

Added value IN BRAZILIAN SOILS



POLY4

K ₂ O	S	MgO	CaO
14	19	6	17

KEY FINDINGS

Greater solubility of Ca and SO₄ supplied by POLY4 outperformed gypsum

POLY4's sustained nutrient delivery encouraged good root architecture

POLY4 improved drought tolerance



POLY4 BENEFITS



Higher solubility than gypsum



Multi-nutrient fertilizer



Extended nutrient delivery profile



Blends, stores and spreads well with conventional equipment

A CASE FOR POLY4

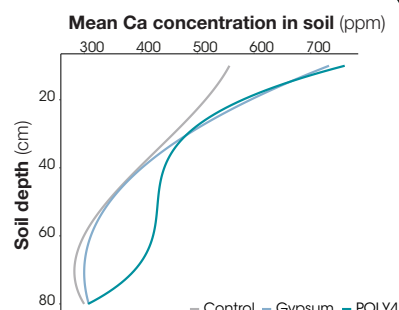
- Cerrado region of Brazil has low fertility soils and a high crop acreage. Calcium (Ca) and sulphate-sulphur (SO₄) from both POLY4 and gypsum detoxified aluminium in these highly weathered soils.
- However, Ca from gypsum tended to displace potassium (K) and magnesium (Mg) down the soil profile, rendering them less available for plants.
- Frequent gypsum application as standard practice causes Mg deficiency, which is especially damaging to sugarcane fields.
- POLY4 improved agronomic value by supplying Ca, SO₄ as well as Mg and K in one product supporting season-long fertility and enhancing resilience to leaching.

Treatment	Average nutrients applied in trial (kg ha ⁻¹)			
	K ₂ O	CaO	MgO	S
Control	0	0	0	0
Gypsum	0	833	0	450
POLY4	700	850	300	950

CALCIUM IMPROVED NUTRIENT UPTAKE



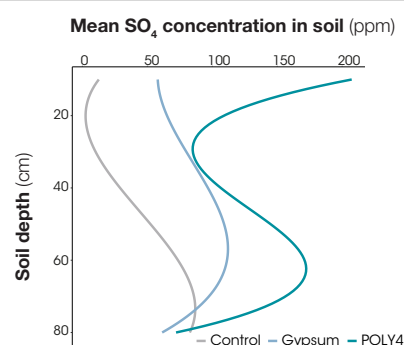
Ca released by POLY4 was available at all depths and encouraged plant roots to further explore the soil thus supporting nutrient and water uptake and helping to protect crops from drought stress. Gypsum improved Ca availability in the upper soil profile only.



HIGHER SULPHATE-SULPHUR SOLUBILITY



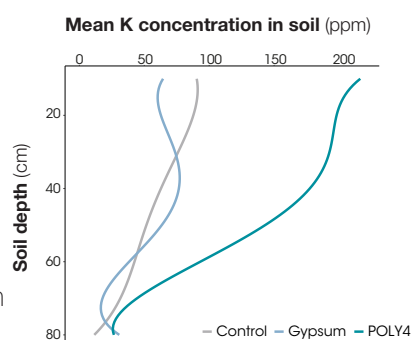
The higher solubility of POLY4-sulphate led to enhancement of SO₄ concentration at both shallow and deeper soils remaining available for the plant.



ENHANCED POTASSIUM AVAILABILITY



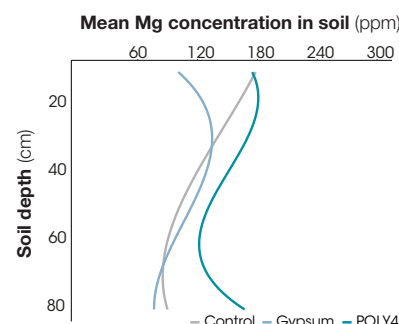
POLY4 delivered additional K with improved availability to 60 cm. This balanced nutrition is sustained throughout the crop cycle supplying nutrients when plants such as sugarcane, soybean and corn need them the most.



MAGNESIUM RESILIENCE TO LEACHING



POLY4 enhanced Mg availability in the root zone, from 40 cm and deeper. After nine months, gypsum promoted Mg leaching, increasing its availability at 40cm depth but depleting it at shallow soil levels. POLY4 compensated and added more Mg to both shallower and deeper soils.



TRIAL FOCUS

To compare S and Ca delivery from POLY4 to gypsum and observe the K and Mg distribution in the soil profile.

PARTNER
UNESP

LOCATION
Jaboticabal, Brazil

DATE
2017 - 2018

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Notes: 1) Treatments were applied to soil columns containing samples of a representative clay oxisol, balancing CaO rate. The experiment was run from September 2017 to May 2018, the length of the cropping season in the trial region. Deionised water was added to soil columns simulating a 45-year-based rainfall pattern for the trial region. Treatments were applied once at 10cm at the beginning of the experiment. At the end of the experiment, the soil in the columns was tested for nutrient concentrations; 2) Referential soil characteristics: pH 5.7, 286 mg Ca kg⁻¹, 102 mg K kg⁻¹, 88 mg Mg kg⁻¹, 26 mg H⁺Al kg⁻¹, base saturation: 51%; 3) Treatments were applied to balance the amount of CaO per hectare at a rate of 3000 kg ha⁻¹ of gypsum and 5000 kg ha⁻¹ of POLY4; 4) R v3.5.3- fitted curves.