Growing CORN IN CHINA

POLY4
A SIRIUS MINERALS PRODUCT

K_2O 14% | S 19% | MgO 6% | CaO 17%

KEY FINDINGS

16% higher grain yield

10% more kernels per cob

Improved potassium use efficiency

A CASE FOR POLY4

- Liaoning province is a major corn producing province in north-eastern China.
- K is usually supplied as MOP.
- Corn can benefit from POLY4's additional macro and micro nutrients supplied in a single application.

POLY4 BENEFITS

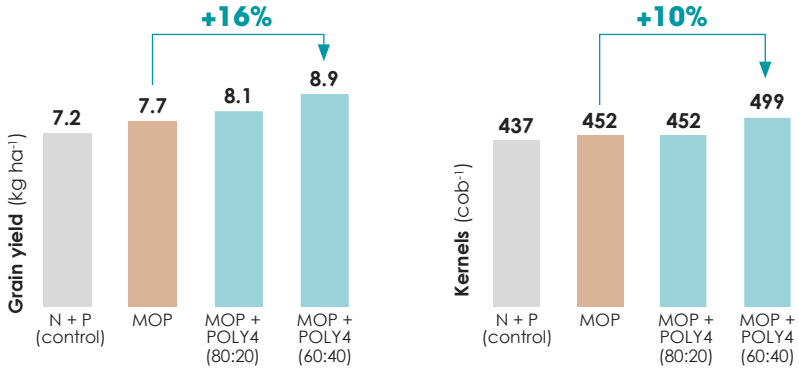
- Sustained nutrient release dynamics
- Source of K and Mg with sulphate S, Ca and additional micro nutrients
- Blends, stores and spreads well with conventional equipment
- Low carbon footprint

Treatments	Nutrient application rate (kg ha^{-1})			
	K_2O	MgO	S	CaO
N + P (control)	0	0	0	0
MOP	95	0	0	0
MOP + POLY4 (80:20)	95	8	26	23
MOP + POLY4 (60:40)	95	16	52	45

*All treatments received typical applications of N and P.

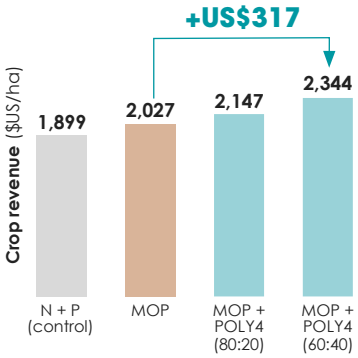
HIGHER GRAIN YIELD AND INCREASED NUMBER OF KERNELS

Yields achieved with the MOP + POLY4 (60:40) blend were significantly higher than yields obtained with straight MOP. The cobs of corn fertilized with POLY4 also had 10% more kernels.



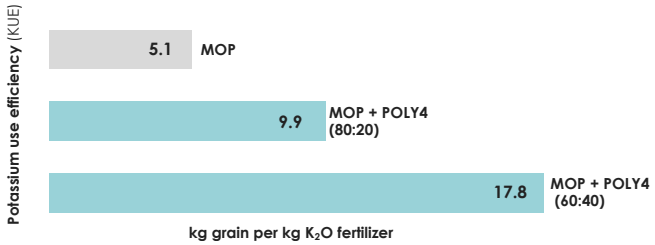
IMPROVED ECONOMICS

POLY4 blends supported the highest revenue.



INCREASED POTASSIUM USE EFFICIENCY

Up to 18 kg more grain was produced for each kg K_2O applied as MOP + POLY4 (60:40), making it over three times more efficient than straight MOP.



Notes: 1) Data presented are averages of both sites. Trials were conducted at two sites in Liaoning province: Changtu and Liaozhong. Pre-trial soil level at Changtu: pH: 5.6; 81 mg P kg^{-1}; 121 mg K kg^{-1}; 1420 mg Ca kg^{-1}; 239 mg Mg kg^{-1}; 20 mg S kg^{-1}; 128 mg N kg^{-1}; EC: 72 mS cm^{-1}. Pre-trial soil level at Liaozhong: pH: 6.0; 24 mg P kg^{-1}; 36 mg K kg^{-1}; 375 mg Ca kg^{-1}; 52 mg Mg kg^{-1}; 11 mg S kg^{-1}; 28 mg N kg^{-1} EC: 18 mS cm^{-1}; 2) Cultivar used in the trial was Zhitai No. 3. Trial at Changtu was rainfed, whereas Liaozhong was irrigated four times. N supplied with urea at both sites. N applied at Changtu: 270 kg ha^{-1}, N applied at Liaozhong: 210 kg ha^{-1}. P_2O_5 supplied with DAP at a rate of 99 kg ha^{-1} at Changtu and at 104 kg ha^{-1} at Liaozhong. Treatment structure: control: No K_2O added. MOP + POLY4 (80:20): 20% of total K_2O supplied with POLY4, MOP + POLY4 (60:40): 40% of total K_2O supplied with POLY4. MOP: 100% of K_2O supplied with POLY4; 3) Genstat analysis of variance blocked by site. Means separation by Fisher's LSD test at the 5% significance level; 4) Crop revenue considered a price of US$264/t (Argus, April 2019); 5) Potassium use efficiency is agronomic efficiency, which is defined as yield obtained – yield of control/K_2O rate per hectare (kg ha^{-1} gained of grain/kg ha^{-1} of fertilizer).

Source: Institute of Applied Ecology, Chinese Academy of Sciences (2017), 74000-IAE-74011-18. (corn).

TRIAL FOCUS

To evaluate the effect of MOP + POLY4 on corn performance and to compare it to the standard practice of MOP as the sole K source.

PARTNER

Institute of Applied Ecology, Chinese Academy of Sciences

LOCATION

Liaoning province, China

DATE

2018

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