

Economics of Late Sown Crops

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KEY MESSAGES

- Vixen wheat provided the highest total return in this trial.
- Late June-sown canola yielded significantly less than mid-June sown canola.
- No differences in yield for cereal and legume crops between the two sowing times.
- Grain quality parameters showed only small differences between sowing times, with overall grain quality broadly similar at harvest.

AIM

To improve understanding of the performance and profitability of different crops and short-season varieties when sown in June.

BACKGROUND

Seasonal variability and delayed season breaks are becoming increasingly common across Western Australian grain-growing regions. Combined with large seeding programs, this often results in sowing extending later into June, increasing exposure to marginal sowing conditions and elevating production risk. In 2024 the break of the season did not come until the end of May, and coming off a dry 2023, there were concerns around spending too much up front on things like hybrid canola seed and fertiliser, potentially increasing financial pressures. This led to some uncertainty around sowing decisions, particularly around what to sow post the break in June. The 2024 season finished well and some growers observed that canola germinating in June, was just as profitable as wheat germinating in June. Whilst this was likely aided by a soft finish, it warranted further investigation, hence this project was instigated by the Mingenew-Irwin Group for the 2025 season.

To reflect common late-sowing scenarios, the trial included two times of sowing. The first time of sowing (TOS 1) was sown on 16th June into a drying soil profile following the seasonal break on 30th May. The second time of sowing (TOS 2) was sown on 26th June after a 27 mm rainfall event on 23rd June. Phenology and establishment data was taken throughout the year as well as harvest data to ascertain the risk profile of late sowing.

The trial was located at the Liebe Group Main Trial Site at Nugadong and conducted in collaboration with the Mingenew-Irwin Group, with funding provided by GRDC. It forms part of a broader body of work aimed at improving grower confidence when managing delayed sowing under increasingly variable seasonal conditions.

TRIAL DETAILS

Trial location	CR & R Cail & Sons, Nugadong
Plot size & replication	10 m x 1.52 m x 3 replications
Soil type	Loam/Loamy Sand
Paddock rotation	2022 Buff barley, 2023 Havoc wheat, 2024 chemical fallow
Sowing date	TOS 1 - 16/06/2025 TOS 2 - 26/06/2025
Sowing rate	1.75 kg/ha Emu, 2.32 kg/ha PY323G, 80 kg/ha wheat, 90 kg/ha barley, 100 kg/ha lupin, 100 kg/ha field pea
Fertiliser	Pre: 110 kg/ha MacroPro Extra with Impact (canola and legumes), 110 kg/ha MacroPro Extra with Uniform (wheat), 100 kg/ha urea (wheat and canola)
Trial management	16/06/2025: 2 L/ha Weedmaster DST, 2 L/ha Treflan, 800 mL/ha Chlorpyrifos, 100 mL/ha Bifenthrin (all treatments), plus 118 g/L Sakura, 200 mL/ha Voraxor (cereal only), 1 L/ha Rustler (canola and legumes only)
Growing season rainfall	224.2 mm (from 16/06/2025)
Harvest date	03/12/2025

TREATMENTS

Crop Type & Variety
Emu Canola
PY323G Canola
Vixen Wheat
Buff Barley
Jurien Lupin
Gunyah Field Pea

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	5.5	27	96	11.3	31	2	0.091	0.66
10-20	5.3	12	55	13.4	19	<1	0.055	0.23
20-30	6	3	33	10.7	23	1	0.057	0.10

*Soil tests taken in July

RAINFALL

The total rainfall at the main trial site in 2025 was 315.25 mm, with a growing season rainfall from TOS 1 (16th June) of 224.2 mm.

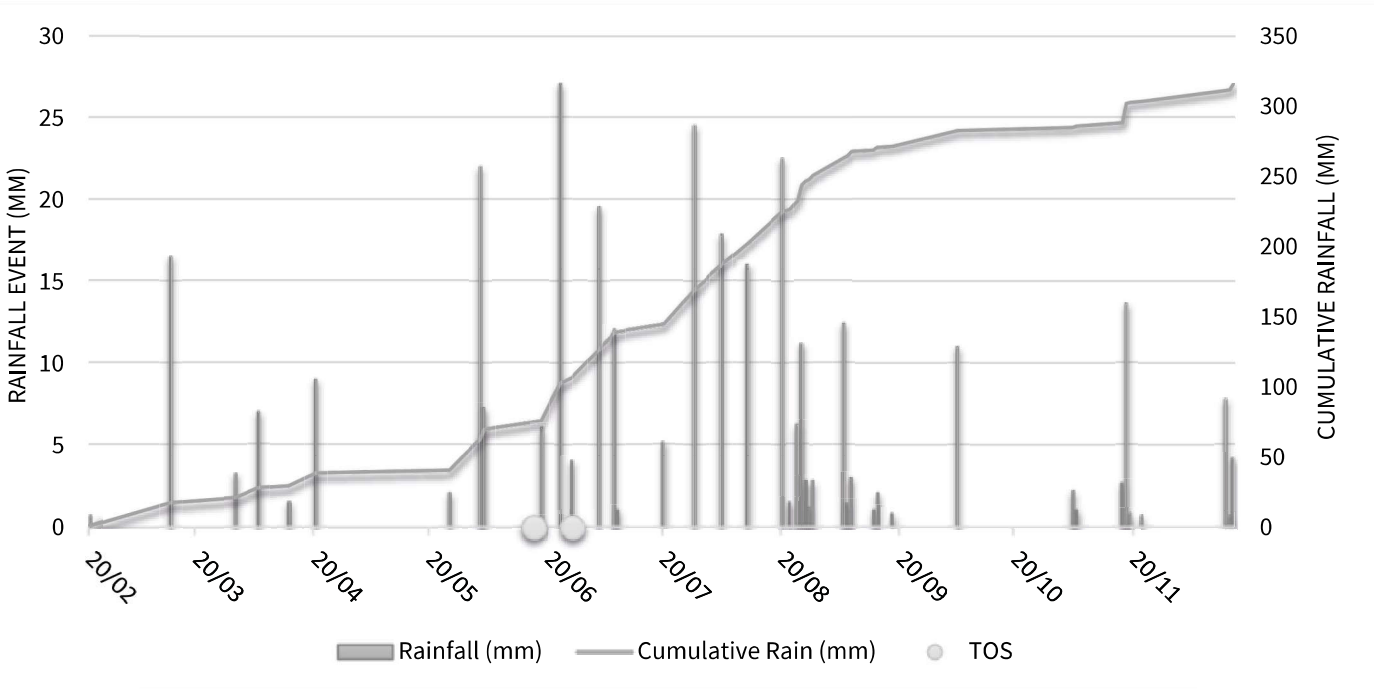


Figure 1. Rainfall data recorded by the electronic rain gauge at the main trial site, showing daily rainfall and cumulative seasonal rainfall, with the two times of sowing indicated.

RESULTS

Crop Establishment

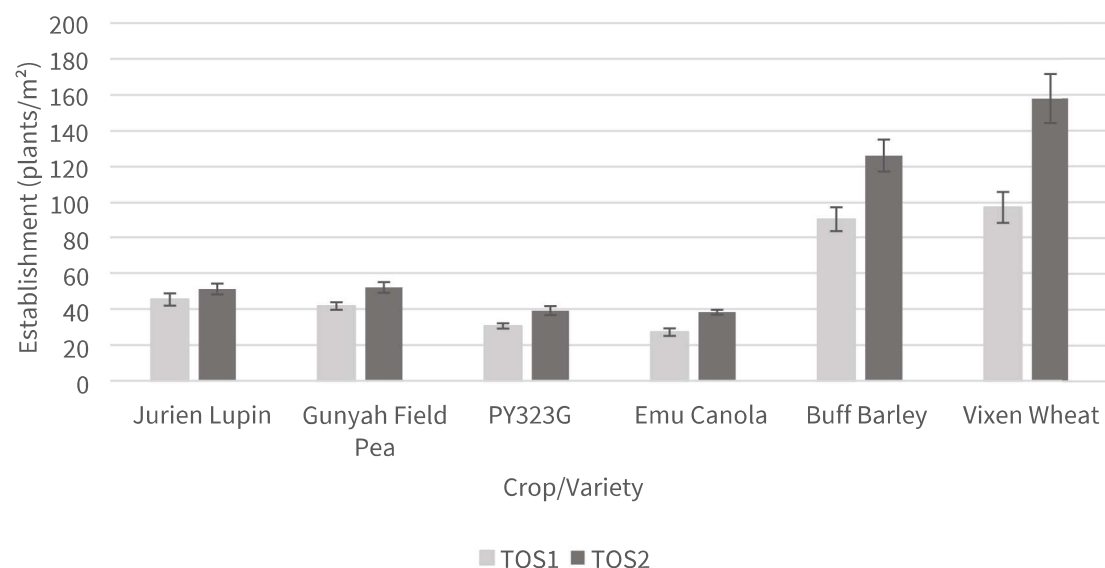


Figure 2. Plant establishment (plants/m²) by crop type for TOS 1 (16th June) and TOS 2 (26th June).

Establishment was consistently higher at TOS 2 than TOS 1 across all crop types, with the largest differences observed in canola and the smallest in the legumes.

Yield

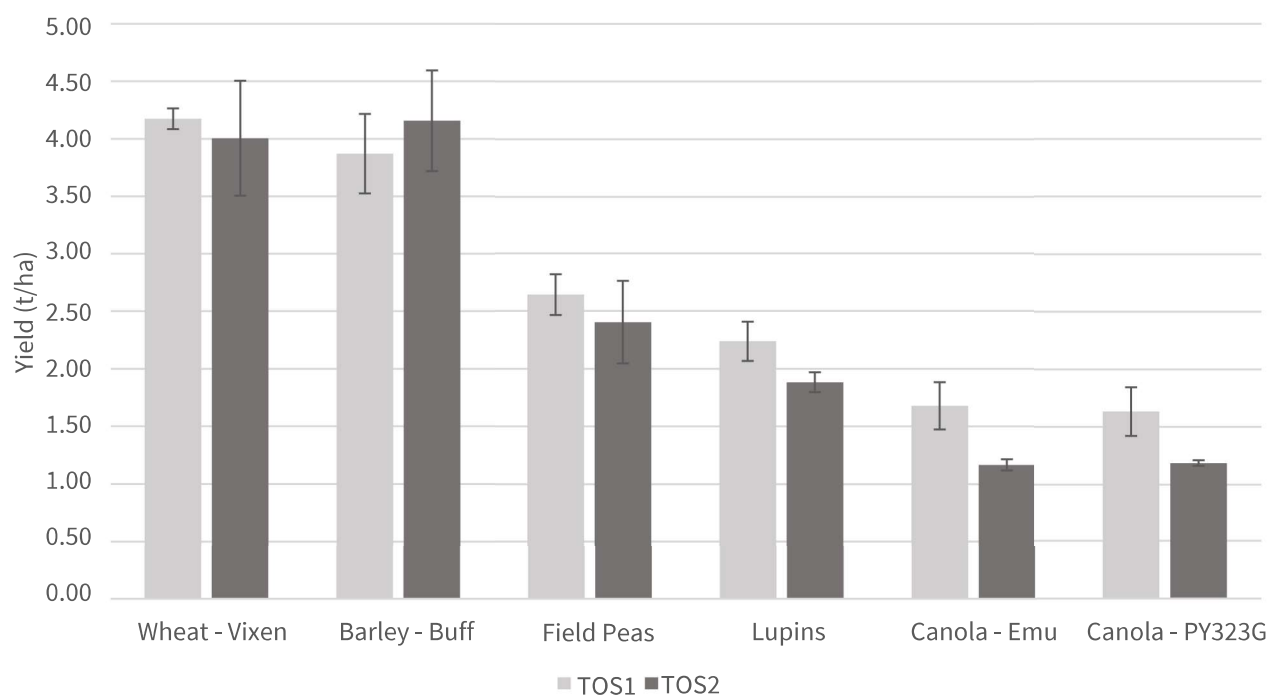


Figure 3. Yield (t/ha) by crop by time of sowing. TOS 1 was sown on 16th June and TOS 2 was sown on 26th June.

A one-way ANOVA was completed for each separate crop type to determine statistical differences between times of sowing. There were no significant differences between times of sowing for wheat, barley, field peas or lupins, however canola was significantly lower at TOS 2 ($p = 0.005$).

*Grain Quality***Table 1.** Grain quality results from all crops for each time of sowing and Nugadong.

Crop Variety	Protein		Screenings		Oil	
	TOS1	TOS2	TOS1	TOS2	TOS1	TOS2
Buff Barley	12.03	12.77	6.23	11.69		
Vixen Wheat	11.13	11.87	7.45	9.69		
Lupins	32.67	33.37				
Field Peas	23.80	24.17				
Emu Canola	23.20	23.63			44.80	43.43
PY323G Canola	21.77	26.13			45.17	43.07

A one-way ANOVA was completed for each separate variety to determine statistical differences between times of sowing. There were no significant differences between times of sowing for Canola oil %, or screenings in Wheat or Barley. There were also no differences between protein for any crop type except PY323G canola who had significantly higher protein in TOS2 ($p = 0.011$).

COMMENTS

Time of sowing 1 (TOS 1) was sown on 16 June into marginal conditions and a drying soil profile following the seasonal break on 30 May, prior to 33.2 mm of rainfall received between 18–20th June. Time of sowing 2 (TOS 2) was sown on 26th June following a 27 mm rainfall event on 23rd June and ahead of a smaller 4 mm event. Differences in crop development were observed between sowing times through to August, after which crops sown at late June began to catch up to those sown earlier, particularly in the cereals.

Across all crop types, late June sown crops recorded higher plant densities than mid-June sown crops, reflecting more favourable establishment conditions at sowing (Figure 1). Differences in establishment between sowing times were most pronounced in the cereal and canola treatments. Lupins and field peas established well, while Buff barley and Vixen wheat recorded lower establishment overall, especially in TOS 1.

Canola and legume crops sown at TOS 1 remained at more advanced growth stages entering September compared with TOS 2. In contrast, cereal crops sown at TOS 2 largely caught up to the growth stages of TOS 1 during August. Emu canola flowered earlier than PY323G, with PY323G still producing buds around 1st September. High aphid pressure was observed in the canola plots in late September, along with a small amount of disease present in the cereals.

Overall, the later time of sowing (TOS 2) had a significant negative effect on canola yield (Figure 2) under the conditions experienced in this season, while no statistically significant yield differences were observed between sowing times in the cereal or legume crops.

Grain quality showed only small differences between times of sowing across all crop types (Table 1). Protein generally trended higher across all crop types with later time of sowing, although this was only statistically significant for PY323G canola. Canola oil trended lower with later sowing time, highlighting the inverse relationship between protein and oil. Screenings were high across the cereal crops perhaps reflecting the June sowing time.

Total Return

Table 2 outlines the potential total return for each crop type based on yield and grain pricing. Whilst this table is not a full gross margin analysis, it does highlight that in 2025 good returns can still be made on late sown canola. However, Vixen wheat was still the highest returning crop in this trial. Generally, canola is a more expensive crop to grow than wheat and it should be noted that the canola yield in this trial did reduce dramatically from early June to late June, highlighting the risks involved in sowing canola in June. The softer finish in 2025 did support canola yields and result may have been vastly different in a tighter finish.

Table 2. Total Return of each crop type in June. Yields for Wheat, Barley, Lupins and Field Peas are average yields across both times of sowing as there were no significant yield differences. Canola yields have been separated out into each time of sowing as differences were significant. Wheat, Barley, Lupins and Canola prices based on web prices quoted 19/01/2025 (Grain Brokers). Field Peas are an estimated price.

Crop Variety	Yield (t/ha)	Estimated Grade	Grain Price (\$/t)	Total Return (\$/ha)
Vixen Wheat	4.09	AUH	303	1239.27
Field Peas	2.52	FP	473	1191.96
Emu Canola TOS1	1.68	CAG1	695	1167.60
Buff Barley	4.01	Fed1	288	1154.88
PY323G Canola TOS1	1.63	CAG1	695	1132.85
PY323G Canola TOS2	1.19	CAG1	695	827.05
Emu Canola TOS2	1.17	CAG1	695	813.15
Lupins	2.06	LUP1	338	696.28

ACKNOWLEDGEMENTS

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REFERENCES

1. Grain Brokers. (2025, 01 19). Daily Grain Pricing Update. Perth, WA.

PEER REVIEW

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