TRIAL OBJECTIVE
To investigate fresh market tomato’s response to POLY4 blends compared to MOP blends with or without Ca and/or S.

HIGHLIGHTS

UP TO 13% INCREASE IN YIELD

6% INCREASE IN US$ RETURN PER HECTARE

BRIX, VITAMIN C CONTENT, TOTAL ACIDITY AND pH IMPROVED OR MAINTAINED

UP TO 62% IMPROVEMENT IN NUTRIENT UPTAKE

LEAF IRON, ZINC, COPPER AND MANGANESE CONTENT INCREASED BY 7%, 9%, 21% AND 23%

POST-HARVEST SOIL ANALYSIS FOR Ca AND Mg WERE 11% AND 24% HIGHER

TREATMENT TABLE (kg ha⁻¹)

<table>
<thead>
<tr>
<th>TREATMENTS</th>
<th>AVERAGE NUTRIENT APPLIED IN TRIAL (kg ha⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>K₂O  MgO  CaO  S  Cl</td>
</tr>
<tr>
<td>Control</td>
<td>0     0     0     0     0</td>
</tr>
<tr>
<td>MOP blends¹</td>
<td>130   0     0     0     104</td>
</tr>
<tr>
<td>MOP+ blends²</td>
<td>130   0     102   118   104</td>
</tr>
<tr>
<td>POLY4 blends³</td>
<td>130   37    104   119   47</td>
</tr>
</tbody>
</table>

TRIAL DESIGN

PARTNER: VIRGINIA TECH
LOCATION: VIRGINIA, US
YEAR: 2015

- Virginia is the third largest fresh market tomato producer in the US.
- Production in the coastal plains is limited by soil potassium and sulphur.
- The use of NPK blends containing MOP in Virginia is standard practice but blends are missing calcium, magnesium and sulphur.
YIELD RESULT $^2,3$

- The addition of calcium and sulphur in the MOP+ and POLY4 blends improved yield over the MOP blends.

- Tomato yields were improved by 8% and 11% for MOP+ and POLY4 blends at an application of 100 kg K$_2$O ha$^{-1}$.

- At the higher rate of 200 kg K$_2$O ha$^{-1}$, the value of magnesium in POLY4 differentiates yield from MOP+ blend with a 13% yield increase achieved.

ECONOMIC SUMMARY (US$/ha) $^1$-$^8$

- Use of simple MOP blends provides the least return for tomato growers due to a lack of calcium, magnesium and sulphur being applied.

- The inclusion of gypsum and ammonium sulphate to supply calcium and sulphur increases returns by 7% compare to the MOP blends.

- The lower chloride POLY4 blends also include magnesium and beneficial micro nutrients that increase return by a further 6% over the MOP+ blends.
Notes: 1) Blend treatments 6:3:12 and 11:4:17 applied separately to provide 40% and 60% of the K₂O required respectively as a K rate response to deliver 40, 80, 160, 240 kg K₂O ha⁻¹; 2) Blends and fertigation delivered 224 kg N ha⁻¹ to all plots except control where only fertigation was used; 3) P₂O₅ was not recommended but was applied in blends for good agricultural practice; 4) MOP blends were made with Urea, DAP and MOP; 5) MCP+ blends were made with AS, Urea, DAP, MCP and gypsum; 6) POLY4 blends were made with Urea, DAP, MOP and POLY4; 7) Initial soil analysis: pH 6.2, P 122 mg kg⁻¹, K 78 mg kg⁻¹, Ca 403 mg kg⁻¹, Mg 43 mg kg⁻¹, CEC 3.3 meq 100g⁻¹; 8) Fertilizer prices based on US Mid-West 2016 annual prices: Urea ($219/t), AS ($223/t), DAP ($311/t), MOP ($214/t), POLY4 ($200/t), Gypsum ($25/t).