

Camelina production in Saskatchewan has risen to 5,000 acres in 2016 and in 2017 estimates are 8,000 acres. In order to reach this growing demand, camelina producers will need to increase production acres and maximize yields on pre-existing production acres. The objective of this demonstration is to investigate camelina responses to monoammonium phosphate (MAP; 11-52-0), rate and placement method and interactions between these two factors.

The demonstration was arranged as a randomized complete block design with four replicates at Scott in 2017. The treatments consisted of a factorial combination of 5 phosphorus (P) fertilizer rates and 3 placement methods to result in 15 treatments. Phosphorous was applied as monoammonium phosphate (11-52-0). Nitrogen and sulphur were applied as per soil test recommendation to achieve a 40 bu/ac. Nitrogen was balanced for the N supplied by the monoammonium phosphate (11-52-0) and ammonium sulphate (21-0-24

Plant densities measured at two and four WAE (weeks after emergence) indicated a significant response ($P=0.0004$ and $P=0.0083$) to fertilizer placement. Stand establishment tended to decline when phosphorus (P) was placed in close proximity to the seed. P rate did not significantly affect plant density at two WAE ($P=0.3467$) while it was significant at four WAE ($P=0.17$). Although at two WAE there was no significant effect, an underlying trend indicated that plant density decreased on average of 15% when rates exceeded 40 kg of P / ha. A similar trend also occurred at four WAE as plant populations declined with increasing rates of phosphorus.

The average plant density for the check was 144.2 plants m^{-2} and when phosphorus rates were 80 kg ha^{-1} plant density declined to 101.62 plants m^{-2} with a reduction of 30%. Based on the assumption that camelina will respond similarly to P as it does to available N, a yield response was anticipated when grown on nutrient deficient soils. However, grain yield was unaffected by P rate ($P=0.5802$), placement (0.4286) and any combination of these factors ($P=0.8496$) (Table 3). There was no yield response detected between the fertilized (20, 40, 60 and 80 kg P_2O_5 /ha) and non-fertilized treatments.

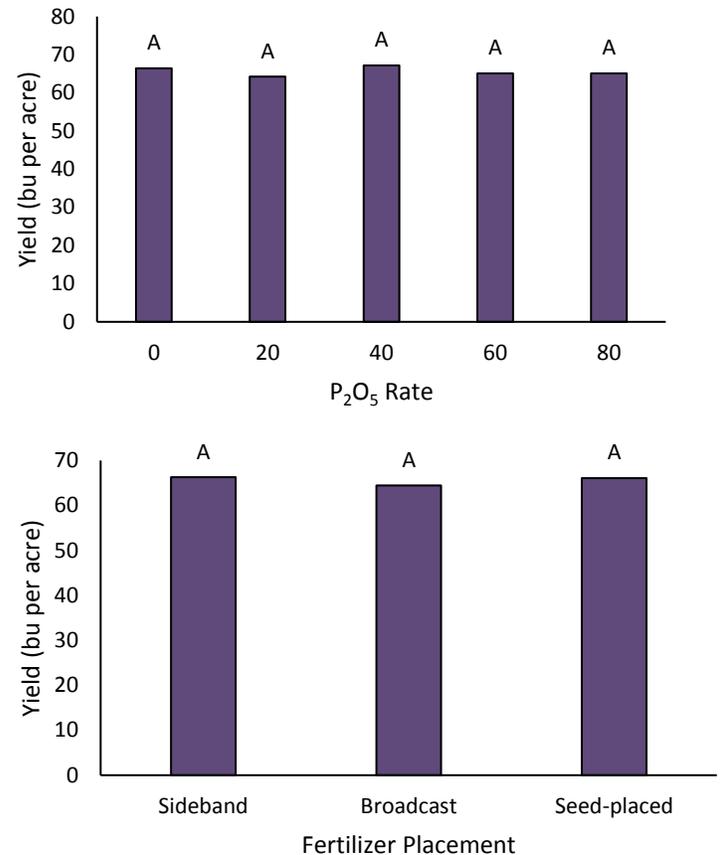


Figure 1. Yield response of Camelina with different phosphorus rates (a) and different fertilizer placement (b) at Scott in 2017.

The results of this demonstration indicate that P rates in excess of seed placed 20 kg/ ha will result in seedling damage and thus the current safe rate P recommendations for canola should be followed to reduce seedling damage. We recommend the evaluation of residual soil P contents to improve the decision-making process for P applications. Furthermore, we recommend side-banded P to reduce seedling damaged caused by fertilizer burn. Although there was no yield difference with application method, banding of P fertilizers is still the preferred method over broadcasting due to the immobile nature of P. Lastly, we recommend that further research should be conducted to conclusively determine P recommendations of camelina.

Full report at:

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