Growing CORN IN USA





KEY FINDINGS

5% grain yield improvement across five trials

Higher number of grains and greater thousand grain weight

Increased fertilizer revenue



Source of macro and secondary nutrients

POLY4 BENEFITS

A CASE FOR POLY4

- Mid-western Minnesota is the fourth largest corn producing state in USA.
- Standard practice is to apply NPK fertilizer. S deficiency and fertilizer use have increased throughout the region.
- POLY4 supplies plant available sulphur in sulphate form as well as K, Ca, Mg and micro nutrients.
- POLY4 has a sustained nutrient delivery which can meet ongoing crop demand. This is important for increasing yield potential during later periods of high K demand, particularly during grain fill.



Sustained nutrient availability



Suitable for organic farming



Granulated product suited to machine application

Nutrients applied (kg ha ⁻¹)				
K ₂ O	S	CaO	MgO	CI
0	0	0	0	0
101	0	0	0	77
101	28	25	9	66
	κ₂Ο 0 101 101	K ₂ O S 0 0 101 0 101 28	Kutrients applied K20 S CaO 0 0 0 101 0 0 101 28 25	K ₂ O S CaO MgO 0 0 0 0 101 0 0 0 101 28 25 9

*All treatments received standard applications of N and P fertilizer.

IMPROVED YIELD

Across the five trials MOP + POLY4 fertilized corn had significantly higher yield than MOP. POLY4 treatment also achieved a higher number of grains per square metre and greater thousand grain weight.



IMPROVED INCOME



Com fertilized with MOP + POLY4 had the greatest revenue.



IMPROVED QUALITY

The MOP + POLY4 treatment had the highest starch content indicating improved grain fill and plant nutrition.

Notes: 1) Trials were considered responsive if MOP and/or MOP + POLY4 had significantly (P < 0.1) higher yield than N + P (control); Five out of ten com trials conducted in 2017 and 2018 were responsive; responsive trials were located at Waseca in 2018 (v. DKC54-38) and Lamberton and St Charles in 2017 and 2018 (cv. DR157); 2) N and P was from urea and DAP at 90 kg N ha⁻¹ and 60 kg P O, ha⁻¹ in 2017, MOP + POLY4 treatment had 20% of K_O supplied by POLY4; 3) Initial soil tests: Lamberton 2017; pH 5.4, 1.2% SOM, 7 mg P kg⁻¹, 125 mg K kg⁻¹, 8 mg S kg⁻¹, 416 mg Mg kg⁻¹, 1966 mg Ca kg⁻¹; Lamberton 2018; pH 5.5, 4.6% SOM, 13 mg P kg⁻¹, 133 mg K kg⁻¹, 6 mg S kg⁻¹, 501 mg Mg kg⁻¹, 1982 mg Ca kg⁻¹; St Charles 2017; pH 6.6, 2.9% SOM, 8 mg P kg⁻¹, 81 mg K kg⁻¹, 88 mg S kg⁻¹, 638 mg Mg kg⁻¹, 1657 mg Ca kg⁻¹; Waseca 2018; pH 6.0, 6.1% SOM, 9 mg P kg⁻¹, 363 mg Mg kg⁻¹, 363 mg Mg kg⁻¹, 1657 mg Ca kg⁻¹; Waseca 2018; pH 6.0, 6.1% SOM, 9 mg P kg⁻¹, 3617 mg Ca kg⁻¹; 4) Analysed by Genstat ANOVA analysis. Fishers LSD at 5% level used to separate means; 5) Crop price: US\$130/t.

Source: University of Minnesota (2017-2018) 14000-UMN-14018-17, 14000-UMN-14019-18 (corn).



TRIAL FOCUS

To compare the effect of POLY4 on corn yield from MOP + POLY4 to MOP.

PARTNER

University of Minnesota

LOCATION Minnesota, USA

> DATE 2017 - 2018

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