



## Canola response to row spacings and seeding rates

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Research shows that the highest plant densities and yields were produced at a narrow row spacing of 9 inches compared to those of 12, 18 and 24 inch spacings in a no-till production system. Increasing seeding rates of 2.8, 5.7 and 8.5 pounds per acre resulted in a linear increase in plant density with no difference in yield, likely because of good growing conditions that resulted in plant stand establishment in a range of 6 to 13 plants per square foot.

Optimizing canola yield and crop quality is influenced by interactions among factors such as agronomic practices, soil and environment. Under no-till production systems, information about row spacing, seeding rate and their interaction was not well-defined. While this research is almost 20 years old, it is foundational research that looked at optimum row spacing and seeding rates under no-till.

The objective of this study was to determine the effects of different row spacing and seeding rates on the response of two glyphosate-tolerant canola cultivars over 6 site-years in a no-till production system. Although the study also had sclerotinia stem rot as a focus, limited disease development occurred so the focus was only on canola agronomics.

The study was conducted at Melfort, Saskatchewan and Lacombe, Alberta over a three-year period from 2002 to 2004, under a no-till production system. For the trials, 4 row spacings were compared at 9, 12, 18 and 24 inches (23, 31, 46 and 61 cm), and 3 seeding rates of 2.8, 5.7 and 8.5 lbs/ac resulting

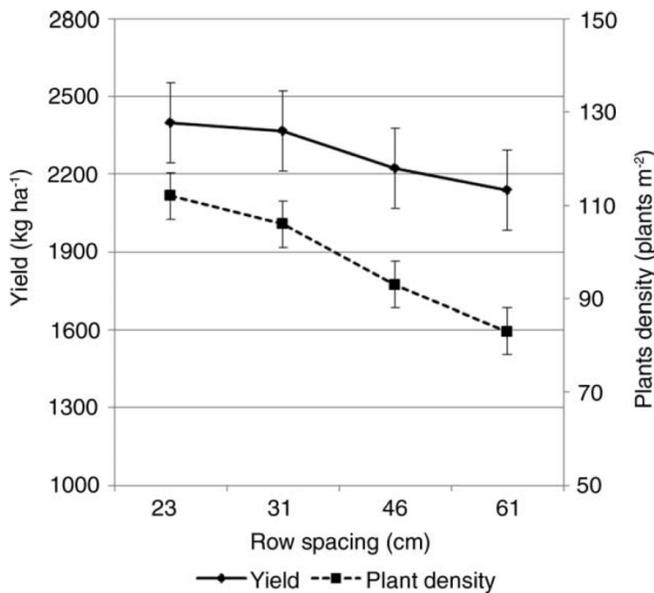
in 8.7, 17.3 and 26 seeds planted/ft<sup>2</sup> (3.2, 6.4 and 9.6 kg/ha, or 87, 173 and 260 seeds planted/m<sup>2</sup>). The treatments were compared with two glyphosate-tolerant canola (*Brassica napus*) cultivars, an open-pollinated and a hybrid.

A number of variables were measured during the study, including plant density, days from seeding to start of flowering (DTSF), days from seeding to the end of flowering (DTEF), days to maturity (DTM), yield, TSW, and the proportion of green canola seed (GS) in the harvest sample.

### Row spacing, plant density and yield

The results from the two locations were similar, with row spacing having an effect on both plant density and yield, with the effect being linear in both cases. At the wider row spacing, both plant density and yields decreased. Plant density decreased to 8.3 plants/ft<sup>2</sup> (83 plants per/m<sup>2</sup>) at the 24-inch row spacing compared to 11.2 plants/ft<sup>2</sup> (112 plants/m<sup>2</sup>) at the 9-inch row spacing. Yield was highest at the 9-inch row spacing at 43 bu/ac (2397 kg/ha) and decreased to 38 bu/ac (2138 kg/ha) at the 24-inch row spacing.

### Response of seed yield and plant density to row spacing



Source: Kutcher et al. 2013

In terms of seeding rates, the results showed that plant density decreased by 56% as the seeding rate decreased from 8.5 to 2.8 lbs/ac. However there was no associated decrease in yield. This result should be viewed with some caution. Adequate stand establishment of 6 plants/ft<sup>2</sup> at the

lowest seeding rate was still achieved – well within the Canola Council of Canada’s recommend stand establishment of 5 to 8 plants/ft<sup>2</sup>. This plant stand target is supported by a meta-analysis of canola plant stand densities that found canola growers should target 6 to 7 plants/ft<sup>2</sup> ([Hartman and Jeffrey. 2020](#)).

Wider row spacings and lower seeding rates can also increase the risk of poor stand establishment under poor growing conditions, reduce competitiveness with weeds, and lead to increased reliance on herbicides.

The results from the study indicate that in no-till production systems under conditions of adequate soil fertility, effective weed management, minimal disease pressure, and good flea beetle control, row spacings of 9 to 12 inches produced the highest plant densities and yields.

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H. R. Kutcher, T. K. Turkington, G. W. Clayton, and K. N. Harker (2013). Response of herbicide-tolerant canola (*Brassica napus* L.) cultivars to four row spacings and three seeding rates in a no-till production system. Canadian Journal of Plant Science,

<https://doi.org/10.4141/cjps2013-173>

Photo by Kelly Turkington: 18 inch row spacing, 3.2 kg/ha seeding rate (lowest of the three), RoundUp Ready Hybrid