mg/Kg, Mg 177mg/Kg, SO_4 31mg/Kg, P 92.8 mg/Kg soil
Sources: University of Florida.

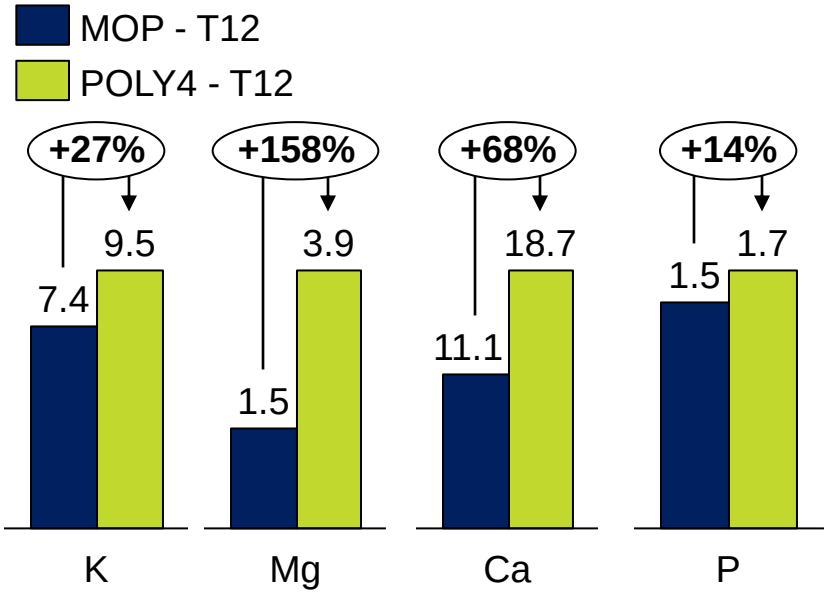
Nutrient uptake vital for improving tomato plant growth

Tissue nutrient content reflects benefit in straights and blends

1 **Leaf tissue nutrient uptake at 45 days**[1]
(in '000 mg/kg)



2 **Leaf tissue nutrient uptake at 45 days** [2]
(in '000 mg/Kg)



- 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 and magnesium uptake

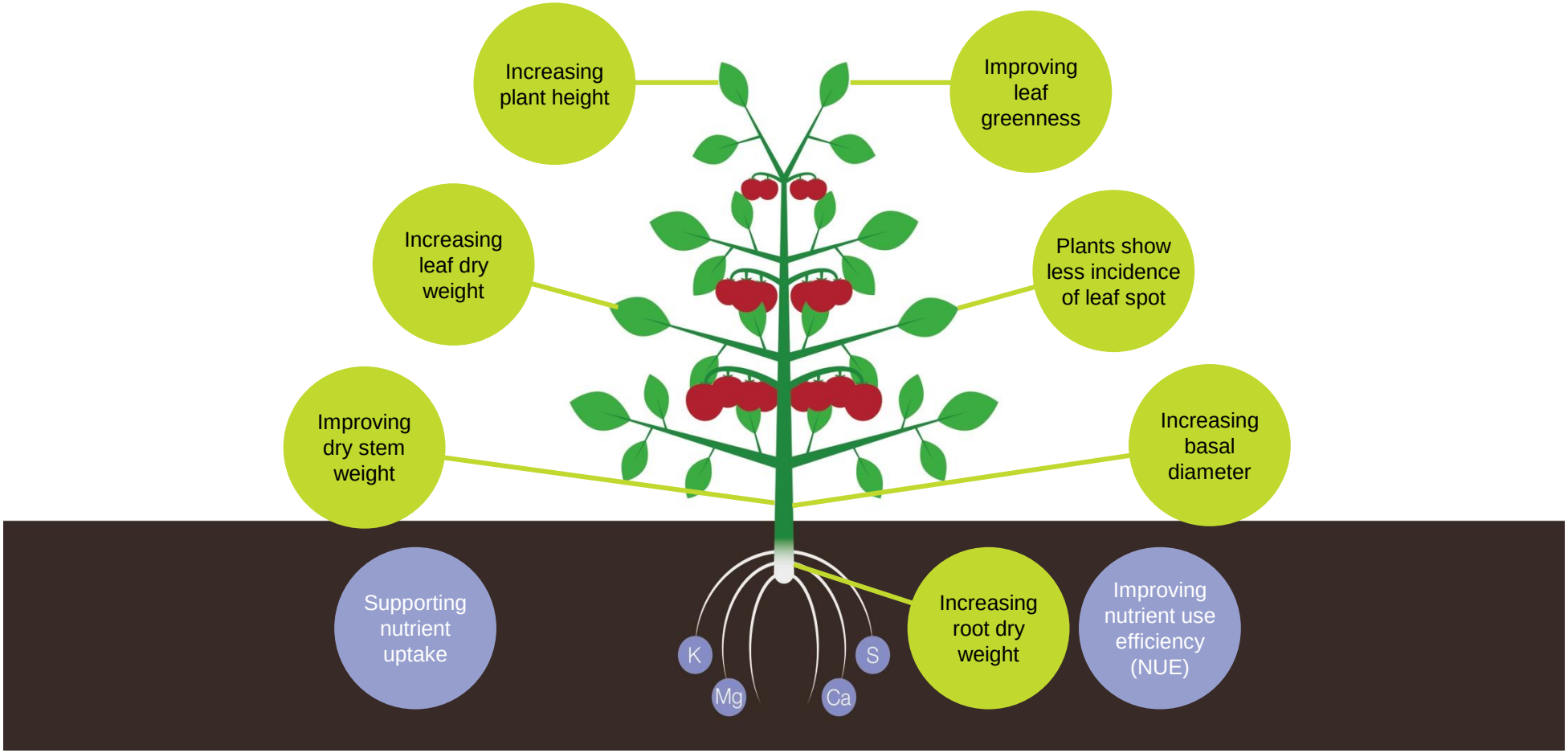
Calcium for tissue strength, potassium for water relations and magnesium for photosynthesis all benefit from POLY4

Notes: 1) Mean results from 100-250 kg/ha K_2O 2) Mean results from 100-250 kg/ha K_2O; Nutrients' uptake means obtained from plants fertilized with two blend fertilizers type (MOP 12-12-12 and POLY4 12-12-12); Iinitial soil analysis pH 7.3, EC 98uS/cm, Ca 21123 mg/Kg, K 102.6 mg/Kg, Mg 177mg/Kg, SO_4 31mg/Kg, P 92.8 mg/Kg soil.
Sources: University of Florida.

POLY4 effects on tomato plant characteristics

POLY4 improves nutrient availability which supports plant health and vigour

POLY4 benefits tomato plants by…



…Resulting in a stronger, greener, healthier plant [1]

Notes:1) Appendix 1 provides overview of percentage differences between treatments validating the statements above; Initial soil analysis pH 7.3, EC 98uS/cm, Ca 21123 mg/Kg, K 102.6 mg/Kg, Mg 177mg/Kg, SO_4 31mg/Kg, P 92.8 mg/Kg soil; Sources: University of Florida.

POLY4 enhances disease defence mechanisms

Fruit and foliar disease reduces the cosmetic value of a crop

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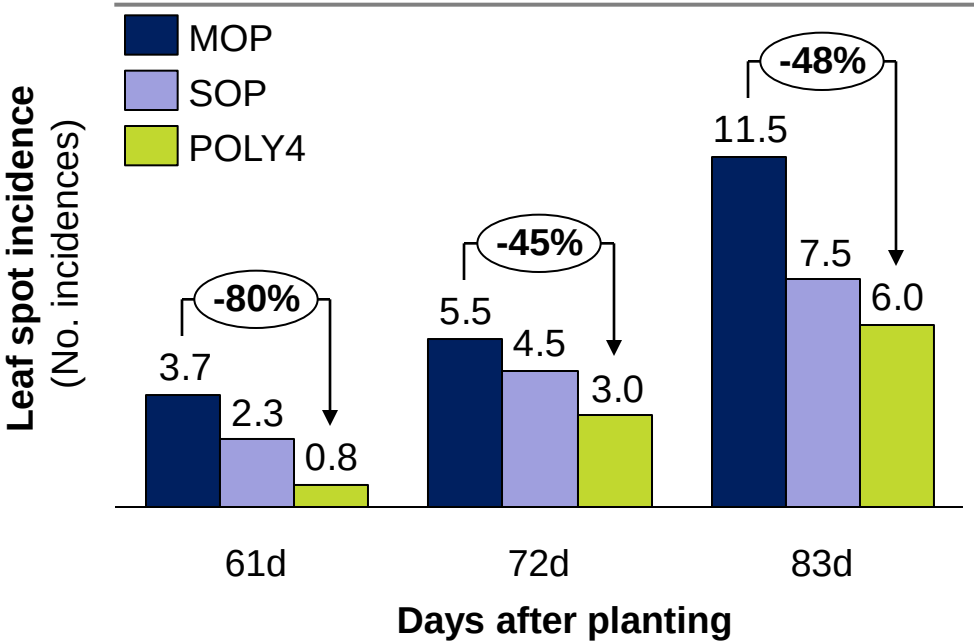
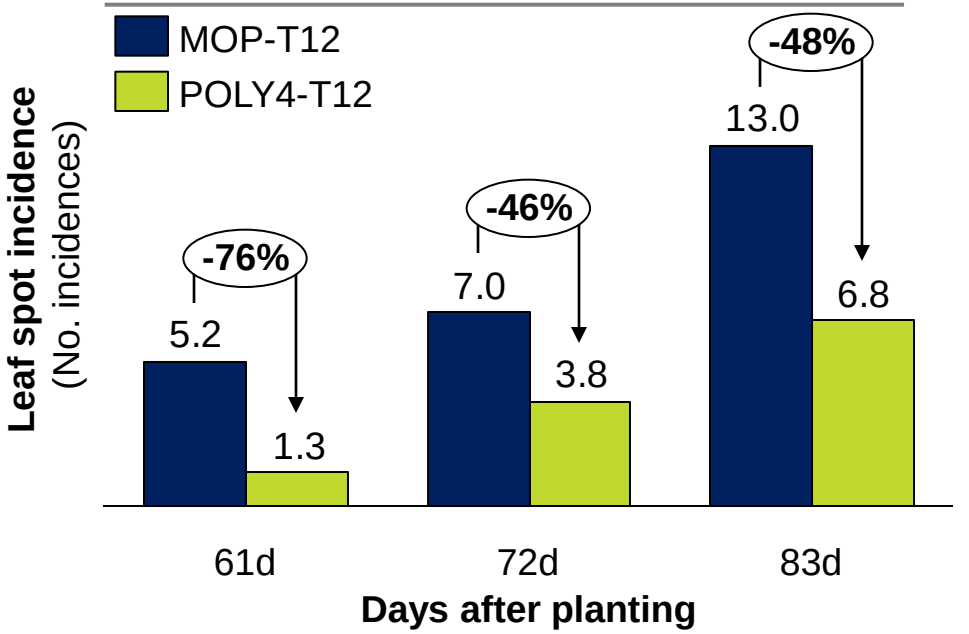
1 **Tomato leaf spot incidence**[1]
(Number of incidences)



2 **Tomato leaf spot incidence**[1]
(Number of incidences)



- Tomatoes fed by POLY4 blends and straights have significantly lower initial 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

POLY4 seems to support a robust plant which resists disease attack

Notes: 1) Mean results from 100–250 kg/ha K_2O applications by product, disease causal organism by Xanthomonas campestris pv. vesicatoria and early blight caused by Alternaria solani; Initial soil analysis pH 7.3, EC 98uS/cm, Ca 21123 mg/Kg, K 102.6 mg/Kg, Mg 177mg/Kg, SO_4 31mg/Kg, P 92.8 mg/Kg soil. Sources: University of Florida.

Tomato field study results on yield parameters

POLY4 significantly increases fruit number

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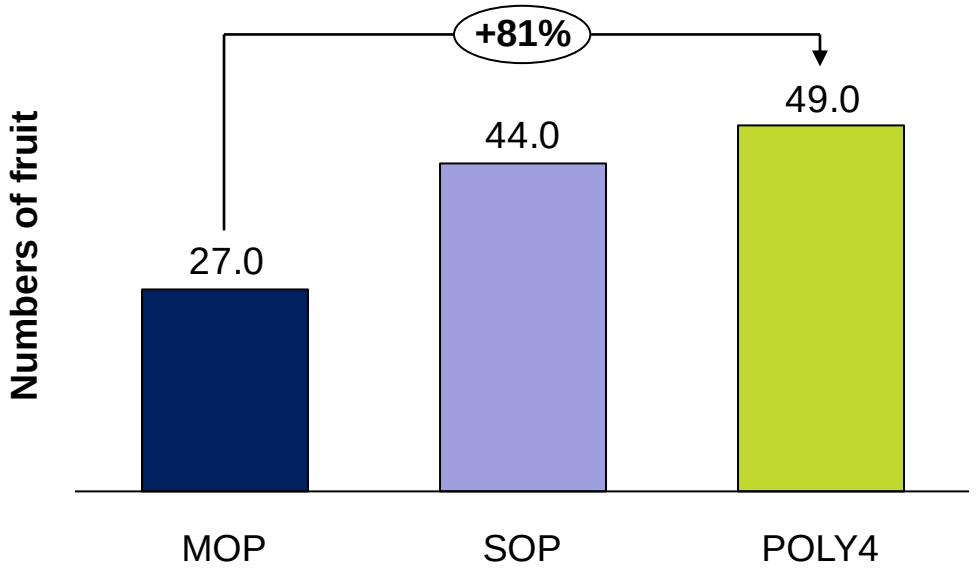
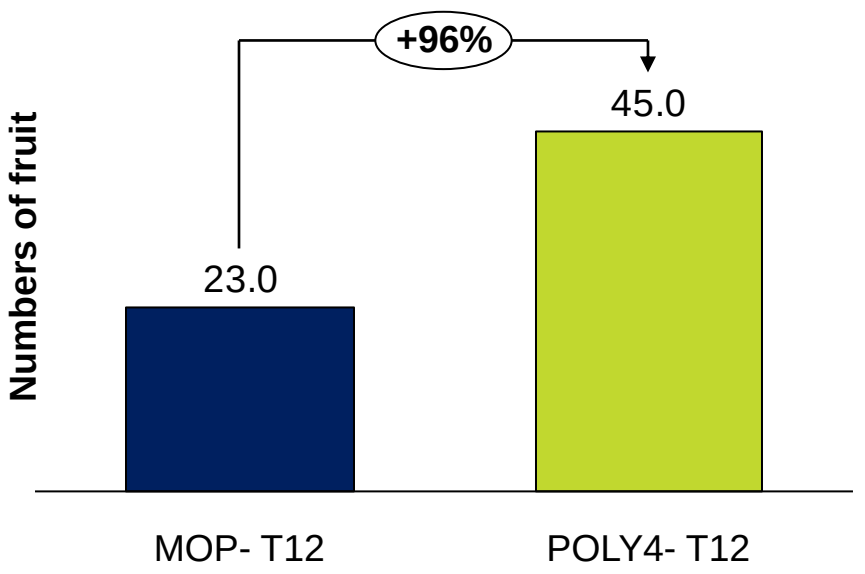
1 **Number of tomatoes**[1]
(in No. of fruit, 116 days after planting)



- POLY4 had a significant increased fruit number of 81% over MOP
- Fruit number is a key yield parameter

2 **Number of tomatoes**[1]
(in No. of fruit, 116 days after planting)



- The POLY4 blend fed crop has a significant 96% greater fruit number than MOP blend
- This result has great implications for farmer economics

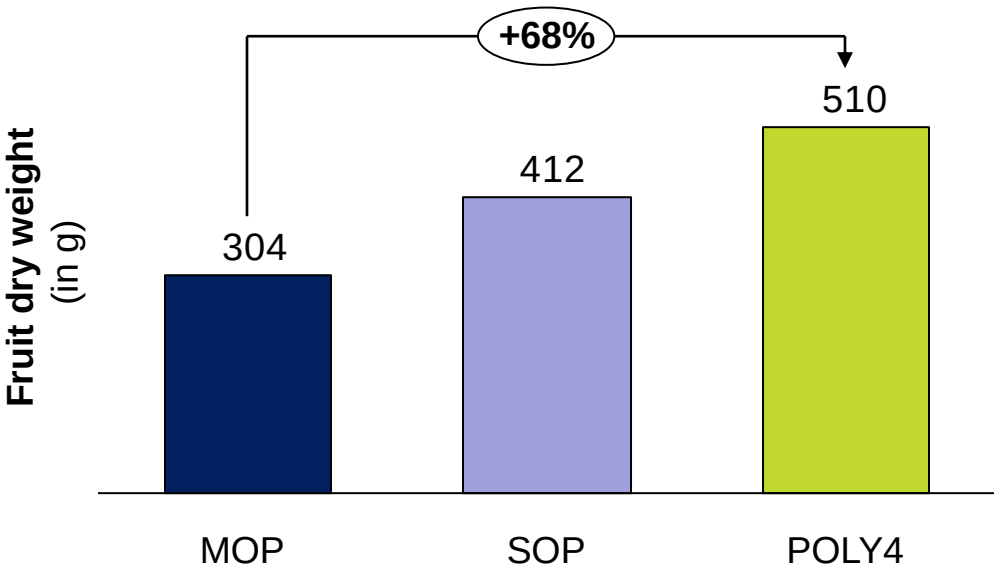
Straights & blends with POLY4 elevate the number of tomatoes

Notes: 1) Mean results of fruit count across a 100–250 kg/ha K_2O range; biomass per plant means obtained from tomato plants fertilized with four fertilizers type (POLY4, MOP, SOP and SOP-M); 2) Mean results of fruit count across a 100-250 kg/ha K_2O range; I Biomass per plant means obtained from tomato plants fertilized with two blend fertilizers type (MOP 12-12-12 and POLY4 12-12-2) and a control initial soil analysis pH 7.3, EC 98uS/cm, Ca 21123 mg/Kg, K 102.6 mg/Kg, Mg 177mg/Kg, SO_4 31mg/Kg, P 92.8 mg/Kg soil; Sources: University of Florida.

POLY4 field study results on fruit dry weight

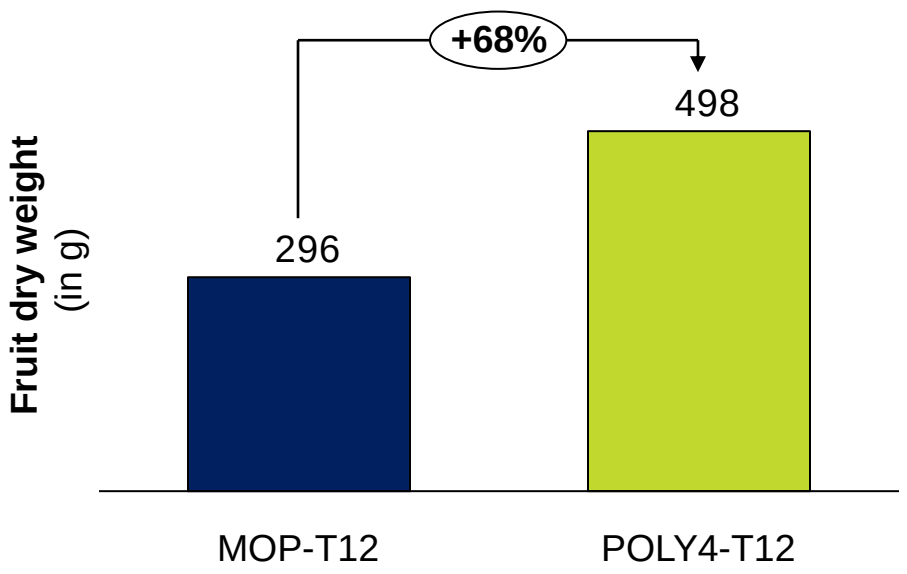
POLY4 increases important quality parameter

1 **Tomato fruit dry weight** [1]
(in g, 116 days after planting)



- POLY4 showed a statistically significant increase of +68% over MOP
- POLY4 appears to support higher dry fruit weight

2 **Tomato fruit dry weight** [1]
(in g, 116 days after planting)



- POLY4 supplemented blend supports a significantly greater fruit dry weight yield compared to MOP
- Fruit dry weight yield is an important yield parameter

POLY4 elevates tomato fruit dry weight

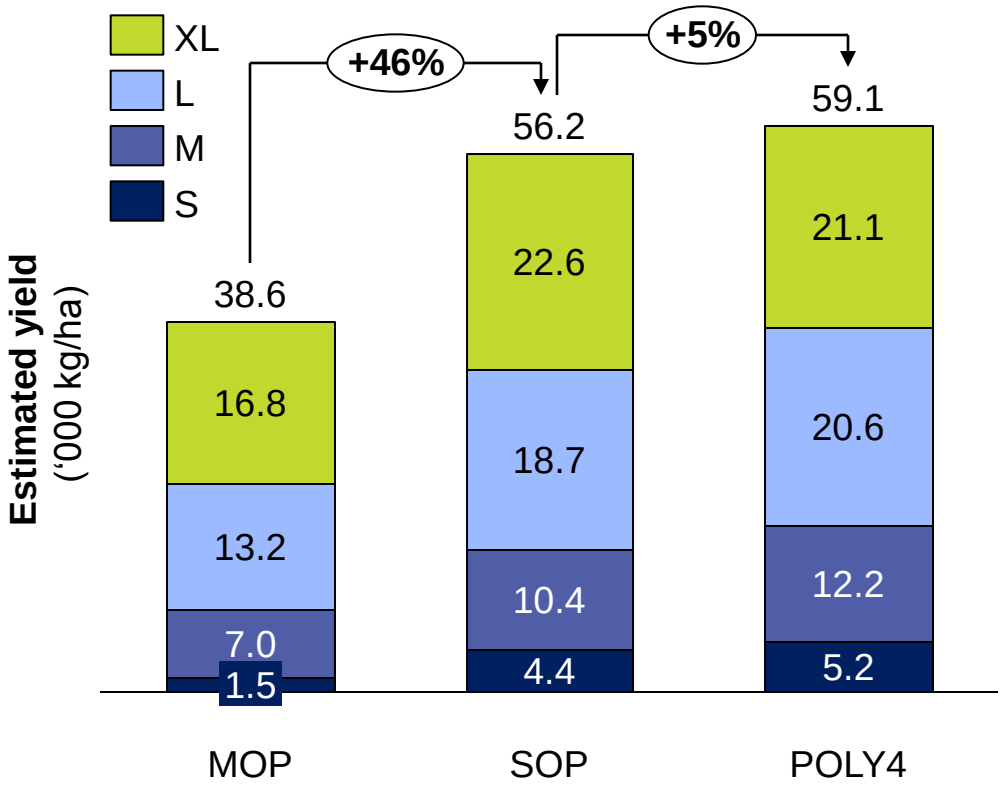
Notes: 1) Mean results of fruit count across a 100–250 kg/ha K_2O range; Initial soil analysis pH 7.3, EC 98uS/cm, Ca 21123 mg/Kg, K 102.6 mg/Kg, Mg 177mg/Kg, SO_4 31mg/Kg, P 92.8 mg/Kg soil. Sources: University of Florida.

POLY4 enhance yield results

POLY4 achieved higher fruit yields at all application rates compared to MOP & SOP

1 Tomato yield & fruit size [1]

(in '000 kg/ha)



2 Key findings

- Additional nutrients from POLY4 lift the ceiling on the K_2O rate-yield response
- POLY4 significantly out yields MOP
- SOP significantly out yields MOP
- The additional nutrients of POLY4 consistently improve yields over SOP

Balanced nutrition is the key to higher yields

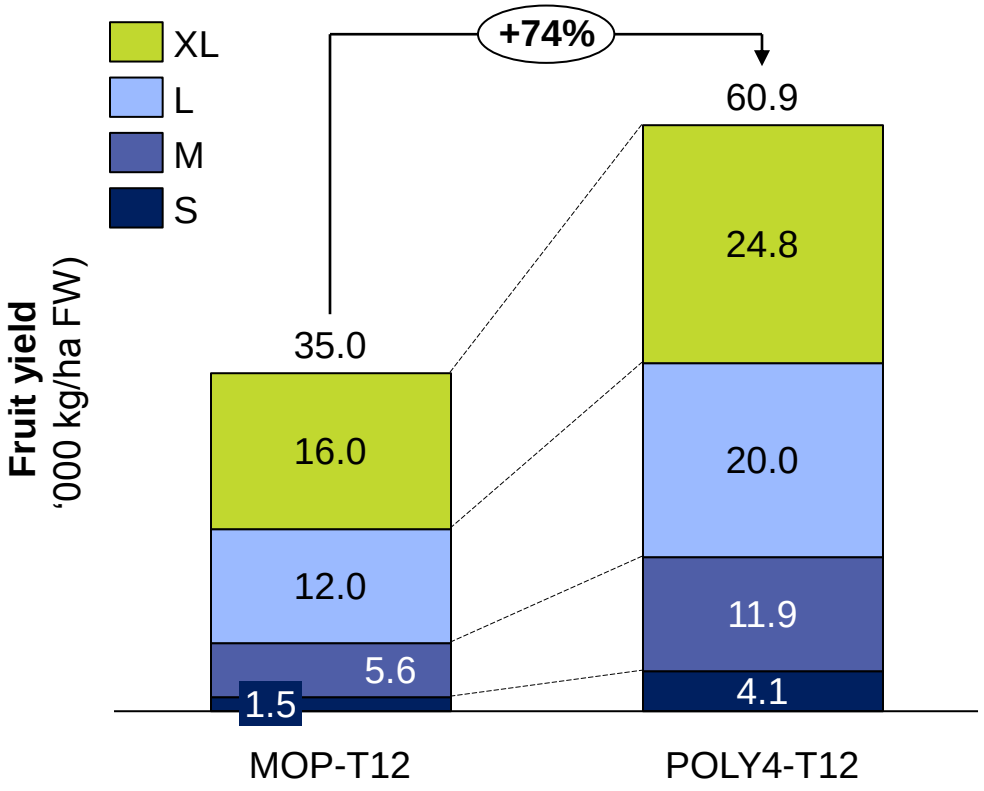
Notes: 1) Mean results from 100–250 kg/ha K_2O, tomato variety rally; Initial soil analysis pH 7.3, EC 98uS/cm, Ca 21123 mg/Kg, K 102.6 mg/Kg, Mg 177mg/Kg, SO_4 31mg/Kg, P 92.8 mg/Kg soil.
Sources: University of Florida.

POLY4 blends enhances yields

POLY4 blends elevate fresh weight yield

1 Tomato yield & fruit size [1]

('000 kg/ha FW)



2 Key findings

- Market target for this variety is large/extra large fruit
- POLY4 yields 57% more large and extra large class fruits
- The total fruit yield is 74% greater
- Quality is also improved as seen above
- The overall result is a premium on crop due to yield and quality making a very positive impact on farmer economics

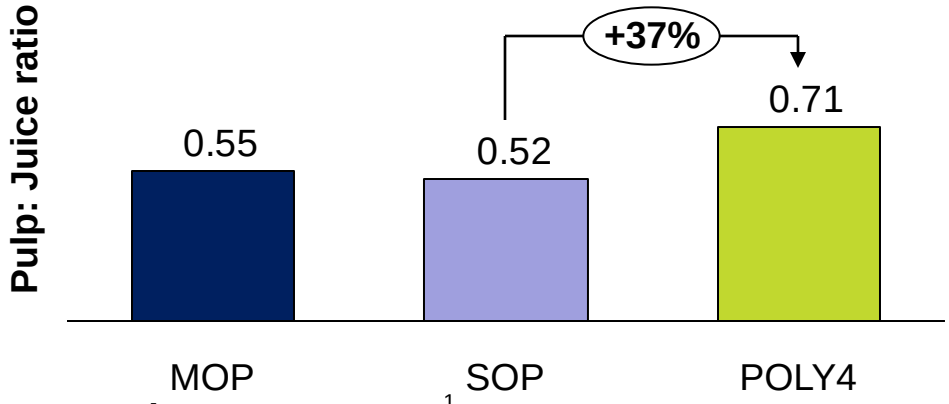
POLY4 increases fruit yield

Notes: 1) Mean fruit yield regardless the K_2O kg ha-1 rate applied to soil where tomato was grown; Initial soil analysis pH 7.3, EC 98uS/cm, Ca 21123 mg/Kg, K 102.6 mg/Kg, Mg 177mg/Kg, SO_4 31mg/Kg, P 92.8 mg/Kg soil; Sources: University of Florida.

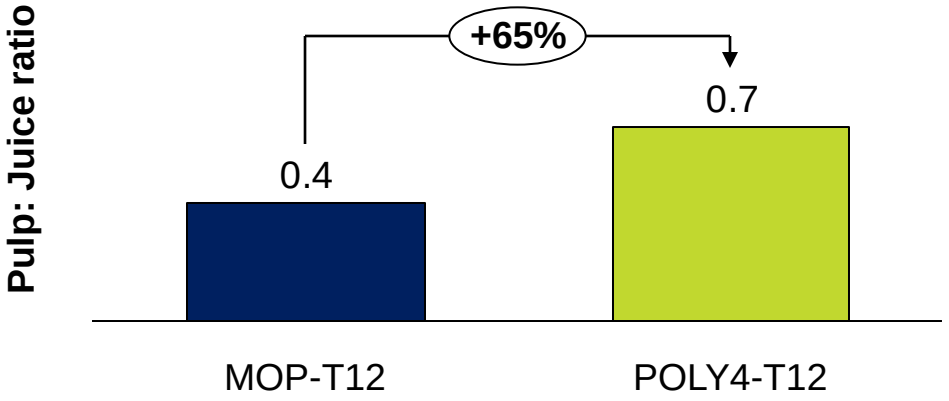
Fruit quality field study results on tomatoes

Higher pulp: juice ratio and fruit sugar content are beneficial for grower returns

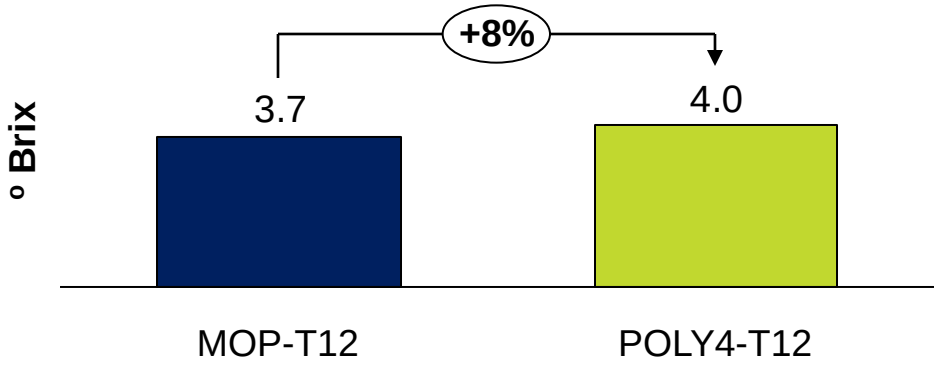
1 Tomato pulp: juice ratio [1]
(P/J ratio)



2 Tomato pulp: juice ratio [1]
(Ratio P/J)



3 Fruit sugar content [1]
(º Brix)



4 Key findings

- 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
- POLY4 blends seem to lead to sweeter fruits

POLY4 improves fruit quality characteristics leading to greater crop value

Notes: 1) Initial soil analysis pH 7.3, EC 98uS/cm, Ca 21123 mg/Kg, K 102.6 mg/Kg, Mg 177mg/Kg, SO_4 31mg/Kg, P 92.8 mg/Kg soil; Sources: University of Florida.

Tomato farmers to benefit from using POLY4

POLY4 proves to be an effective fertilizer source for tomato farmers

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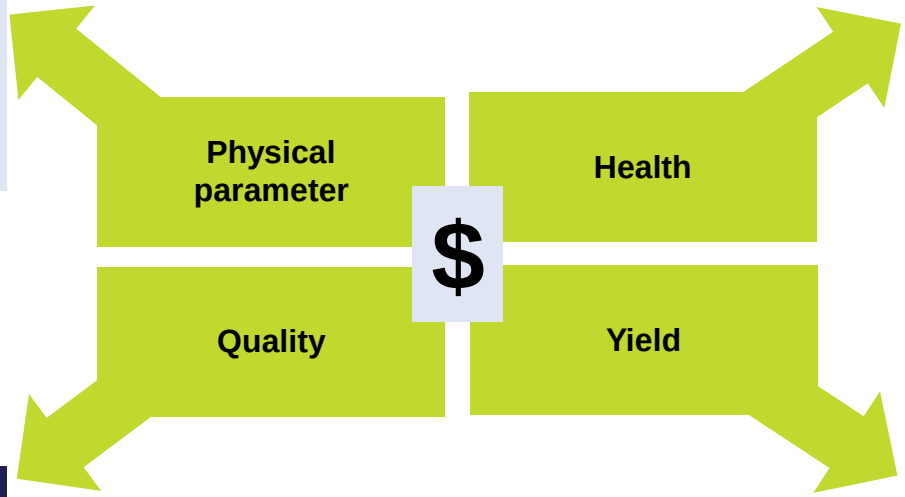
POLY4's nutrient availability supports…

- ✓ Greater root dry weight
- ✓ Greater leaf fresh weight & dry weight
- ✓ Greater stem basal diameter and dry weight
- ✓ Greater leaf greenness

POLY4 appears to help the crop combat disease as it…

- ✓ Reduces *Alternaria*
- ✓ Reduces *Xanthomonas* infection and severity



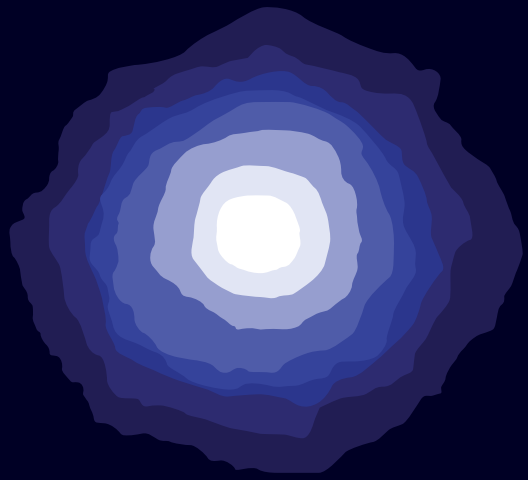
POLY4 improves the crop quality as it…

- ✓ Improves fruit dry matter
- ✓ Improves pulp ratio
- ✓ Improves fruit sugar content

POLY4 supports yields as it results in…..

- ✓ Higher fruit numbers
- ✓ Higher dry matter content
- ✓ Higher yield

POLY4 repeatedly outperforms other potassium sources as nutrients are immediately available to support the plant's growth



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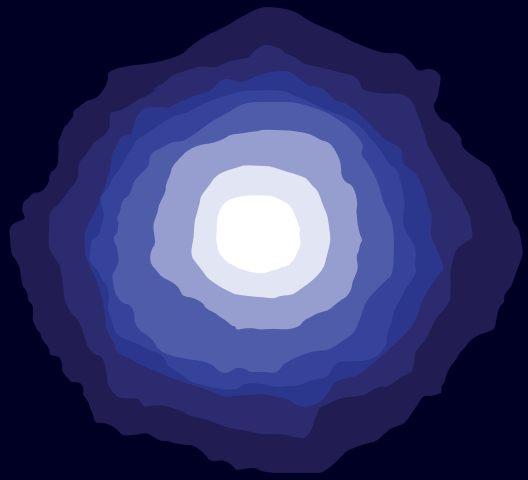

Appendix 1

Summary of observed plant vigour and health results

Plant vigour and health are important indicator of a farmers

POLY4 results over other fertilizer products

Indicator	Parameter	Datapoint	POLY4 benchmarked against other K-sources		
		M [1] / R [2]	POLY4vs. MOP	POLY4 vs. SOP	POLY4T12 vs. MOP T12
Plant Vigour	Root dry weight [3]	M	+33%	+1%	+53%
	Stem dry weight [3]	M	+89%	+23%	+57%
	Basal diameter [4]	R	+7.6%	+7.6%	+8.3%
	Plant height [4]	M	+17%	+4%	+18%
Plant Health	Leaf dry weight [3]	M	+53%	+24%	+68%
	Leaf greenness [5]	M	+44%	- /+	+46%
	Leaf spot incidence [5]	R	- 50%	- 20%	- 48%

POLY4 seems to support the tomato plant vigour and health

Notes: 1) Differences based on Mean results from 100-250 kg/ha K_2O as ''M''; Initial soil analysis pH 7.3, EC 98uS/cm, Ca 21123 mg/Kg, K 102.6 mg/Kg, Mg 177mg/Kg, SO_4 31mg/Kg, P 92.8 mg/Kg soil. 2) Differences based on Recommended application rate of 250kg/ha K_2O as ''R''; 3) Mean results 116 days after planting; 4) Recommended application rate results111 days after planting; 5) SPAD Meter measurement average over 36-11 days after planting; 5) Mean results after 83 days after planting. Source; University of Florida