

Growing COTTON IN USA



POLY4
A SIRIUS MINERALS PRODUCT

K ₂ O	S	MgO	CaO
14%	19%	6%	17%

KEY FINDINGS

**POLY4 fertilizer programme
achieved highest yield for
the third year in a row**

4% cotton lint yield increase

Improvement in fertilizer margin



A CASE FOR POLY4

- USA is the third largest cotton producer in the world.
- Virginia cotton is grown on coastal plains that are often deficient in both potassium and sulphur.
- POLY4 is a source of K, S, Mg and Ca, all of which are important nutrients for cotton production.
- POLY4 fertilizer programme improved cotton yield in previous cotton trials in Virginia: 3% lint yield improvement over MOP-balanced in 2015 and up to 77% increase in 2016 when severe drought restricted yield.

POLY4 BENEFITS



Source of macro and micro nutrients



Improved fertilizer use efficiency



A sulphate-sulphur source



Extended delivery profile



A good environmental profile



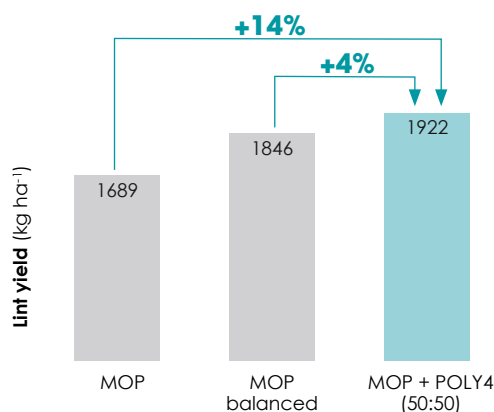
Suitable for organic farming

Treatment	Average nutrients applied in trial (kg ha ⁻¹)					
	N	K ₂ O	CaO	MgO	S	Cl ⁻
MOP	112	84	0	0	0	56
MOP balanced	112	84	51	18	52	56
MOP + POLY4 (50:50)	112	84	51	18	57	38.5

HIGHER COTTON YIELD



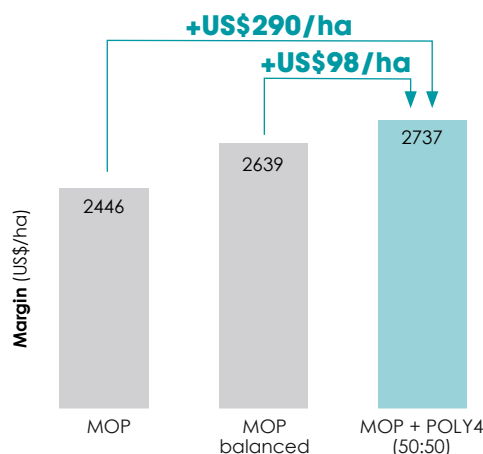
POLY4 outperformed both the MOP and MOP balanced treatments. All K fertilizers increased cotton yield. However, POLY4 also supplied S, Mg and Ca, which are important for cotton production.



INCREASING FARMER PROFITS



The MOP + POLY4 treatment had the greatest fertilizer margin, which is the crop output value minus the fertilizer and spreading costs.



MAINTAINING COTTON QUALITY



Cotton quality is measured by the fibre fineness and maturity (Micronaire), strength, size, uniformity and colour. Based on these parameters, MOP + POLY4 maintained quality producing highly uniform, long, very strong cotton fibres within the same colour grade.



TRIAL FOCUS

The response of cotton to POLY4 was compared to an equivalent fertilizer blend of MOP, gypsum and kieserite.

PARTNER

Virginia Tech

LOCATION

Virginia, USA

DATE

2017

Notes: 1) USDA (US Department of Agriculture, 2017); 2) 2015 trial: 23000-VIR-23010-15; 2016 trial: 23000-VIR-23014-16; 3) Treatment table is based on the average K₂O rate. All treatments received 112 kg N ha⁻¹ and 1.12 kg B ha⁻¹; K₂O rates of 34, 67, 101 and 134 kg K₂O were applied; MOP + POLY4 was used in a ratio of 50:50 K₂O; MOP balanced contains MOP + Kieserite + gypsum; 4) Initial soil analysis: pH 6.0; 38 mg P kg⁻¹, 56 mg K kg⁻¹, 49 mg Mg kg⁻¹, 267 mg Ca kg⁻¹; sand to sandy loam texture; 5) GENSTAT mean results across the applied K₂O rates; 6) <https://www.cottoninc.com/cotton-production/quality/us-cotton-fiber-chart/ratings-of-fiber-properties/>; 7) Fertilizer prices based on US South 2017 annual prices: MOP (US\$272/t), POLY4 (US\$200/t), Kieserite (US\$248/t), gypsum (US\$25/t). Analysis accounts for fertilizer application of spreading cost of US\$16.16/t, cotton price was equivalent of 2017 price US\$1.48/kg (67 cent/lb); 8) Net margin = crop output (US\$/ha) – (cost of fertilizer material + cost of fertilizer application).

Source: Virginia Tech (2017) 23000-VIR-23020-17

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