



POLY4
A SIRIUS MINERALS PRODUCT

TRIAL RESULTS

CORN

SICHUAN, CHINA (2014)

HIGHLIGHTS

GRAIN YIELD AND WHOLECROP
BIOMASS INCREASED

HIGH DISEASE RESILIENCE

poly4.com

TRIAL OBJECTIVE

To compare the response of corn to applications of POLY4 and an alternative commercial fertilizer (MOP).

TREATMENT TABLE²

TREATMENTS	AVERAGE NUTRIENTS APPLIED (kg ha ⁻¹)						
	N	P ₂ O ₅	K ₂ O	CaO	MgO	S	Cl
CONTROL	300	90	0	0	0	0	0
POLY4	300	90	141	167	60	192	30
MOP	300	90	141	0	0	0	113

OVERVIEW

PARTNER: SOIL AND FERTILIZER INSTITUTE, SICHUAN ACADEMY OF AGRICULTURAL SCIENCE, SICHUAN PROVINCE, CHINA

LOCATION: SICHUAN, CHINA

YEAR: 2014

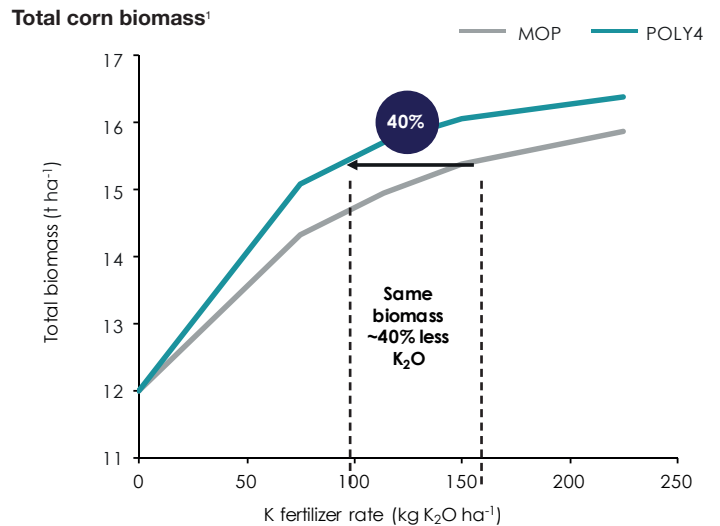
- China farms over 37 million hectares of corn and produced 216 million tonnes of corn in 2014.¹
- Corn has a large potassium demand.
- A field experiment was carried out in the farmer's field of a commercial crop in E'mei County, Sichuan province, China. The trial compared POLY4 with a commercial K fertilizer.
- Fertilizers were applied as per local practice (300 kg N ha⁻¹ (as urea) and 90 kg P₂O₅ ha⁻¹ (as MAP)).
- The trial treatments were K₂O applications of 0, 75, 113, 150 and 225 kg ha⁻¹. All treatments were replicated four times in a randomised block design.
- The soil was loam textured. Soil was analysed for nutrient concentrations.²





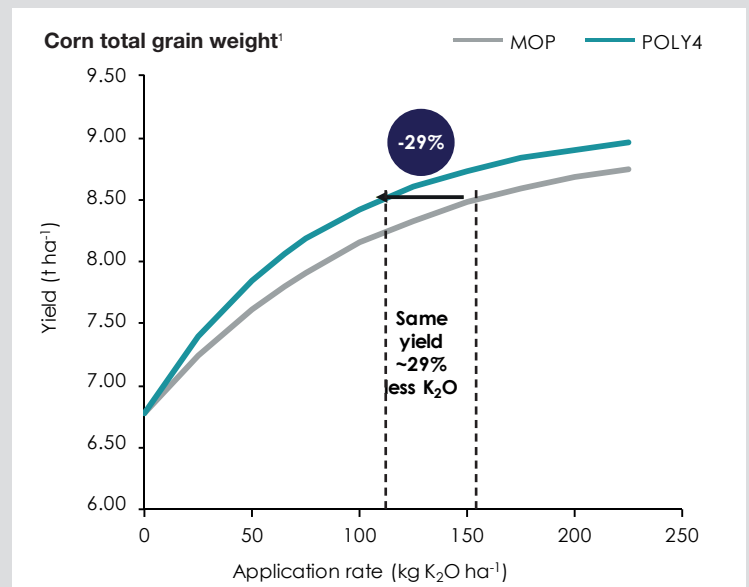
CORN BIOMASS^{2,3,4}

- Wholecrop biomass includes the entire above-ground corn crop.
- Wholecrop biomass is important when the crop is used as animal fodder or bioenergy.
- POLY4 increased wholecrop biomass yields compared to MOP.
- POLY4 produced significantly greater wholecrop biomass than MOP at the recommended K application rate (150 kg K₂O ha⁻¹).
- 90 kg K₂O ha⁻¹ as POLY4 produced the same wholecrop yield as MOP applied at 150 kg K₂O ha⁻¹ (locally recommended rate).
- POLY4 fertilizer allowed less K to be applied without compromising wholecrop yield.



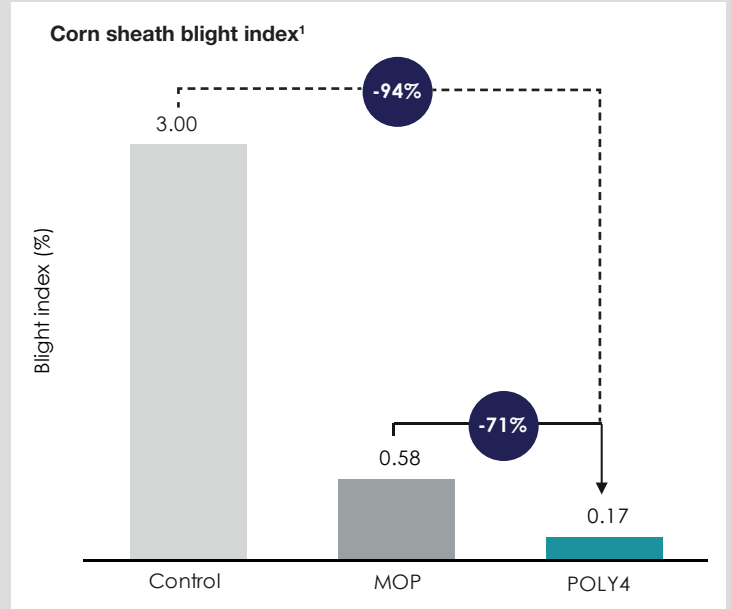
CORN YIELD^{2,3,4}

- POLY4 increased grain yield compared to MOP.
- POLY4 produced the same yield with less fertilizer K added.
- POLY4 achieved the same corn yield with 43 kg K₂O ha⁻¹ less applied, compared to MOP at the recommended rate (150 kg K₂O ha⁻¹).
- POLY4 was a suitable K fertilizer for corn.



CORN DISEASE RESISTANCE^{3,5,6}

- Sheath Blight is a local disease of corn crops, which can substantially reduce corn yields.
- Application of potassium fertilizer lowered the severity of Sheath Blight by 81-94%.
- POLY4 fertilizer had greater control of Sheath Blight than MOP.
- Reduced Sheath Blight infection would be an advantage to farmers.



Note: 1) Based on 2014 FAOSTAT data; 2) Initial soil analysis, pH 5.64, N 160 mg kg⁻¹, P 13 mg kg⁻¹, K 43 mg kg⁻¹, Mg 37 mg kg⁻¹, Ca 34 mg kg⁻¹, S 27 mg kg⁻¹
3) GENSTAT regression analysis; 4) Defined at a confidence level of 95%; 5) GENSTAT means; 6) Sheath Blight is a soil-borne disease caused by *Rhizoctonia solani*.

Sources: FAOSTAT 2017, Soil and Fertilizer Institute, Sichuan Academy of Agricultural Science (19000-SAAS-19012-14)

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