Growing CORRINING





KEY FINDINGS

POLY4 improved grain yield by 19%

Increased fertilizer margin

Greater crop biomass throughout the growing season

POLY4 BENEFITS



Source of macro and micro nutrients



A sulphate-S source ensuring immediate use by crop



Sustained nutrient availability



Suitable for organic farming



Good environmental profile

A CASE FOR POLY4

- India has the fourth largest corn (maize) area in the world with 9.2 million hectares planted in 2017.
- A mustard-maize cropping system is prevalent in Uttarakhand, where POLY4 improved the prior mustard crop yield by 13%.
- N + P and MOP + elemental S (40 kg ha⁻¹) are the typical fertilizers for mustard-maize systems. Elemental sulphur is not immediately plant-available and must be converted by microorganisms to sulphate-S.

Treatments	Nutrients applied (kg ha ⁻¹)						
	K ₂ O	S	MgO	CaO	Ν	P ₂ O ₅	CI
N + P (control)	0	0	0	0	120	40	0
MOP	44	0	0	0	120	40	35
MOP + 40S	44	40	0	0	120	40	35
MOP + 60S	44	60	0	0	120	40	35
MOP + POLY4 (40S)	44	40	13	35	120	40	18
POLY4 (60S)	44	60	19	53	120	40	9

*All treatments received 120kg N ha⁻¹ and 40kg P_2O_5 ha⁻¹ from urea and DAP.

IMPROVED GRAIN YIELD



Grain yield was increased by 1.6 t ha⁻¹ after applying MOP + POLY4 compared to standard practice (MOP + 40S). Number of grains was increased from 473 per cob with MOP + 40S to 530 per cob with MOP + POLY4.



INCREASED FERTILIZER MARGIN



Fertilizer margin was greatest when POLY4 treatments replaced standard fertilizer inputs.



ENHANCED PLANT GROWTH



POLY4-fertilized corn was larger which allowed the crop to capture more sunlight. Stem girth was also increased in the POLY4-fertilized crops.



Notes: 1) FAO Stat (2017); 2) Mustard factsheet, Uttarakhand, India (2018), Sirius Minerals; 3) N and P supplied from urea and DAP at 120 kg N ha' and 40 kg P₂O₂ ha'; 4) Two-thirds of potassium (29 kg K₂O) was supplied by POLY4 in the MOP + POLY4 treatment; 5) Initial soil analysis: pH 7.5, 7 mg Pkg¹, 72 mg K kg¹, 288 mg Mg kg¹, 2700 mg Ca kg¹, 5 mg S kg¹, 1.2% SOM; 6) Fertilizer prices: MOP (US\$214/t), POLY4 (US\$200/t), bentonite (US\$250/t), DAP (US\$8307/t), urea (US\$84/t). Analysis accounts for fertilizer apriceating cost of US\$9.07/t. Com price was US\$243/t. Margin = crop output (US\$/ha) minus (cost of fertilizer material plus spreading cost).

Source: G B PANT University of Agriculture & Technology (2018) 88000-GBPU-88010-17.



TRIAL FOCUS

To compare POLY4's effect on corn yield to the commercial practice of MOP + elemental S.

PARTNER

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LOCATION Pantnagar, India

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