

Enhancing Canola Production with Improved P Fertilizer Management: Factsheet



Objective:

The objective of this study was to evaluate the impact of rate and placement (seed-placed versus side-band) of fertilizer phosphate, either alone or in combination with fertilizer S, on canola P-uptake and yield across a range of soil and climatic conditions in Saskatchewan.

Methodology:

The trial was established at three locations (Indian Head, Melfort, and Scott) over a three-year period (2016-2018). There were two factors evaluated. The first factor was five fertilizer rates of phosphorus at 0, 20, 40, 60, 80 kg/ha (0, 18, 36, 53, 71 lbs/ac). The second factor was placement which compared side-band, seed-placed, and seed-placed with fertilizer S.

Key Findings:

*key findings are based on results found at the Scott site. For further results of all three sites please read the full report on the WARC website www.warc.ca

- Plant density tended to increase as the rate of side-band P increased. This reveals that any rate of P applied in the side-band can be beneficial for canola establishment and building soil P reserves.
- Seed-placed P had higher initial plant density than the other two treatments, however as the rate of P increased, plant density declined. It was observed that rates above 20 kg/ha (18 lbs/ac) of P in the seed-row had negative impacts on plant establishment and became more severe at higher rates. At lower P rates plant density losses were at 4% for every 9 lbs/ac of fertilizer, increasing to 6% at rates higher than 60 kg/ha (53 lbs/ac).
- The treatment of seed-placed P with S fertilizer observed similar trends to the seed-placed P treatment, with a less severe decline in plant density. This treatment observed only a 2-3% loss in plant populations for every 9 lbs/ac increase in fertilizer P. This suggests that adding S to the seed-row may be helpful in sites with low S. Note that these results were observed at Scott, but were not consistent at all sites in the study, please refer to the full report.
- As the rate of side-banded P increased, yield increased with the highest rate of P, 80 kg/ha (71 lbs/ac), resulting in a 7 bu/ac increase over the control. Seed-placed P resulted in a slight yield increase, with only 0.6 bu/ac between the highest and lowest rates. The treatment of seed-placed P and S resulted in a decline in yield as P rate increased, with yield losses of up to 2 bu/ac.

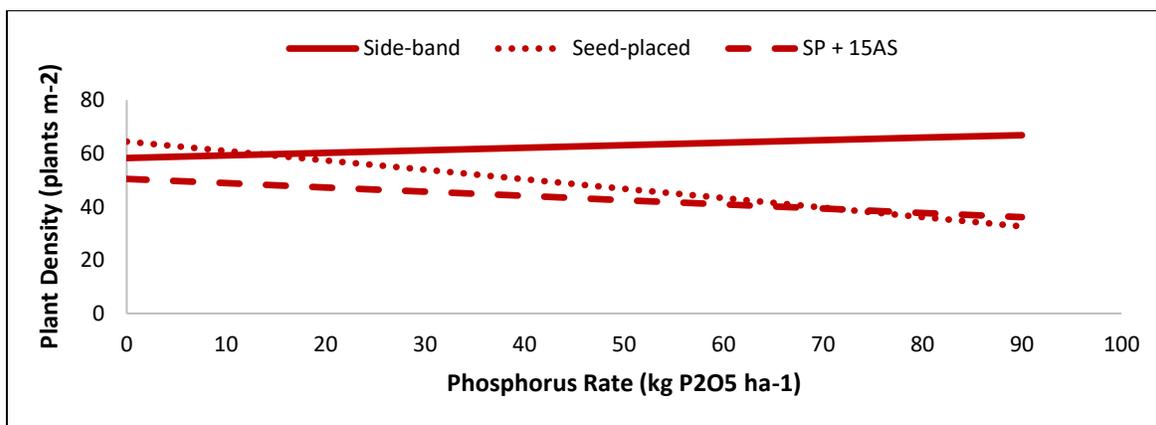


Figure 1. Phosphorus Rate and Placement Effect on Plant Density (plants/m²) Six Weeks after Seeding at Scott Combined over Three Years.

The full report is available on www.warc.ca. This project was funded by the Saskatchewan Canola Development Commission.