

Impact of Traditional and Enhanced Efficiency Phosphorus Fertilizers on Canola Emergence, Yield, Maturity, and Quality in Manitoba

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The objectives of this research are to: (1) determine the relative effects of traditional and enhanced efficiency fertilizers in terms of safe rates for seed-row placement, and effects on crop yield, crop maturity, and seed quality and (2) determine if canola cultivars differ in response to seed-placed P fertilizer.

In the first study, a no P control was compared to standard monoammonium phosphate (MAP), a polymer-coated controlled-release product (CRP) MAP product formulated for broadacre agriculture, Avail®-treated MAP designed to sequester antagonistic ions and reduce soil P reactions, liquid ammonium polyphosphate, Avail® liquid P, and Polyon®-coated MAP formulated for horticulture. Each of the P sources was applied at 10, 20, 40, and 80 kg P₂O₅/ha. A single 0 kg P₂O₅/ha treatment was included for a total of 25 treatments per site. Seedling damage occurred with high rates of uncoated P fertilizer, with the damage mainly occurring on a fine sandy loam (FSL) textured soil, but not on the clay loam textured soil. Both the CRP and Polyon®-coated product prevented seedling damage. Seed yield on the FSL soil increased with low rates of liquid P then decreased when rates were increased to 40 kg P₂O₅/ha or higher. Seed yields on the FSL tended to be higher with high rates of Avail® MAP than with the high rates of CRP or uncoated MAP.

In the second study, yellow- and black-seeded canola cultivars were seeded following the methodology described for the previous study. Yellow-seeded canola was slightly more prone to reduced emergence with seed-placed MAP than was the black-seeded cultivar. There appears to be a number of differences in the sensitivity and responsiveness of the black- and yellow-seeded canola cultivars to seed-placed P. Samples have been submitted for quality analysis.
MB-22