

The Impact of Stubble Height on Cropping Systems in the Western Region

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KEY MESSAGES

- The 2025 lupin crop showed no statistically significant differences between stubble height and seeding system treatments for soil moisture or yield.
- 2025 results demonstrate that high-residue systems can be implemented in lupins without compromising yield, but that yield advantages are not consistent across crop types or seasons.

AIM

To provide growers with the knowledge and understanding of how differing stubble retention approaches contribute value to their farming systems, enabling them to weigh the risks and rewards of each approach and make the best management decision for their goals.

BACKGROUND

Over the past four years, the Liebe Group has led research investigating how stubble height and seeding system combinations influence soil moisture, crop establishment, yield and overall system performance in the central Wheatbelt. The work forms part of the GRDC-funded project “The Impact of Stubble Height on Cropping Systems in the Western Region”, delivered in collaboration with Stirlings to Coast Farmers, Facey Group, the Corrigin Farm Improvement Group, DPIRD, Farmanco and Charles Sturt University. The project set out to provide practical, evidence-based insights for growers on how stubble and seeding options can influence both agronomic outcomes and operational efficiency, with a focus on comparing the traditional draper front and tyne seeding setup to the emerging strip and disc system.

The Liebe Group site was first established at Maya in 2021, where varying stubble height treatments were implemented during harvest to compare how different residue loads performed in the following crop. Sowing into the heavier residue proved challenging, leading to the inclusion of a stubble-crunching treatment to help the disc seeder operate effectively. Despite the added complexity and early issues with hair-pinning, the system showed early promise in maintaining ground cover and reducing early weed pressure. The following year, the trial was relocated to the Hirsch family property at Bunjil, where the research has since continued through a mix of seasons to explore how residue height affects soil moisture, crop growth and overall system practicality under local conditions.

Across the four years, the trial has built understanding of how stubble height influences both soil and system function. There has been a consistent trend towards higher soil moisture levels in the strip and disc treatments, supporting the idea that taller residue can reduce evaporation and improve water infiltration.

After 3 seasons of wheat, the site has been sown to lupins in 2025. The lupins were sown with both discs and tynes, as per the treatment plan, however harvest was completed with a draper front only.

TRIAL DETAILS

Trial location	BA & JM Hirsch, Bunjil
Plot size & replication	36.6 m x 1000 m (1 strip) x 4 replications
Soil type	Sandy loam
Paddock rotation	2021 lupins, 2022 wheat, 2023 wheat, 2024 wheat, 2025 lupins
Sowing date	21/05/2025
Sowing rate	70 kg/ha Jurien Lupins
Fertiliser	02/04/2025: 100 kg/ha Super phosphate, 100 kg/ha Muriate of Potash 22/05/2025: 40 L/ha UAN

Trial management

20/05/2025: 2 L/ha Glyphosate, 0.5 kg/ha Diuron, 0.6 kg/ha Propyzamide 900, 0.78 kg/ha Simazine 900
01/07/2025: 0.1 kg/ha Butroxydim, 1.5 L/ha Clethodim 240
08/08/2025: 0.2 kg/ha Metrabuzin, 0.2 L/ha Diflufenican

Growing season rainfall

291 mm (May - Oct)

Harvest date

13/11/2025

TREATMENTS

1	Draper Front + Tyne Seeder
2	Stripper Front + Disc Seeder
3	Draper Front + Disc Seeder

LATHAM MONTHLY RAINFALL (MM)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2025	0.0	7.8	11.0	11.0	22.8	68.8	56.0	100.4	23.0	20.0	22.0	11.6	354.4

SOIL COMPOSITION - Pre-seeding 2025

Treatment	Depth (cm)	pH (CaCl ₂)	Col P (mg/kg)	Col K (mg/kg)	N (NO ₃) (mg/kg)	N (NH ₄) (mg/kg)	EC (ds/m)	OC (%)
Draper Front + Tyne Seeder	0-10	6.0	35.5	93.75	23.25	<1	0.09	0.48
	10-30	4.9	22.75	36.5	3.5	<1	0.0405	0.185
Stripper Front + Disc Seeder	0-10	6.175	30.75	74.5	24.25	<1	0.10	0.52
	10-30	5.025	20.5	36.0	3.75	<1	0.032	0.195
Draper Front + Disc Seeder	0-10	6.1	33.25	100.0	24.25	<1	0.11	0.47
	10-30	5.375	22.5	45.0	3.5	<1	0.027	0.225

RESULTS

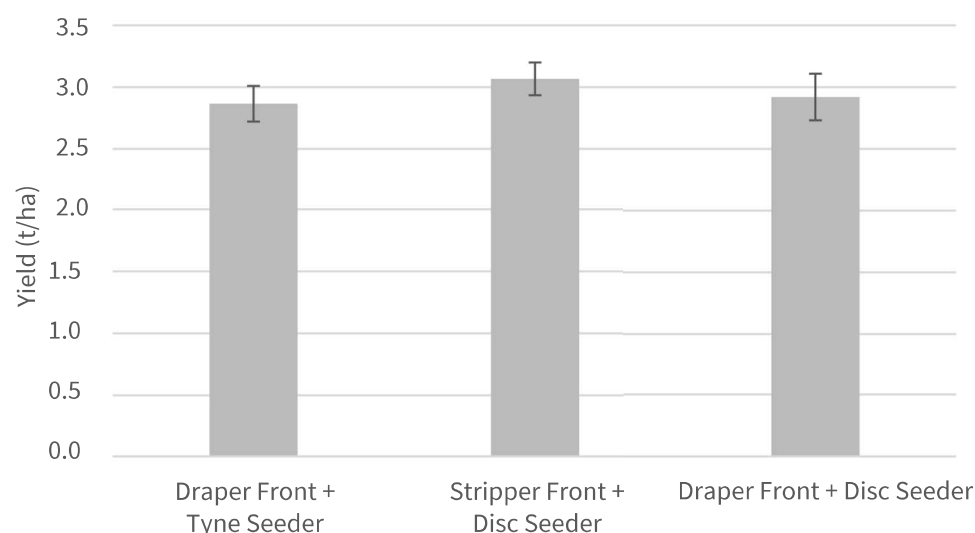


Figure 1. Average Lupin grain yield (t/ha) for 2025 at Latham.

There were no statistically significant differences ($p = 0.68$) in yield between treatments in 2025.

COMMENTS

Grain yield was broadly similar across all treatments, with only minor numerical differences observed. This contrasts with the 2024 wheat results, where the strip and disc system produced a significantly higher yield under favourable seasonal conditions. The absence of a clear yield response in lupins highlights that benefits observed in cereals are not necessarily replicated across all crop types and seasons, however may also be a result of a favourable season and soft finish.

There was no observable differences in soil moisture content between treatments (data not shown) in 2025. Further measurements of moisture have been conducted post-harvest and analysis will be presented in a future Liebe Group newsletter.

PEER REVIEW

Chris O'Callaghan, Liebe Group

ACKNOWLEDGMENTS

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FURTHER READING

Strip & Disc Research Summary: Scan QR code to view.



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