# 1.4 Precise seed-to-seed spacing not necessary for canola

**KEY PRACTICE:** The key step in seed placement is to achieve the overall target population with some aspect of uniform distribution and depth. Precision tools to enhance seed spacing in the row provide little evident economic benefit.

**PROJECT TITLE, LEAD RESEARCHER:** "Seeding rates for precision seeded canola," 2012-14, Gazali Issah, Western Applied Research Corporation
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A general principle in nature is that uniform distribution within a plant community increases plant biomass and productivity compared with non-uniform distribution. This is because of the availability of resources such as light, soil water, and organic carbon. However, more uniform spacing of canola seeds in the seed row does not seem to improve seed survival or overall yield. The goal of seed placement is to achieve the overall target population with some aspect of uniform distribution. This study found that equipment used to provide more precise seed spacing down the row did not provide a benefit over a more basic metering system using the same openers.

The objectives of this experiment were: (1) to determine if the SeedMaster UltraPro canola roller produces more uniform canola seed placement than conventional rollers; and (2) to determine if more uniform plant density would allow growers to reduce canola seeding rates.

Treatments included seeding rates at 10, 20, 40, 80, 160 and 320 seeds per square metre applied with the traditional Valmar and SeedMaster's UltraPro roller. Field trials were conducted near Scott, Melfort, Redvers and Indian Head, SK in 2012, 2013 and 2014. The hybrid canola variety L150 was direct seeded at all locations in 2012 and 2013 on cereal stubble. In 2014 the variety L130 was seeded at all locations on cereal stubble. Seeding equipment varied between sites and row spacing ranged from 20 to 30 centimetres. Fertilizer was applied according to soil test recommendations, and herbicides and fungicides were applied as required. The plots were straight combined at Indian Head and Scott and swathed at Melfort.

Data collection included spring and fall seedling density and uniformity, days to maturity and seed yield.

Seeding rate was the only factor to significantly affect plant density, maturity and seed yield. There were generally no differences in plant density (in spring or fall), seed yield or maturity between the rollers at any level of seeding rate.

Average spring plant density was above the lower critical threshold of 50 plants per square metre with seeding rates ≥ 80 seeds per square metre. At individual site years, there were generally no significant differences in spring or fall plant density between the two rollers at each level of seeding rate, except at the higher rates at some locations.

There appeared to be more uniform seedling distribution (on average) with the UltraPro roller than with the Valmar at seeding rates from 10 to 80 seeds per square metre, but this did not translate to improvements in seed yield. Differences in uniformity generally disappeared at fall plant population assessment, likely due to the self-thinning nature of canola.

Average distance between seedlings was similar for both rollers at each level of seeding rate. There was a general decrease in variability (standard deviation) within plants with increased seeding rates.

Because the rollers provided such similar results, this study did not provide a good comparison to achieve the second objective. For a full summary of this report, go to www.saskcanola.com and look for "research project reports" under the Research banner. ●

## No clear yield advantage for more precise seed metering

| ROLLER | SEEDING RATE (seeds $m^2$) | SPRING PLANT DENSITY (plants $m^2$) | DAYS TO MATURITY | SEED YIELD (kg ha) | FALL PLANT DENSITY (plants $m^2$) |
|---|---|---|---|---|---|
| Valmar | 10 | $13^{e}$ | $99.7^{a}$ | $1873^{b}$ | $11^{g}$ |
| Valmar | 20 | $20^{de}$ | $99.3^{a}$ | $2292^{ab}$ | $19^{fg}$ |
| Valmar | 40 | $36^{de}$ | $97.9^{abc}$ | $2333^{a}$ | $31^{efg}$ |
| Valmar | 80 | $72^{cd}$ | $96.6^{bcde}$ | $2472^{a}$ | $57^{cde}$ |
| Valmar | 160 | $136^{b}$ | $95.07^{de}$ | $2464^{a}$ | $91^{bc}$ |
| Valmar | 320 | $212^{a}$ | $94.4^{e}$ | $2467^{a}$ | $139^{a}$ |
| Ultra | 10 | $12^{e}$ | $99.4^{a}$ | $1883^{b}$ | $12^{g}$ |
| Ultra | 20 | $17^{e}$ | $98.8^{ab}$ | $2154^{ab}$ | $16^{fg}$ |
| Ultra | 40 | $36^{de}$ | $97.2^{abcd}$ | $2421^{a}$ | $32^{efg}$ |
| Ultra | 80 | $60^{de}$ | $97.2^{abcd}$ | $2517^{a}$ | $52^{def}$ |
| Ultra | 160 | $118^{bc}$ | $95.3^{cde}$ | $2519^{a}$ | $88^{bcd}$ |
| Ultra | 320 | $193^{a}$ | $94.5^{e}$ | $2460^{a}$ | $120^{ab}$ |

Values that share a letter (a, b, c, d, e) are considered statistically equivalent.