TRIAL RESULTS

OILSEED RAPE

NORTH DAKOTA, US (2016)
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.
- 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$_2$O$_5$ ha$^{-1}$.
- Treatments were applied in a randomised complete block design with five replications.

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

TREATMENT TABLE (kg ha$^{-1}$)

<table>
<thead>
<tr>
<th>NUTRIENT</th>
<th>AVERAGE NUTRIENT APPLIED IN TRIAL (kg ha$^{-1}$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>Control</td>
<td>140</td>
</tr>
<tr>
<td>AS (at planting)</td>
<td>140</td>
</tr>
<tr>
<td>POLY4 (at planting)</td>
<td>140</td>
</tr>
<tr>
<td>AS (11 days before planting)</td>
<td>140</td>
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<tr>
<td>POLY4 (11 days before planting)</td>
<td>140</td>
</tr>
</tbody>
</table>

TRIAL OBJECTIVES

To evaluate the agronomic performance of oilseed rape in response to POLY4 and Ammonium Sulphate as sources of sulphur.
**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.
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 P₂O₅ 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.