

Nitrogen Recovery Under Various Legume Strategies

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Aim
This demonstration aims to investigate long-term gross margins and nitrogen recovery under various legume strategies in canola and subsequent cereal crops.

Background
The cultivation of grain legumes provides nutritious food, improves soil health and reduces nitrogen fertiliser in farming systems. Burgeoning global populations and incomes, improving market access, and our geographic advantage are forecast to significantly increase domestic and international demand for Western Australian grain legumes. However, grain legumes currently contribute in a small and diminishing way to the profitability of Western Australian farming systems. In the Liebe Group region, grain legumes in general have declined in popularity due to issues around weed control, performance in acid soils and profitability when compared to alternative break crops such as canola.

This trial is a farmer-scale demonstration part of GRDC investment into improving the adoption of grain legumes in Western Australia. This trial involves farmer-size strips of lupin, brown manure lupin, brown manure vetch and fallow, which were sown in 2023, followed by canola in 2024 and a cereal crop in 2025.

Trial Details

Trial location	BA JM Hirsch, Bunjil
Plot size & replication	12m x 600m x 2 replications
Soil type	Sandy loam
Paddock rotation	2022 cereal, 2021 canola, 2020 lupin
Sowing date	07/05/2023 lupin, 08/05/2023 vetch
Sowing rate	40 kg/ha vetch, 60 kg/ha Jurien lupin
Fertiliser	N/A
Herbicides, Insecticides & Fungicides	N/A
Harvest date	25/10/2023

Treatment

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1	Lupins (grain)
2	Brown manure lupin
3	Brown manure vetch
4	Chemical fallow

Results
Treatment 1, lupins (grain) yielded on average 0.3 t/ha in 2023.

Comments
The difference in yield of the subsequent crop seeded over the four treatments will help farmers understand potential rotational strategies, by determining which are most effective and profitable. Data collection in 2024 will include soil sampling, plant tissue sampling and yield.

Acknowledgments
Thank you to Dylan Hirsch for hosting and implementing the trial. This trial is part of a GRDC investment into grain legume extension being led by the Grower Group Alliance.

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