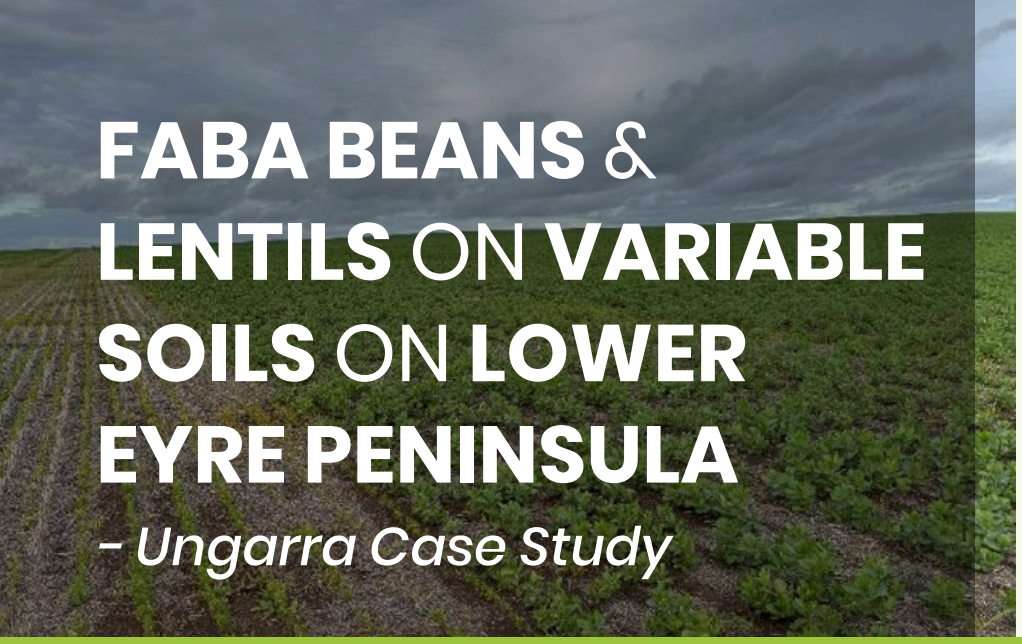


FABA BEANS & LENTILS ON VARIABLE SOILS ON LOWER EYRE PENINSULA

- Ungarra Case Study

AIR EP
Ag Innovation & Research
Eyre Peninsula

THE PROJECT

This project "Break Crop Suitability Across Landscapes: Stage 2" was funded by the SA Drought Hub. A multi-regional approach was led by Upper North Farming Systems (UNFS) and undertaken in partnership with Agricultural Innovation and Research Eyre Peninsula (AIR EP). Case studies spanning three farming groups and four node regions were delivered in 2024-2025.

BACKGROUND

Managing break crops has long been a balancing act for growers on the Eyre Peninsula. Break crop options offer significant benefits (e.g. price potential, nitrogen fixation, cereal diseases, fertility and grass weed control), but success is highly dependent on seasonal conditions and landscape variability. Other risks include limited end-use markets, fragile stubble and reduced ground cover. In low rainfall and variable environments, this makes break crop selection and subsequent management complex.

Pulses are a favoured break crop on EP as they fix nitrogen, support cereal rotations and improve profitability. The main pulse types grown are faba beans (preferred in the medium to high rainfall zones), peas, lupins and lentils. The area of lentil crops on Eyre Peninsula has increased significantly in recent years, especially in low rainfall zones.

AIMS:

To highlight the potential benefits and risks of incorporating break crops, in this case faba beans and lentils, across a range of soil types and growing environments.

KEY FINDINGS AT UNGARRA:

- Lentils were able to establish on variable acidic and gravelly soils, showing they may be a possible break crop option in better-drained parts of the paddock.
- Faba beans were the more consistent option across the paddock, producing stronger yields and more reliable gross margins than lentils under the 2025 seasonal conditions.
- Waterlogging caused lentil plant death even in the dry season of 2025 - probably due to high rainfall in July.

MAIN CASE STUDY

GROWER:
Isaac Telfer

AREA:
Ungarra, Lower Eyre Peninsula

AVERAGE RAINFALL:
418mm annual;
320mm
growing season.

OPENING RAINFALL:
28 May 2025.

ROTATION:
Break crop phase after wheat

THE TELFER ENTERPRISE:

This farm has usually been sown to faba beans as a break crop. The Telfers are trying to see if lentils could be an alternative break crop option for this block.

Isaac was particularly interested in seeing how lentils would perform on a silty gravel acidic soil type, as this is where faba beans have usually been grown.



Isaac with his daughter Hazel.

WHAT WAS DONE:

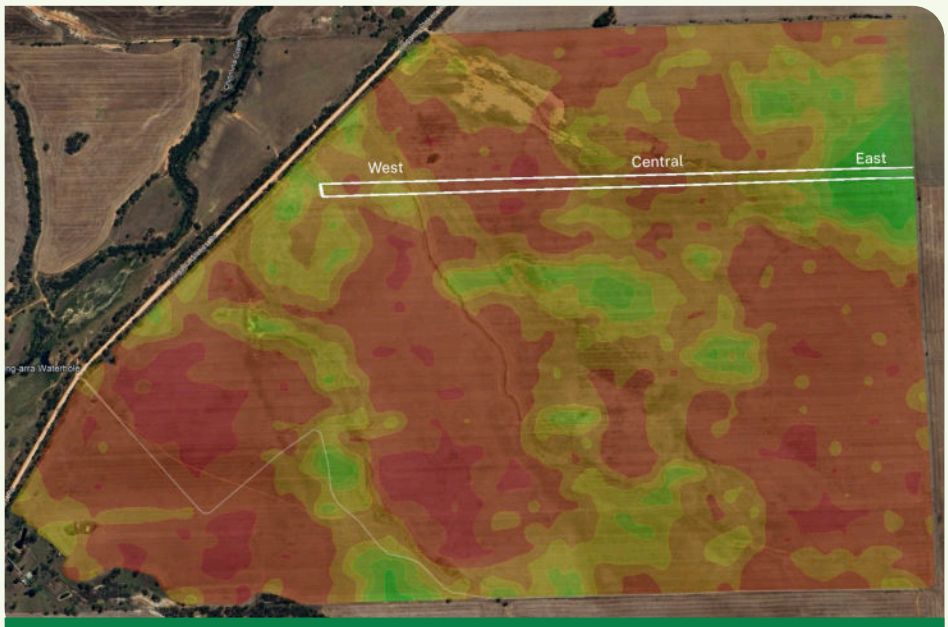
A faba bean and lentil demonstration was sown on the Telfer property on 29 May 2025.

The paddock was selected for its silty gravel acidic soil type. Acidity is an increasing production constraint on lower EP. The paddock has been limed multiple times to address this issue, but it is still a problem, with pH levels as low as 4.4 in some parts of the paddock at depth (paddock pH range: 4.4 – 7.7).

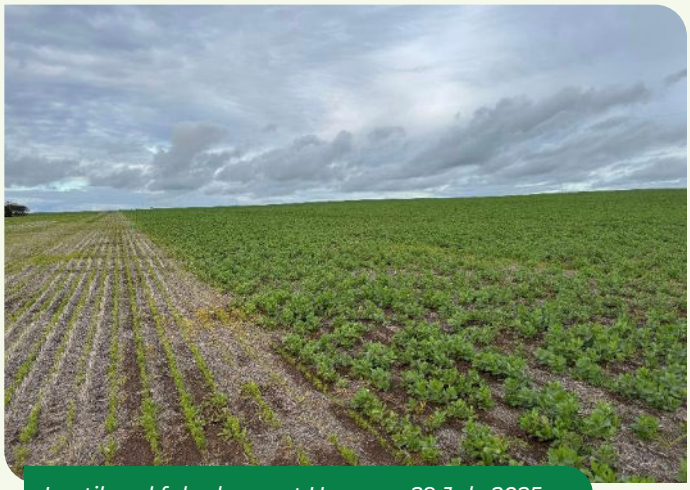
A 1.7 km transect representing 3 distinct production zones was chosen for monitoring, based on pH mapping and previous faba bean yield maps. The monitoring area was 36 m wide (3 x 12 m runs) to align with the controlled traffic line used on the property.

Production zones monitored were:

1. Moderately acidic sand, moderate yield potential (West)
2. Silty-gravel acidic sand with waterlogging issues, low yield potential (Central)
3. Calcareous loam, high yield potential (East)



Veris pH map showing acidity across the Ungarra break crop paddock. White rectangle indicates the lentil strip that was sown in the faba bean paddock, with paddock testing zones indicated along that line. pH key: Green = 7, Yellow = 5.5, Red = 4.



Lentil and faba bean at Ungarra, 29 July 2025.



Lentil strip between faba beans, 4 September 2025 at Ungarra.

OBSERVATIONS AND DISCUSSION:

Lentils are generally grown on more alkaline soils, so this demonstration was an opportunity to test whether they could be pushed into more acidic, waterlogging-prone soils. Except for a slightly wet July, the 2025 season was relatively dry and lentils performed well across most soil types providing there was no waterlogging. At locations in the paddock where waterlogging occurred, lentil plant death resulted and so there was reduced biomass.

Isaac was encouraged with how the lentils established. It was a confidence booster for him to see that lentils could still establish and generate biomass, (Table 1) on the poorer soil types providing there was no waterlogging. The real test came at harvest. Overall faba beans yielded consistently higher across all areas of the paddock. Lentil yields were 3.35 t/ha in non-acidic parts of the paddock, while in waterlogged areas they only yielded 0.86 t/ha. Even in the poorer areas faba beans yielded 2.48 t/ha but yielded up to 3.93 t/ha in the less acidic and water stressed parts of the paddock (Table 1).

Table 1. *Key soil test and establishment parameters and final grain yields at Ungarra in 2025.*

Pre-sowing	**East**		**Central**		**West**	
Soil Texture	Sandy Loam		Loamy Sand		Loamy Sand	
Constraints	Nil		Acidity, waterlogging		Acidity	
pH (CaCl)	7.6		5.1		6	
Nitrogen (mg/kg) (0-60 cm)	32.8		35.7		39.5	
Organic Carbon (%)	1.21		1.17		1.45	
Colwell Phosphorus (mg/kg)	26		25		34	
In Season	***Lentil***	***Faba Bean***	***Lentil***	***Faba Bean***	***Lentil***	***Faba Bean***
Biomass (kg/ha) (17 Sept 2025)	1163	2553	720	1731	747	1857
Plants (m^2)	139	25	109	20	133	20
Harvest	**East**		**Central**		**West**	
Lentil Yield (t/ha)	3.35		0.86		1.82	
Faba Bean Yield (t/ha)	3.93		2.48		3.7	

THE BOTTOM LINE:

Grain gross margins (Table 2) varied greatly across the different zones at Ungarra in 2025, but followed expected trends. Both lentils and faba beans performed best in the east zone (pH~7.5) and worst in the central zone where acidity and waterlogging were issues. Lentils in the east zone had the highest gross margin at $1,422/ha, but had a negative gross margin in the central zone. Faba beans performed more consistently, with positive gross margins across all paddock zones.

The average gross margin across all zones for faba beans was $921/ha and for lentils the average gross margin was $565/ha. Grain prices at time of harvest (December 2025) were used in the gross margin calculations - lentils @ $590/t, faba bean @ $425/t. If pricing changed for lentils, then the Telfers would need to consider how much of the paddock would be impacted by the waterlogging soils compared to the soil types which were able to produce a positive gross margin.

Table 2. *Grain gross margins for the Ungarra break crops.*

	Location within paddock		
	East	**Central**	**West**
Lentil grain gross margins for the Ungarra break crop demonstration 2025.			
Grain Yield (t/ha)	3.35	0.86	1.82
Grain price ($/t) (December 2025)	$590		
Total grain income ($/ha)	$1,977	$507	$1,074
Total variable costs ($/ha)	$555	$517	$532
Gross margin ($/ha)	**$1,422**	**-$10**	**$542**
Faba bean grain gross margins for the Ungarra break crop demonstration 2025.			
Grain Yield (t/ha)	3.93	2.48	3.7
Grain price ($/t) (December 2025)	$425		
Total grain income ($/ha)	$1,670	$1,054	$1,573
Total variable costs ($/ha)	$520	$498	$516
Gross margin ($/ha)	**$1,151**	**$556**	**$1,056**

Note: Most input records were provided for this site.
Note: Assume medium rainfall zone (MRZ) for SAGIT input estimations, where required to fill gaps in records.

Source: BUILDING RESILIENCE – BREAK CROP SUITABILITY ACROSS LANDSCAPES Economic Analysis for 2024/25 and 2025/26 by Emily Chambers, Pinion Advisory

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