

Reducing Risks to Canola Establishment

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KEY MESSAGES

- In 2025, sowing shallow contributed to significantly higher canola establishment comparative to sowing deeper.
- Altering press-wheel pressure and the addition of soil wetter did not provide any added benefit or reduce canola establishment, regardless of sowing depth.

AIM

To understand and limit potential risks of sowing canola early. Specifically, does sowing deeper with higher press-wheel pressure reduce canola establishment and can the addition of soil wetter improve canola establishment under dry sowing conditions in April.

BACKGROUND

Previous GRDC investment into early sown canola and its profitability showed increased yield potential when sowing early. In recent years, growers have been sowing canola earlier to take advantage of autumn rainfall events rather than waiting for traditional sowing times. However, sowing early also comes with increased risks of poor establishment. In this trial the effect of shallow (1 cm) and deep (3 and 6 cm) placement of seed was explored in addition to the effect of press-wheel pressure (high at 12.5 kg or low at 5.93 kg) and soil wetter (+ or – 3 L/ha) on canola establishment when sown dry in early April.

TRIAL DETAILS

Trial location	CR & R Cail & Sons, Nugadong
Plot size & replication	10 m x 2 m x 4 replications
Soil type	Loam
Paddock rotation	2024 chemical fallow, 2023 wheat, 2022 barley
Sowing date	09/04/2025
Sowing rate	3.3 kg/ha Regiment RR Canola
Fertiliser	09/04/2025 Macro Pro Extra (with Impact) 100 kg/ha + Urea 60 kg/ha 17/06/2025 UAN 20 L/ha 03/07/2025 UAN 150 L/ha
Trial management	17/06/2025 Glyphosate 470 g/L Herbicide 0.5%/ha, Soyal phospholipids 490 g/L Herbicide 1.2 L/ha 01/08/2025 Bixafen 75 g/L + Prothioconazole 150 g/L Fungicide 500 mL/ha, Gamma-cyhalothrin 150 g/L Insecticide 30 mL 12/09/2025 Glyphosate 470 g/L Herbicide 270 mL/ha 01/10/2025 Gamma-cyhalothrin 150 g/L Insecticide 30 mL/ha
Growing season rainfall	265.6 mm
Harvest date	03/11/2025

TREATMENTS

Treatment	Seeding Depth	Press-Wheel Pressure (High = 12.5 kg, Low= 5.93 kg)	+ or – SE14 (@3 L/ha)
1	1 cm	High	+
2	1 cm	High	-
3	1 cm	Low	+
4	1 cm	Low	-
5	3 cm	High	+
6	3 cm	High	-

7	3 cm	Low	+
8	3 cm	Low	-
9	6 cm	High	+
10	6 cm	High	-
11	6 cm	Low	+
12	6 cm	Low	-

SOIL COMPOSITION

Depth (cm)	pH (CaCl ₂)	Col P (mg/kg)	Col K (mg/kg)	S (mg/kg)	N (NO ₃) (mg/kg)	N (NH ₄) (mg/kg)	EC (ds/m)	OC (%)
0-10	6.0	24	77	6.1	32	1.2	2.0	0.78
10-30	5.5	22	41	7.3	27	1.1	1.7	0.73

RESULTS

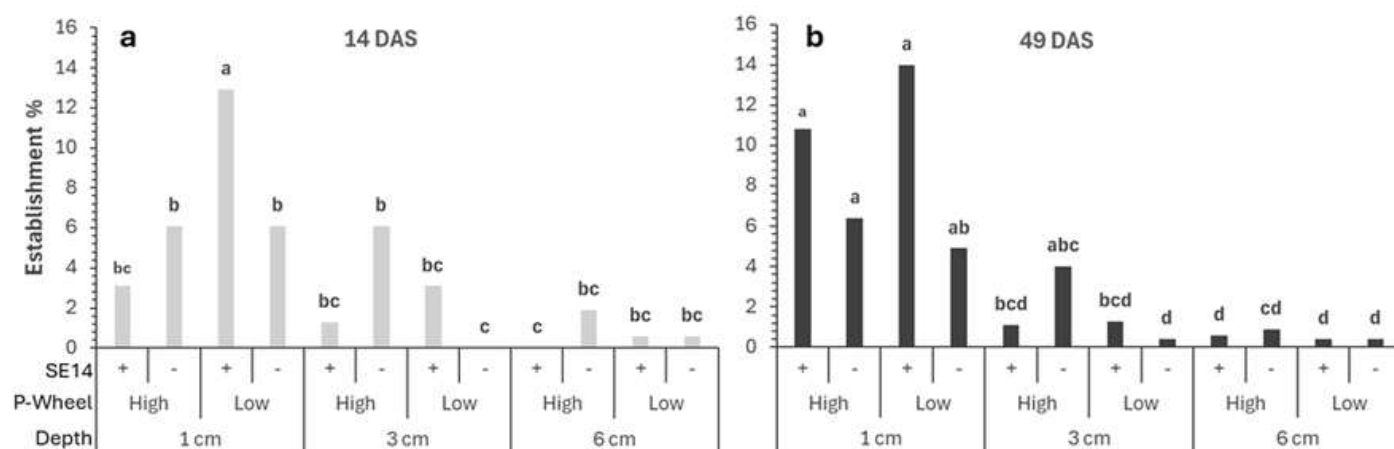


Figure 1. Comparison of canola establishment rates between treatments at 14 (a) and 49 (b) days after sowing. Letters represent significant differences between treatments, for each timing.

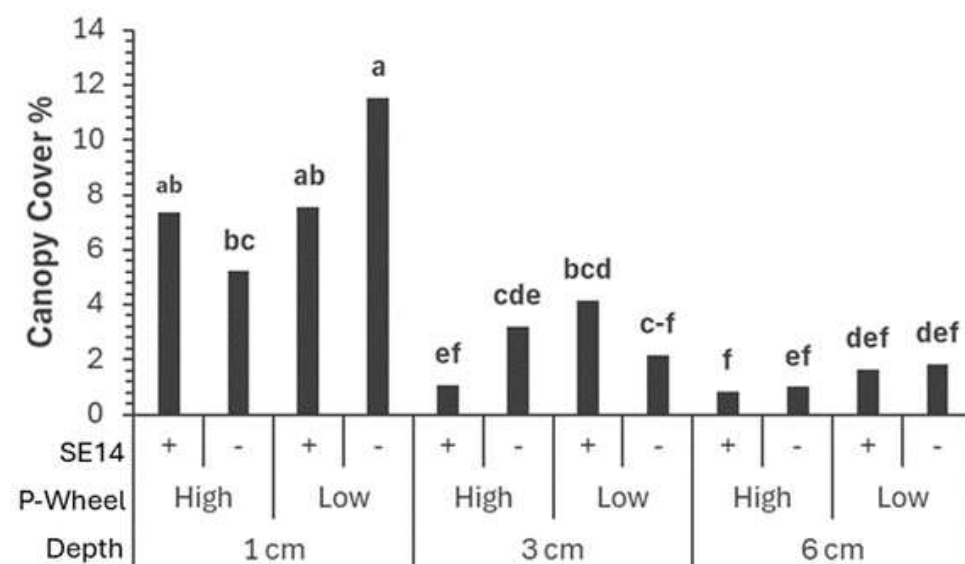


Figure 2. Percent canopy-cover 49 days after sowing (16th June), calculated from drone imagery. Letters represent significant differences between treatments.

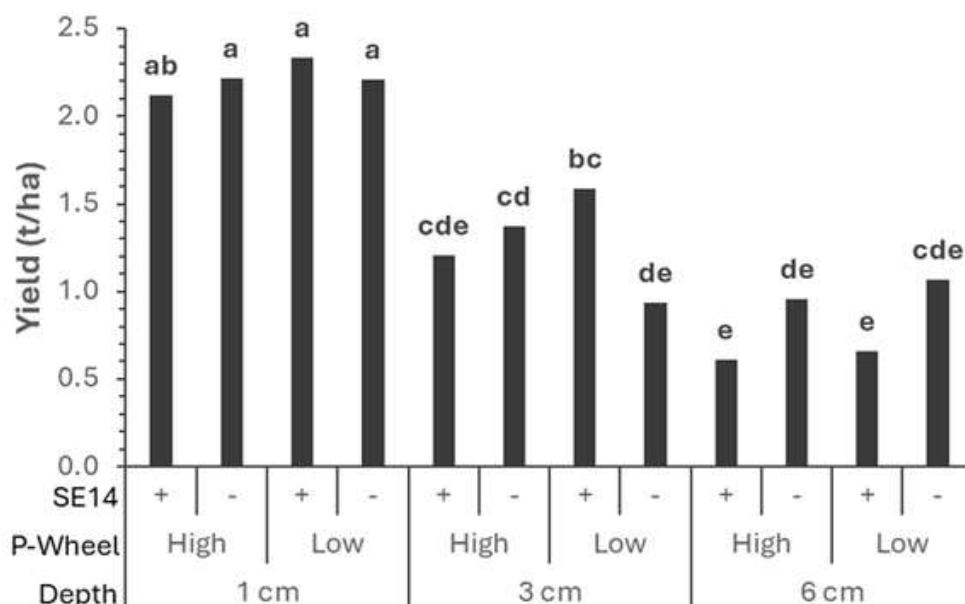


Figure 3. Yield (t/ha) across treatments.

DISCUSSION

Following a dry summer, rainfall in the lead up to seeding was 16.5 mm during mid-March, and a further 10 mm in the week before seeding. As a result, conditions at sowing were a dry surface, with marginal moisture beginning at 3-4 cm. In the week after sowing, the site received 1.5 mm, with a further 9 mm approximately 2 weeks after sowing.

Over-riding all comparisons between treatments was poor establishment overall, with no treatments achieving above 20% establishment compared to the target plant density of 40 plants/m². Comparison between treatments showed sowing depth was the over-riding factor influencing emergence and establishment. Moisture conditions are the major influencing factor. At seeding, moisture was observed at 3 cm and 6 cm, which would have been considered marginal for seed imbibition, germination and emergence. The minor influence of rainfall following seeding may have reached these depths, but energy was inadequate for emergence. In contrast, sowing at 1 cm may have been into dry soil, with no germination initiated until post seeding rain. Although establishment was significantly great in these treatments compared to deeper sowing, actual establishment was poor – particularly compared with the surrounding commercial canola crop.

Some minor improvement in canola density was recorded at subsequent assessments 49 DAS, however the relationship between treatments remained similar. All treatments sown at 6cm recorded a canola density of less than 2 plants/m² with several plots recording zero establishment. Canopy cover interpreted from drone imagery reflected plant count data – shallow sown canola showing 5-12% coverage compared to <2% coverage in plots sown at 6 cm.

In this trial, soil wetter (SE14) applications had no significant effect on canola establishment. This may reflect existing residual soil moisture but is more likely to indicate adequate soil wettability. Furthermore, press wheel pressure was not a significant influencing factor on establishment regardless of seeding depth. Although soil moisture was evident below 3 cm, the soil surface was dry which limit the soils capacity to compact and “crust” over therefore impacting emergence.

Harvest data reflected early in season assessments, with shallow sown canola yielding significantly higher compared to 3 cm and 6 cm seeding depths. This trial is an excellent example of canola’s capacity to compensate for low plant densities, with the shallow sown treatments all yielding above 2 t/ha. While canola establishment was severely impacted in response to deeper sowing, most of these treatments yielded 1 t/ha or greater. These compensatory responses are attributed to excellent rainfall from July onwards, combined with a cool finish.

Overall, predicting canola establishment in low-rainfall areas of the northern wheatbelt creates challenges. Acknowledging high risk activities, and taking steps to limit the damage if conditions aren't favourable, is the sensible move. But this is difficult! Canola is inherently a difficult crop to manage prior to establishment – seed is small, epigeal (pushes seed to surface), and new research suggests it can imbibe at soil moistures below wilting point. However, once established, canola is particularly hardy and will compensate for early season weaknesses!

ACKNOWLEDGMENTS

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PEER REVIEW

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