TRIAL RESULTS

TOMATO
(BACTERIAL SPOT DISEASE)

**TRIAL OBJECTIVE**

To compare K fertilizer source effectiveness on tomato plant health to combat bacterial spot and rates of application using POLY4.

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**HIGHLIGHTS**

**CALCIUM HAS VALUE IN CONTROLLING BACTERIAL SPOT**

**UP TO 89% DECREASE IN DISEASE SEVERITY COMPARED TO OTHER K SOURCES**

**HIGHER RATES OF POLY4 ARE MOST EFFECTIVE FOR DISEASE CONTROL**

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**NUTRIENT INPUTS**

**APPLIED IN STUDY 1 (kg ha\(^{-1}\))**

<table>
<thead>
<tr>
<th>Nutrient Input</th>
<th>K(_2)O</th>
<th>CaO</th>
<th>MgO</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>0</td>
<td>84</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MOP</td>
<td>200</td>
<td>84</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SOP</td>
<td>200</td>
<td>84</td>
<td>0</td>
<td>72</td>
</tr>
<tr>
<td>SOP–M</td>
<td>200</td>
<td>84</td>
<td>67</td>
<td>113</td>
</tr>
<tr>
<td>POLY4</td>
<td>200</td>
<td>327</td>
<td>85</td>
<td>271</td>
</tr>
</tbody>
</table>

**NUTRIENT INPUTS SUPPLIED BY POLY4 IN STUDY2 (kg ha\(^{-1}\))**

<table>
<thead>
<tr>
<th>K(_2)O</th>
<th>CaO</th>
<th>MgO</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>50</td>
<td>60</td>
<td>21</td>
<td>68</td>
</tr>
<tr>
<td>150</td>
<td>182</td>
<td>64</td>
<td>205</td>
</tr>
<tr>
<td>250</td>
<td>304</td>
<td>107</td>
<td>344</td>
</tr>
</tbody>
</table>
STUDY 1 – BACTERIAL SPOT DEVELOPMENT

• Varying the potassium source affects bacterial spot disease development post-planting.

• The greatest difference in macro-nutrient application was calcium from POLY4, supplying nearly four times more than the other treatments, clearly demonstrating its value.

• At 95 days post planting, POLY4 significantly lowered disease infection rates by 82% compared to SOP, by 80% compared to SOP-M and by 78% compared to MOP.

STUDY 1 – LEAF VISUAL ASSESSMENT

![Control](image1)

![MOP](image2)

![SOP-M](image3)

![SOP](image4)
STUDY 2 – BACTERIAL SPOT DEVELOPMENT

- In a parallel study, tomato plants were treated with increasing POLY4 application rates ranging from 0 to 250 kg K₂O ha⁻¹ balanced for nitrogen and phosphorus.

- POLY4 was most effective at 250 kg K₂O ha⁻¹ with a 59% reduction compared to the control.

- Over time, 50 kg K₂O ha⁻¹ from POLY4 lowered infection rates to less than that experienced with the control.

STUDY 2 – LEAF VISUAL ASSESSMENT

- Infection rates were lowest in treatments supplied with more than 150 kg K₂O ha⁻¹.

- At 150 kg K₂O ha⁻¹, POLY4 supplies an additional 182 kg CaO ha⁻¹, 64 kg MgO ha⁻¹ and 203 kg S ha⁻¹.

Notes: 1) Obradovic et al. 2008; 2) All plants were supplied 194 kg N ha⁻¹ as Urea and 194 kg P₂O₅ ha⁻¹ as TSP; 3) GENSTAT regression analysis; 4) Infection rates determined from amount of plant leaf canopy showing infection; 5) p<0.001; 6) 72 days after transplanting. Initial soil analysis: very gravelly loam, pH 7.3, 2.4% organic matter, K 85 mg kg⁻¹.

Sources: University of Florida (2015) 1000-UOF-1020-14