

## Pulse trial

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### Key Points

- Wheat and field peas had the highest yields and gross margins compared with lupins and vetch.
- Field peas have the potential to be an alternative crop in western cropping rotations.

### Why do the trial?

The Euabalong regional site community in 2004 conducted a trial to investigate the yield and gross margins associated with three different pulse crops (field peas, lupins and vetch) compared with their most commonly grown cereal crop, wheat. The aim of the trial was to determine how well alternative pulse crops grow in the district and to calculate the associated gross margins to determine their profitability.

### How was it done?

As the trial was looking into three different pulse crops, two varieties were selected to represent each crop. The field pea varieties were selected based on their ability to stand at maturity and their height, whilst the lupin varieties were selected based on their shatter resistance and disease resistance. The wheat varieties selected represent the varieties currently grown in the district.

The trial was designed as a randomized replicated block. There were three replicates with each crop/variety present in each replicate, with the plots 30 m long and 6 m wide. The trial was on a local fanner's property approximately 50 km west of Condobolin on a red loam soil. The trial was sown, using a cone seeder, and managed by the Euabalong Regional Site group and CWFS staff. The trial was sown on the 15<sup>th</sup> June 2004, with the sowing rate and fertilisers used for each crop and variety sown in Table 1. This

table shows different sowing rates for the two field pea varieties and two lupin varieties. The different sowing rates occur because of the variations in seed sizes and germination rates. These differences affect the sowing rate when calculated using the following formula:

*sowing rate (kg/ha) = weight of 100 seeds \* target plant population \* 10 / establishment percentage.*

The pre-emergent herbicides used in the trial were Triflur X<sup>®</sup> at 0.8 L/ha and Roundup CT<sup>®</sup> at 1.2 L/ha. Rainfall figures can be seen in Figure 1.

Prior to sowing the trial, soil samples from 0-60 cm were taken and tested by CSBP, a soil and plant testing laboratory in Bibra Lake, WA. These soil samples will be used to compare the nitrogen input over the growing season and summer period from the different pulse crops. Due to the dry summer the post harvest soil samples have not been taken, however, soil samples from each plot will be taken when soil moisture allows.

### What happened?

The yield results from the pulse trial are shown in Figure 2. These results show a significant difference ( $P \leq 0.01$ ) between the yields of each crop. Field peas and wheat yielded significantly higher than both lupins and vetch. There was no significant difference in yields between the varieties of each crop.

Table 1. Crop, variety, sowing rate and fertiliser type and rate for the Ei regional site pulse trial.

Crop	Variety	Sowing rate (kg/ha)	Fertiliser type and rate (kg/ha)	Soil
Field peas	Kaspa	122	Trifos @ 60 kg/ha	
Field peas	Morgan	81	Trifos @ 60 kg/ha	
Lupins	Ultra	161	Trifos @ 60 kg/ha	
Lupins	Merrit	60	Trifos (5) 60 kg/ha	
Vetch	Languedoc	35	Trifos @ 60 kg/ha	
Vetch	Blanchefleur	35	Trifos @ 60 kg/ha	
Wheat	Janz	35	DAP @ 80 kg/ha	
Wheat	Sunbri	35	DAP @ 80 kg/ha	

\* Sowing time - Optimum: preferred sowing time, Late: later than recommended, yield reductions

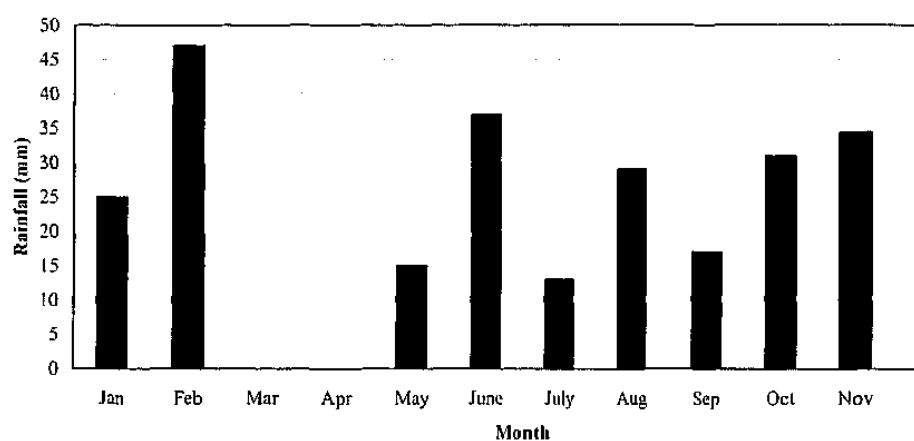


Figure 1. Rainfall at the Euabalong regional site pulse trial 2004

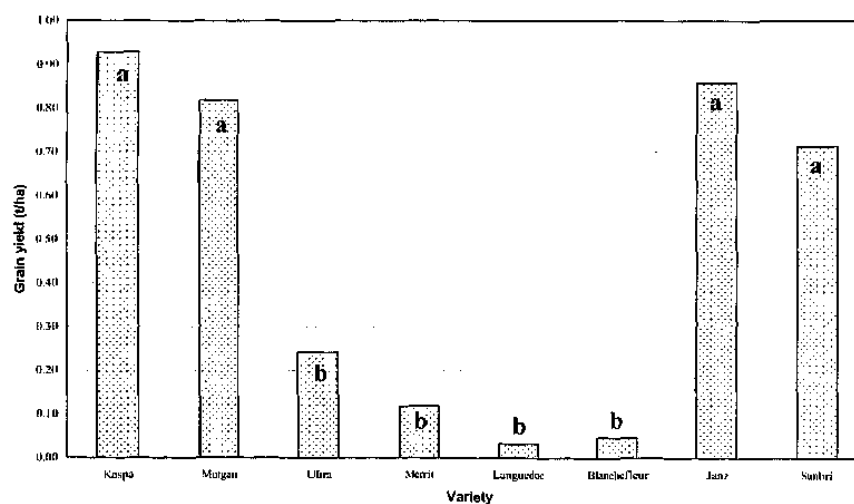


Figure 2. Grain yield (t/ha) for the Euabalong regional site pulse trial

Note: columns with the same letter are not significantly different

The gross margin results from the pulse trial are shown in Table 2. These results show there are significant differences ( $P \leq 0.05$ ) between varieties and their gross margins. All field pea and wheat varieties had positive gross margins that were significantly higher than the lupin and vetch varieties. Ultra lupins had the lowest gross margin.

**Table 2. Gross margins (\$/ha) for the Euabalong regional site trial**

Crop	Variety	Gross Margin (\$/ha)	
field peas	Kaspa	29.40	c
field peas	Morgan	48.10	c
lupins	Ultra	-138.50	a
lupins	Merrit	-78.40	b
vetch	Languedoc	-80.30	b
vetch	Blanchefleur	-77.70	b
wheat	Janz	33.50	c
wheat	Sunbri	13.10	c
5% Lsd between crop		44.75	

Note: values with the same letter are not significantly different

## Conclusions

The main points from this trial were:

- Field peas had the same yield and gross margin as wheat.
- Lupins and vetch had significantly lower yields and gross margins compared with wheat and field peas.
- Ultra lupins had the lowest gross margin mainly due to the high cost of seed but also because of poor yields.

These results are interesting to farmers because they show that in an extremely dry year field peas can perform as well as wheat. This gives a key message to farmers and advisors that field peas have real potential to be a profitable alternative crop in western cropping rotations.

The results from this trial can be adopted by farmers in commercial practice. Due to the excellent performance of field peas, farmers could add this pulse crop into their farming rotation to investigate,

on a larger scale, their performance, cost and benefit as an alternative crop. If farmers do not want to commit a large area to field peas it is recommended that they utilize test strips in their rotational phase or that they split the paddock to be rotated with the desirable alternative crops to monitor and compare their pros and cons.

## Other factors

In 2004 this area was in their 4<sup>th</sup> year of drought. Therefore the conditions were extremely tough for the trial.

## Acknowledgments

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