**TRIAL OBJECTIVE**

This second year trial compared a POLY4 fertilizer plan as an alternative potassium source for potatoes against a MOP fertilizer plan.

**HIGHLIGHTS**

- **18% INCREASE IN YIELD**
- **17% DECREASE IN FERTILIZER PLAN COST**
- **REDUCTION IN THE NUMBER OF FERTILIZER INPUTS**
- **6% INCREASE IN TUBER DRY MATTER**
- **TUBER NITROGEN, PHOSPHORUS, POTASSIUM AND SULPHUR INCREASED BY 7%, 2%, 6% AND 5% RESPECTIVELY**

**TREATMENT TABLE** (kg ha⁻¹)

<table>
<thead>
<tr>
<th>NUTRIENT</th>
<th>N</th>
<th>P₂O₅</th>
<th>K₂O</th>
<th>MgO</th>
<th>CaO</th>
<th>S</th>
<th>Cl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MOP NPK+S</td>
<td>150</td>
<td>528</td>
<td>188</td>
<td>0</td>
<td>326</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>POLY4 NPK+S</td>
<td>150</td>
<td>528</td>
<td>188</td>
<td>81</td>
<td>257</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

**TRIAL DESIGN**

- **PARTNER:** UNIVERSITY OF SÃO PAULO
- **LOCATION:** SÃO PAULO, BRAZIL
- **YEAR:** 2015

- Following a first year potato trial, a second year was established to confirm previous results.
- The use of SSP within 4:14:8 blends is the commercial standard practice supplying phosphorus, calcium and sulphur.
- A 4:14:2/4/6/8 series was used to demonstrate the K response from blends delivering fixed N and P.
- Asterix potatoes were trialled which are commonly used in French Fries and processed potato products.
- Increasing potassium application resulted in increasing yields in a stable nitrogen and phosphorus background.

- At the recommended rate of 220 kg K₂O per hectare, POLY4 NPK+S showed a yield improvement of 18% over MOP NPK+S.

- Removal of SSP lowers the calcium content in favour of magnesium from the more efficient POLY4 NPK+S plan that supports yield improvements.

- Substitution of MOP with POLY4 lowers the chloride content of a fertilizer plan.

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### ECONOMIC SUMMARY

- The inclusion of POLY4 into NPK+S fertilizer plans supplies calcium, magnesium and sulphur in an appropriate ratio and contains less chloride.

- Under average trial conditions, the POLY4 NPK+S plan generates US$146 saving on input and application costs.

- Improvements in yield and quality coupled with a lower input cost extends grower's margins significantly.

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**YIELD RESULT** (t ha⁻¹)¹⁻⁴,⁷

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**ECONOMIC SUMMARY** ⁵,⁶

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- Improvements in yield and quality coupled with a lower input cost extends grower's margins significantly.
Notes: 1) Average nutrients applied per treatment based on range of 0–300 kg K₂O ha⁻¹; 2) MOP NPK+S plan uses Urea, TSP, SSP and MOP; 3) POLY4 NPK+S plan uses Urea, MAP and POLY4; 4) GENSTAT regression analysis 5) Fertilizer prices based on Brazil 2016 annual prices: Urea (US$216/t), TSP (US$288/t), SSP (US$216/t), MAP (US$351/t), MOP (US$321/t), POLY4 (US$300/t); 6) Spreader cost of US$1.17/t accounted for with input calculations; 7) Initial soil analysis: pH 5.6, K 86 mg kg⁻¹, Ca 563 mg kg⁻¹, Mg 198 mg kg⁻¹, S 30 mg kg⁻¹.

Source: University of São Paulo (2015) 4000-USP-4015-15