TRIAL RESULTS

OILSEED

RAPE

NANJING, CHINA (2015)
TRIAL OBJECTIVE
To compare the use of MOP against POLY4 on oilseed rape.

HIGHLIGHTS
7% INCREASE IN YIELD
UP TO 25% IMPROVEMENT IN MACRO-NUTRIENT UPTAKE
UP TO 19% INCREASE IN SEED NUTRIENT UPTAKE
MAINTAINS QUALITY PARAMETERS

TRIAL DESIGN
PARTNER: NANJING INSTITUTE OF SOIL SCIENCE
LOCATION: NANJING, CHINA
YEAR: 2014

- The global oilseed rape market is worth US$ 40.76 billion.¹
- China delivers 30% of the market by value.¹
- Oilseed rape can be processed for rape oil, dairy or pig feed and honey.²
- Field trial used a target seed rate of 260,000 seeds ha⁻¹.
- In this trial, three rates of K₂O application (40, 80 and 120 kg K₂O ha⁻¹) were used to compare MOP and POLY4.
- 36 plots measuring 24m² each were used for all treatment and rate combinations.

TREATMENT TABLE

<table>
<thead>
<tr>
<th>FERTILIZER</th>
<th>N</th>
<th>P₁₀₅</th>
<th>K₂O</th>
<th>MgO</th>
<th>CaO</th>
<th>S</th>
<th>Cl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>180</td>
<td>120</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MOP</td>
<td>180</td>
<td>120</td>
<td>80</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>64</td>
</tr>
<tr>
<td>POLY4</td>
<td>180</td>
<td>120</td>
<td>80</td>
<td>34</td>
<td>97</td>
<td>108</td>
<td>17</td>
</tr>
</tbody>
</table>

¹ Source: World籽rape.org
² Source: World籽rape.org
³ Source: World籽rape.org
Potassium improves tolerance to pest attacks, disease, frost damage and improves plant-water relations.

POLY4 delivered improved macro nutrient grain uptake, driving yield improvement.

The POLY4-fertilized crop had an oil content of 45% oil whilst outperforming the MOP option, in terms of yield, by 7%.

The improvement is a result of the natural balanced fertilization offered by POLY4.

**YIELD RESULT (kg ha⁻¹)**

- High levels of nutrient uptake during seed development indicates satisfactory nutrient supply from POLY4.
- The addition of calcium, magnesium and sulphur from POLY4 supports nutrient uptake.

**TOTAL PLANT NUTRIENT UPTAKE (kg ha⁻¹)**
**SEED NUTRIENT UPTAKE** (kg ha⁻¹)⁵,⁶

- Using POLY4 improved nitrogen, phosphorous and potassium use efficiency.
- POLY4 delivered the highest amounts of nitrogen, phosphorus and potassium into the yield component by 5%, 8% and 11% respectively.
- Delivering nutrients into the seed is important for yield and oil quality at harvest.
- POLY4 also delivered the highest amounts of calcium, magnesium and sulphur into the yield component by 3%, 8% and 19% respectively.
- POLY4 satisfied the high oilseed rape sulphur demand, which is supportive of oil production.

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**Seed nutrient uptake (kg ha⁻¹)**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>P</th>
<th>K</th>
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<tbody>
<tr>
<td>Control</td>
<td>29.2</td>
<td>4.9</td>
<td>5.4</td>
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<tr>
<td>MOP</td>
<td>36.4</td>
<td>6.2</td>
<td>7.4</td>
</tr>
<tr>
<td>POLY4</td>
<td>38.3</td>
<td>6.7</td>
<td>8.2</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>Ca</th>
<th>Mg</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>2.5</td>
<td>4.5</td>
<td>6.0</td>
</tr>
<tr>
<td>MOP</td>
<td>3.4</td>
<td>6.0</td>
<td>7.4</td>
</tr>
<tr>
<td>POLY4</td>
<td>3.5</td>
<td>6.5</td>
<td>8.8</td>
</tr>
</tbody>
</table>

Notes: 1) FAOSTAT 2013; 2) IPNI 2003; 3) GENSTAT means of inputs for 40–120 kg K₂O ha⁻¹ except for control where 0 kg K₂O ha⁻¹ was used; 4) Urea and DAP supplied nitrogen and phosphorus; 5) GENSTAT means; 6) All plots received 180 kg N ha⁻¹ and 120 kg P₂O₅ ha⁻¹ from urea and DAP with 80 kg K₂O ha⁻¹ from MOP or POLY4. Initial soil analysis: pH 4.88, P 10 mg kg⁻¹, K 90 mg kg⁻¹, Mg 173 mg kg⁻¹, S 30 mg kg⁻¹.