POLY4
A SIRIUS MINERALS PRODUCT

TRIAL RESULTS

OILSEED RAPE

NORTH DAKOTA, US (2016)

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TRIAL OBJECTIVES

To evaluate the agronomic performance of oilseed rape in response to POLY4 and Ammonium Sulphate as sources of sulphur.

HIGHLIGHTS

UP TO 9% INCREASE IN YIELD

IMPROVEMENT IN OIL CONTENT

FLEXIBILITY IN APPLICATION TIMING

5% INCREASE IN NITROGEN UPTAKE

UP TO 5% INCREASE IN SULPHUR UPTAKE

TRIAL DESIGN

PARTNER: NORTH DAKOTA STATE UNIVERSITY

LOCATION: NORTH DAKOTA, US

YEAR: 2016

CROP VARIETY: ROUND UP READY (STAR 402)

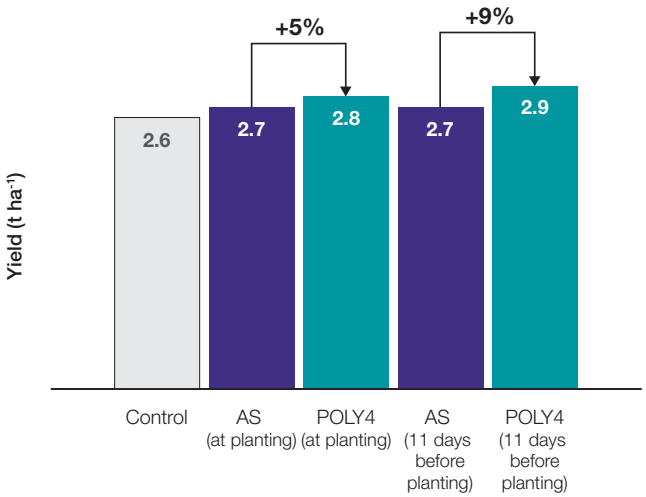
- North Dakota is the largest state in terms of production, delivering 85% of US output in 2016.
- Yield penalties are incurred for oilseed rape (OSR) crops when sulphur is not available which is common with most oil crops.
- This trial was conducted in North Dakota in a loam and a silt loam soil in a field considered to have a high nutrient status[3].
- Ammonium Sulphate (AS) and/or Urea was applied at recommend rates of 140 kg N ha^{-1} and Triple Super Phosphate (TSP) applied at 95 kg P_2O_5 ha^{-1}.
- Treatments were applied in a randomised complete block design with five replications

TREATMENT TABLE (kg ha^{-1}) [1,2]

NUTRIENT	AVERAGE NUTRIENT APPLIED IN TRIAL (kg ha^{-1})						
	N	P_2O_5	K_2O	MgO	CaO	S	Cl
Control	140	95	0	0	41	0	0
AS (at planting)	140	95	0	0	41	28	0
POLY4 (at planting)	140	95	21	9	66	28	11
AS (11 days before planting)	140	95	0	0	41	28	0
POLY4 (11 days before planting)	140	95	21	9	66	28	11

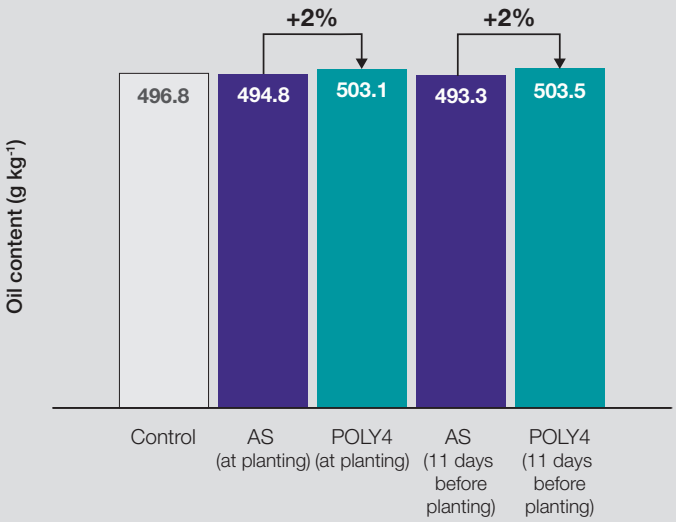
YIELD RESULTS (t ha^{-1})[1,2]

- Under equal sulphur rate applications, POLY4 showed improvements over AS when applied prior to and at planting.
- Yield improvements are an indication of higher oil content which can boost farmers' returns.



OIL CONTENT (g kg^{-1})[1,2]

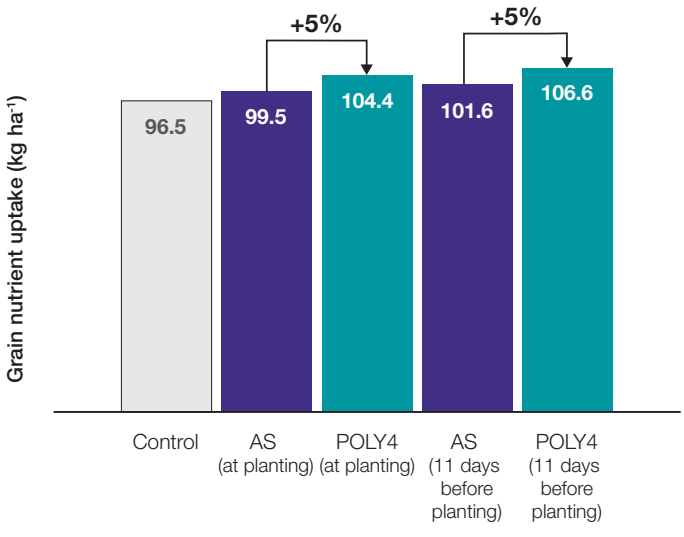
- The changes in oil content are affected by sulphur supply through the plant and into the grain.
- Use of POLY4 showed a 2% improvement in oil content at both stages compared to AS.



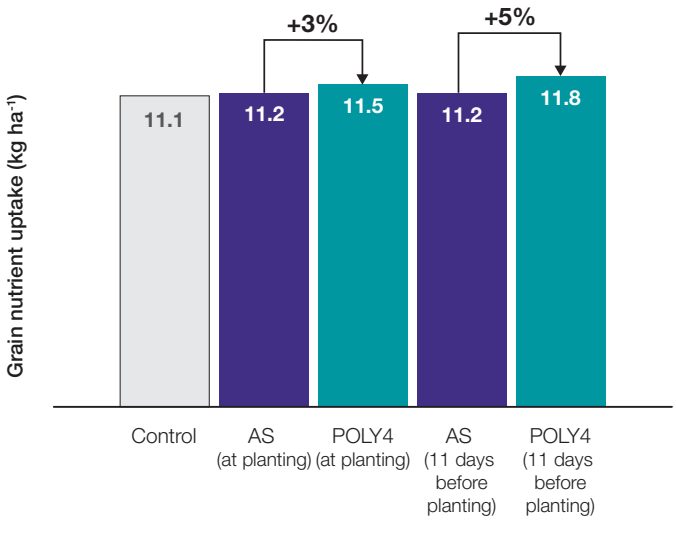
NUTRIENT UPTAKE (kg ha^{-1})[1,2]

- Improving the nitrogen and sulphur uptake into the grain demonstrates the efficiency of POLY4.
- POLY4's more timely release profile offers flexibility in application as nutrients are provided to the plant when needed.
- The use POLY4 allows farmers to decouple crop sulphur supply from nitrogen supply and affords more flexibility for canopy management practices.
- The results showed that the application of POLY4 around 11 days pre-planting is optimal.

Nitrogen



Sulphur



Notes: 1) GENSTAT means; 2) All treatments AS and/or Urea was applied at recommend rates of 140 kg N ha^{-1} and TSP applied at 95 kg P_2O_5 ha^{-1}; 3). Initial soil analysis: pH 6.7, Organic Matter 28 g kg^{-1}, N 73 mg kg^{-1}, P 4 mg kg^{-1}, K 200 mg kg^{-1}.

Source: North Dakota State University (2016) 15000-NDS-15014-16.

siriusminerals.com | +44 1723 470 010 | commercial@siriusminerals.com

Registered Address: 3rd Floor Greener House, 66-68 Haymarket, London SW1Y 4RF, UK
Company Registered Number: 4948435

SIRIUS MINERALS PLC