

Improving Canola Crop Safety Using P and S Fertilizers in the Seed Row

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Introduction

Canola seedlings are very sensitive to seed placed fertilizers; however phosphorus (P) fertilizers are most efficient if seed placed (MAFRI, 2007). Fertilizer rates applied with the seed are limited by crop safety, and blended P and sulphur (S) fertilizers could increase seedling toxicity. Enhanced efficiency fertilizers could increase crop safety.

Objective

To determine:

- If enhanced efficiency fertilizers are more seed safe than conventional fertilizers
- The safe rate of P and S fertilizer blends that can be added in the seed row

Methodology

InVigour 5440 canola was seeded at 150 seeds/m² at ½ inch depth at sites at Carman and Kelburn, MB

P and S fertilizer treatments were placed in the seed row

The P fertilizers used were 11-52-0 Monoammonium phosphate (MAP) and 11-51-0 coated Monoammonium phosphate (cMAP) at rates of:

- 0 kg P₂O₅/ha
- 20 kg P₂O₅/ha
- 40 kg P₂O₅/ha

The S fertilizer used was 21-0-0-24 Ammonium sulphate (AS) at rates of:

- 0 kg S/ha
- 9 kg S/ha
- 18 kg S/ha

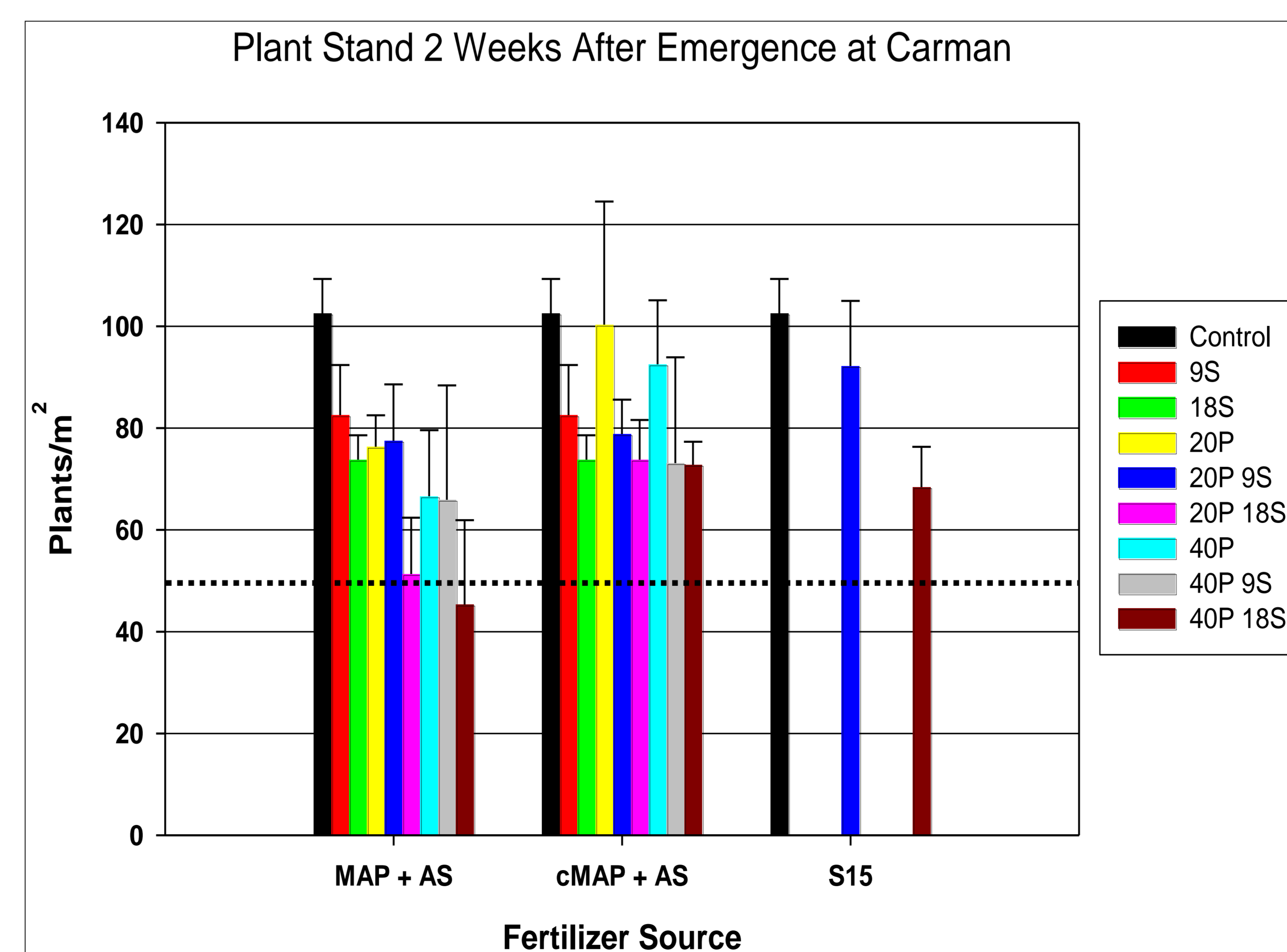
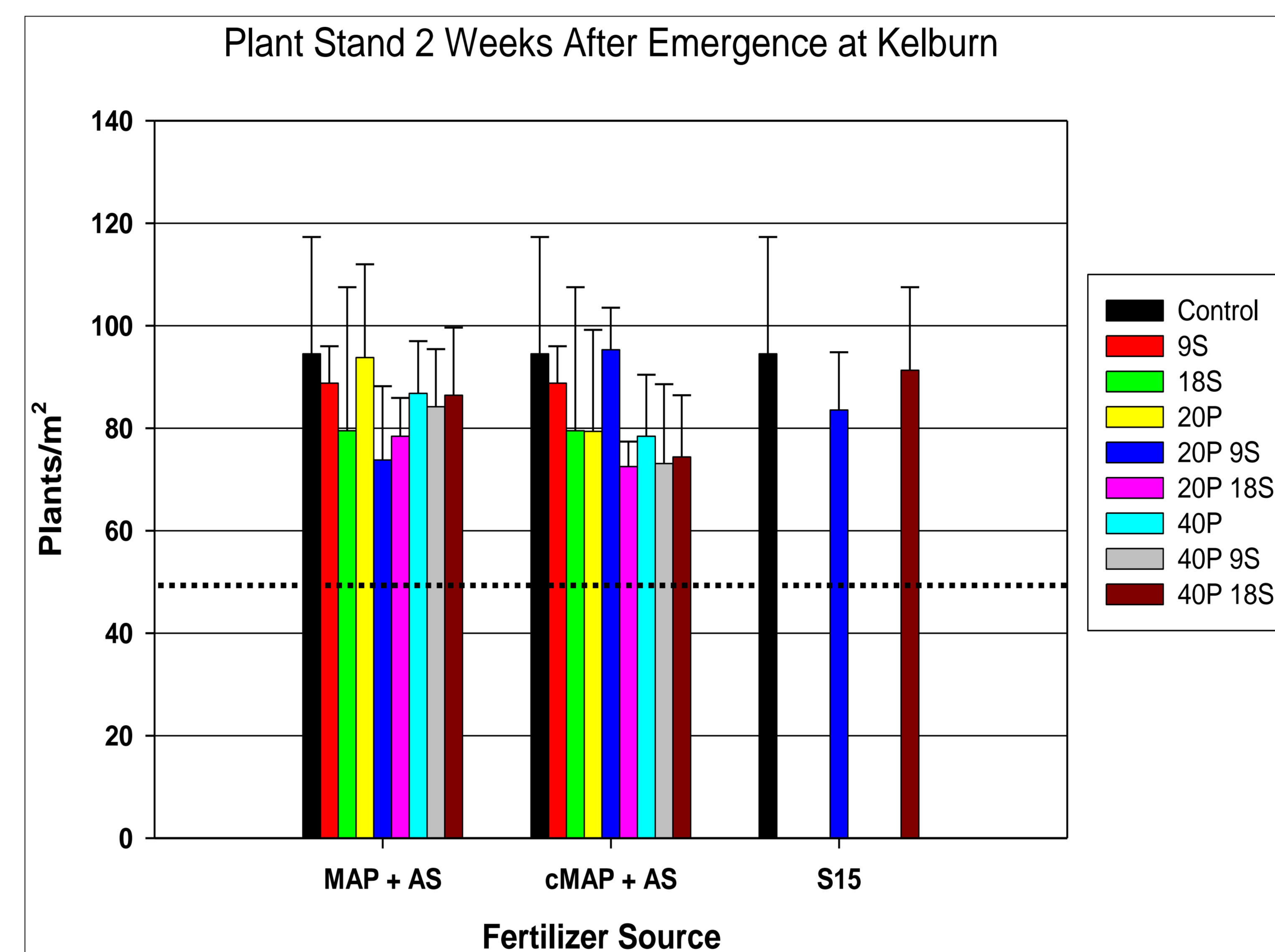
13-33-0-15 Microessentials S15 (S15) was applied at:

- 0kg/ha
- 20 kg P₂O₅ - 9kg S/ha
- 40kg P₂O₅ - 18kg S/ha

All plots were fertilized with a 75:25% blend of ESN:Urea in the mid-row according to MB Soil Fertility Guide recommendations

Crop emergence counts were taken 2 weeks and 4 weeks after the crop emerged

Results



Conclusions

Seed placed P and S fertilizers caused less seedling toxicity at Kelburn than at Carman, probably because the soil at Kelburn has a higher clay content and moisture holding capacity; therefore, the salts from the fertilizers in the seed row are diluted

At Carman:

- Blends of AS and MAP caused enough damage in the seed row to reduce the plant populations below the critical threshold of 40-50 plants/m² (Canola Council of Canada 2003)
- High rates of P added as MAP caused more seedling damage than cMAP
- Adding AS with either MAP or cMAP increased seedling damage compared to either P or S product used alone
- S15 caused less seedling toxicity than equivalent combinations of MAP + AS, probably because 50% of the sulphur in S15 is in the elemental form (non-toxic)

Mid-season biomass and grain yield are being assessed to determine nutrient uptake and if there was a yield penalty using high rates of P and S blends or enhanced efficiency fertilizers in the seed row

References

- MAFRI. 2007. Manitoba Soil Fertility Guide.
Canola Council of Canada. 2003. Canola Grower's Manual.

Acknowledgements



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