

## Euabalong CWFS Site - Pulse Trial

Sharon Taylor, Central West Farming Systems

### Key Points

- The highest yielding pulse in 2003 at Euabalong was field peas, followed by lupins and then vetch.
- All pulse crop gross margins were negative, reflecting the cost of seed, the cost of herbicides and the effect of drought on grain production.

### Introduction

It is well documented that by adding a pulse crop (thought of as cash crops) into a cropping rotation the yield and quality of a subsequent wheat crop can be improved. A pulse crop has the ability to reduce the incidence of disease, such as crown-rot and take-all and it also adds to the available nitrogen pool (Carpenter and Bowcher 2003). Pulses also improve integrated weed management options and contribute to livestock enterprises by stubble grazing and grain storage (Fettell 1998).

The Euabalong regional site group began a pulse trial in 1999 with the aim of assessing the value and place of grain legumes in a wheat rotation. Since the beginning of the trial, problems have

been encountered with both weed management and dry conditions. This year was no exception. The particular pulses being assessed in 2003 were field peas, lupins and vetch. The aim in 2003 was to assess the yield and gross margin differences between the three crops.

### Method

In 2003 the pulse trial was designed as a randomised block, with 3 replicates. It was sown on the 30<sup>th</sup> May using a trial plot seeder with narrow points and press wheels. The pulses were sown at various seeding rates (Table 1), due to varying seedling vigour, seed size, and desirable plant populations, with 100 kg/ha DAP fertiliser. The rainfall figures for the Euabalong pulse trial can be seen in Figure 1.

**Table 1. Field peas, lupins and vetch varieties with their seeding rates.**

Crop/Variety	Seeding Rate (kg/ha)
Lupins	
Ultra	144
Merrit	60
Wonga	60
Field Peas	
Dundale	91
Bohatyr	105
Morgan	88
Vetch	
Haymaker	35
Snowpeak	35

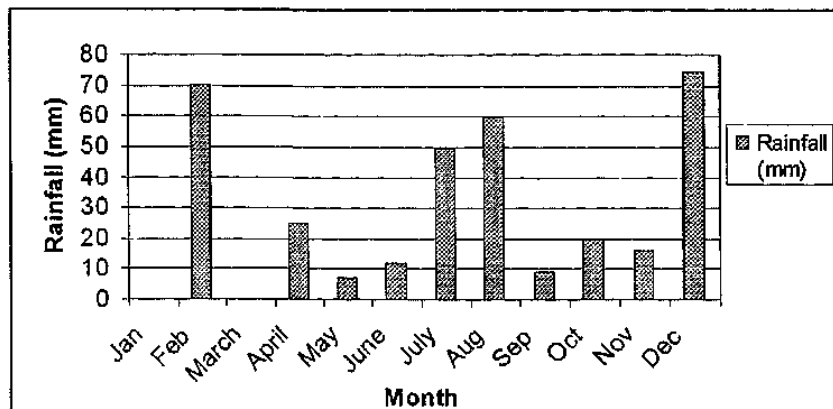


Figure 1. Rainfall for the Euabalong Pulse Trial

Due to a lack of sub-soil moisture and poor weed germination, no herbicides were used prior to sowing. In hindsight, using a pre-emergent would have been a better option. However, rain in July and August caused black oats, mustard and skeleton weed to become a problem. On the 5<sup>th</sup> September these weeds were controlled. The lupins were sprayed with Brodal Options @ 0.2 L/ha and Verdict 250 @ 0.05 L/ha and the vetch was sprayed with Verdict 250 @ 0.05 L/ha. The field peas were not sprayed as flowering had commenced.

During the months of September and October warm windy conditions caused the pulse trial to lodge and pods to

shatter. The field peas and vetch were left lying on the ground making mechanical harvesting impossible. To be able to record yield results from the trial three 1 m<sup>2</sup> samples were taken from each plot on the 21<sup>st</sup> October. These samples were threshed to give an estimate of yield.

### Results

The yields from the Euabalong pulse trial can be seen in Figure 2. This figure shows that there is a significant difference in yield between the pulse crops. Field peas were the highest yielding pulse crop whilst vetch was the lowest.

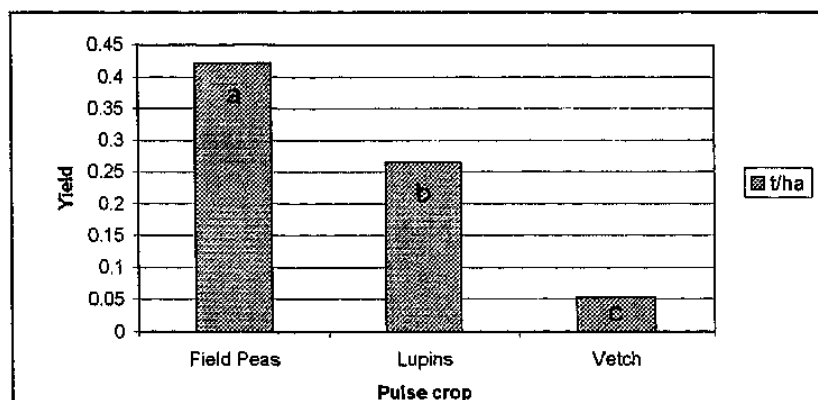


Figure 2. The average yield differences between pulse crops

*Note: Bars with the same letters are not significantly different.*

### Section 3.

### CWFS Regional Site Results - 2003

The gross margin results for each of the pulse crops can be seen in Figure 3. This figure shows a significant difference between the gross margins for each of the pulse crops. Lupins had a significantly

lower gross margin than field peas, whilst the vetch gross margin was not significantly different from either field peas or lupins

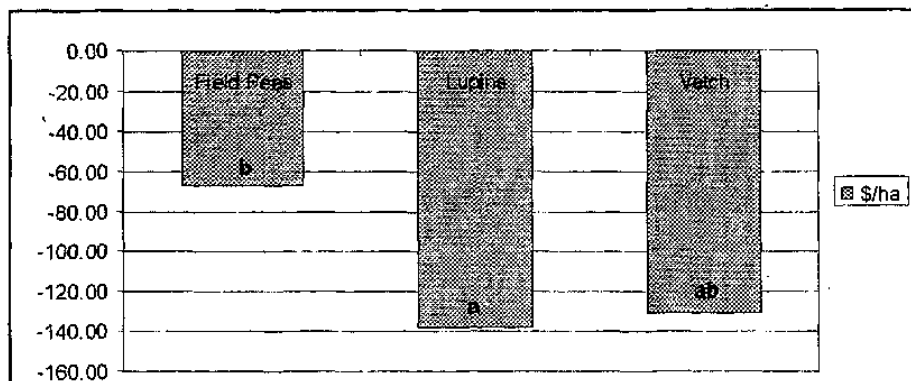


Figure 3. Gross margins for the Euabalong Pulse Trial

*Note: Bars with the same letter are not significantly different*

### Discussion

The results in Figure 2 show that the yields in 2003 were less than 0.5 t/ha, with field peas yielding the highest. These low yields can be attributed to the drought, with only 182 mm during the growing season, weed management issues and windy conditions, which caused lodging and pod shattering in field peas and vetch.

The weeds that infested the trial in July/August reduced the trials yield potential as they competed for nutrients, moisture and sunlight. It has been stated by Carpenter and Bowcher (2003) that weeds in pulse paddocks need to be controlled prior to sowing and in early crop growth to minimise the effect on crop growth and yields. It has also been recommended by Carpenter (2003) that excess pressure should not be put onto a cropping system by placing pulses in a paddock with a high weed population, as it allows the weed seed bank to increase.

The gross margins for each pulse crop (Figure 3) at Euabalong in 2003 were negative. This result was not unexpected given the dry conditions, the cost of seed and the cost of herbicides. The cost of seed from 2002 to 2003 increased due to the drought. In 2003 the average cost of field pea seed increased by \$0.50/kg, vetch by \$1.30/kg and lupins by \$0.80/kg.

The cost of herbicides could have been reduced if a pre-sowing mix of Roundup®CT and Triflur X, @ \$11.95/ha, was used instead of an in-crop spray of Broadal®Options and Vertict® 520, @\$43.90/ha.

In comparing crop gross margins, field peas had a higher gross margin than lupins. This can be directly contributed to the higher field pea yields and the fact that field peas were not sprayed with any post-emergent herbicides due to flowering.

In conclusion the highest yielding pulse crop during the 2003 growing season in Euabalong was field peas, followed by lupins and then vetch. All the pulse crops had a negative gross margin, which was associated with a dry season, herbicide costs and an increase in seed costs.

### Acknowledgement

On behalf of the Euabalong Regional Site group we would like to thank the Martin

family for allowing CWFS to run the pulse trial on their property for the past 5 years. We would also like to thank Jimmy Presley for his help at sowing and Allan L'Estrange for his help with the trial. Thanks Cath Evans, Rob Sanderson and Nathan Border for your help with this paper.

### References

Carpenter, D. (2003) Give your pulse a chance. *In* 'Central West Farming Systems Field Day Book 2003' pp. 15-17

Carpenter, D. and Bowcher, A. (2003) Weeds in Winter Pulses - Integrated Solutions. Wagga Wagga Agricultural Institute, Wagga Wagga.

Fettell, N. (1998) Pulse crops for Central Western NSW. *In* 'Central West Farming Systems Research Compendium'. pp. 16-18