

Optimal Seeding Rate Based on Seed Size in Canola

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The Canola Council of Canada recommends that to reach maximum canola yield potential, the seeding rate should be sufficient to achieve a spring plant density of 5 to 8 plants/ft². In 2018, researchers in Saskatchewan conducted small-plot field trials to study the influence of seeding rate and seed size on hybrid canola productivity. The results showed that seeding rate had an effect on all crop response variables examined, and that the yield response was quite different between the two hybrids. Overall, the most economic and least risky seeding rate to achieve adequate plant population would be seed canola at or near the moderate seeding rate of 10 seeds/ft² and consider using larger seed lots or a slightly higher seeding density with relatively smaller seed lots.

The Canola Council of Canada recommends seeding canola at a sufficient rate to achieve a spring plant density of 5 to 8 plants/ft², which allows for in-season plant losses while maintaining the 4-5 plants/ft² population required to reach maximum yield potential. Variation in management factors, including seeding size, and hybrid, has been shown to influence the weight per area seeding rate required to achieve the recommended plant population density and optimize canola yield potential.

In 2018, researchers in Saskatchewan conducted small-plot field trials to study the influence of seeding rate and seed size on canola productivity at five locations including: Indian Head, Yorkton, Melfort, Scott and Outlook. The objectives of this study were to determine optimal seeding rate to achieve adequate plant populations and optimize yield under various environmental conditions in Saskatchewan; and to determine if the optimal seeding rate varies with seed size and/or hybrid.

For the study, two canola hybrids with contrasting herbicide tolerance traits, InVigor L233P and Pioneer 45M35, were compared at each location. Treatments included a comparison of two seed sizes for each hybrid, small and large, and at three different seeding densities of 5, 10, and 15 seeds per square foot. The same four commercial seed lots were used at each of the five trial sites. Several factors were measured at each site including spring plant density, maturity date, fall stubble density and seed yield.

The study results showed that seeding rate had an effect on all crop response variables that were measured, and the response often varied with seed size and/or hybrid. Emergence rates were very high at all trial locations in 2018, due to above-average temperatures during

the emergence period, and in-season mortality was minimal. For the two larger-seeded lots of each hybrid, the lowest seeding rate resulted in adequate plant population (>4 plants/ft²). However, for the small-seeded lots at the lowest seeding rate, lower emergence and survival rates resulted in marginally adequate final plant population for L233P and less than adequate plant population for 45M35. Maturity was also delayed with lower seeding rates. Overall, the moderate seeding rate of 10 plants/ft² achieved more than adequate plant populations for all combinations of hybrid and seed size.

The study results also showed that yield response was quite different between hybrids. For the hybrid L233P, there was no yield response to seeding rate or resulting plant population, and yield was not affected by seed size. However, the yield of hybrid 45M35 was significantly lower with a smaller seed lot, but optimized at the moderate seeding rate. Researchers noted that had emergence and survival rates been lower, they might have expected a greater yield penalty resulting from less than adequate plant population at the lowest seeding rate.

Overall, considering the differential response between the two hybrids examined, the most economic and least risky seeding rate to achieve adequate plant population would be to seed canola at or near the moderate seeding rate of 10 seeds/ft² and consider using larger seed lots or a slightly higher seeding density with relatively smaller seed lots. Producers should monitor emergence and/or survival rates on a field-by-field and yearly basis to determine typical or expected rates for their operation and management system. Producers who can ensure a high emergence rate and are willing to assume the risk of potential in-season plant loss may be able to use slightly lower seeding rates.