

Wheat after pulses

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Key points

- Wheat yields and quality did not differ after field peas, lupins and vetch in 2003.
- Based on this year's results and the 2003 pulse trial results, the pulse crop more likely to be suited to the Tottenham cropping rotation is field peas.
- Based on research conducted by Fettell (2003) in Condobolin, wheat yields and protein levels were higher after field peas compared to cereals.

Why do the trial?

The Tottenham regional site committee, in association with the Top Woodlands Ag Bureau, in 2003 conducted a pulse trial looking at field peas, lupins and vetch compared to undersown barley. The aim of this trial was to compare pulse production, as well as, assess the follow-on benefits of different pulses to wheat. In 2004 the pulse plots were sown to wheat to investigate the benefits of growing wheat after pulses. The undersown barley plots were not sown to wheat, as the group wanted to see how the lucerne established.

In presenting the data from this trial, I will also present data from research conducted by Dr Neil Fettell, NSW DPI, Condobolin (Fettell 2003). The reason for presenting this data is that it compares the follow-on benefits of field peas and cereals on two following wheat crops in Condobolin. This information is additional to the current trial work which only compares the differences between pulse crops.

How was it done?

The trial was designed as a randomized replicated block with two replicates. The trial plots were 25 m long and 6 m wide. The trial was located on a local farmer's property just north of Tottenham, along the Nevertire Road, on a red brown earth. Trial management

was undertaken by the land owner, Keith Greig, and CWFS staff.

The trial was sown, using an International combine on the 3rd June. All plots were sown with H45 wheat at 35 kg/ha with 55 kg/ha MAP fertiliser. Prior to sowing Roundup CT[®] and Triflur X[®] were used for weed control. The rainfall for the Tottenham trial site is shown in Figure 1.

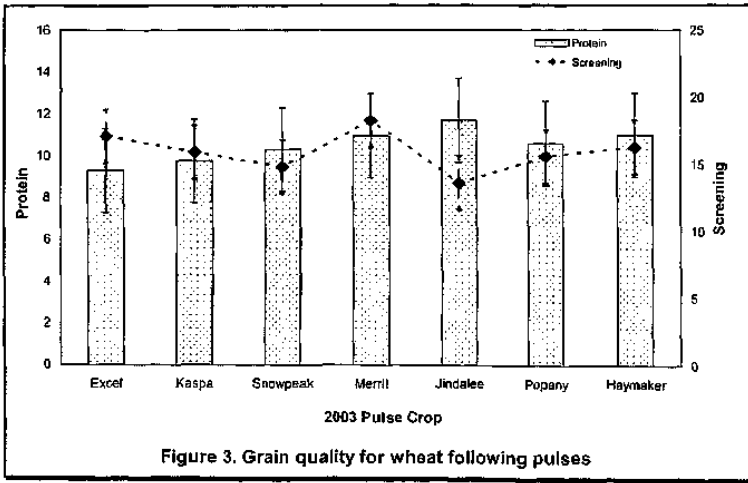
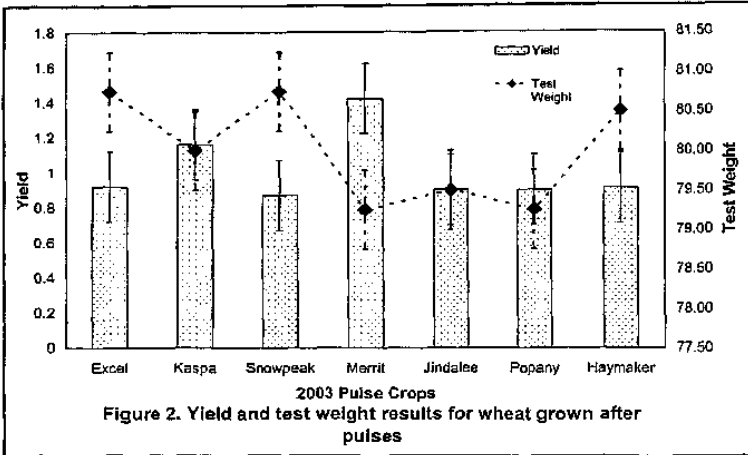
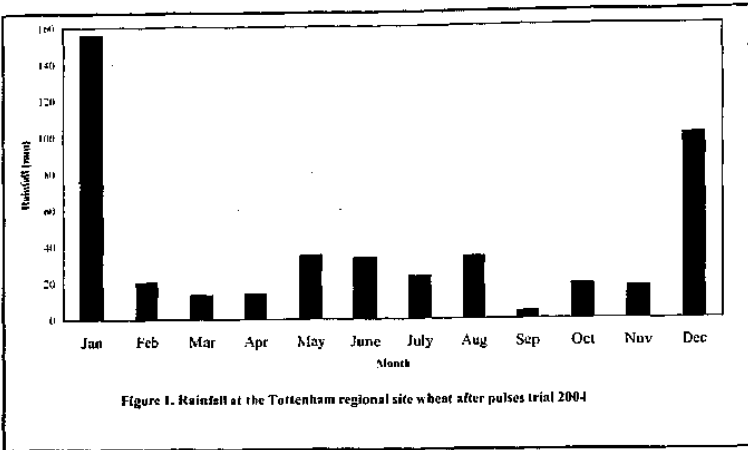
What happened?

The yield and test weight results from this trial can be seen in Figure 2. There is no significant difference ($P < 0.05$) between wheat yields and test weights. This shows, regardless of the pulse crop sown in 2003, the benefit to the following wheat crop in 2004 was the same between all pulses.

The protein and screening results for this trial can be seen in Figure 3. These results show there is no significant difference ($P < 0.05$) between the protein or screenings of wheat due to the pulse crop grown the previous year.

Neil Fettell's research

The wheat yield and protein in 1999 and 2000, following different crop species and management techniques in 1998, are shown in Figure 4. This figure shows that field peas, in all management techniques, produced higher wheat yields and protein levels in both years compared to oats.



Conclusions

The main standout point in this trial is that regardless of the pulse crop grown in 2003, the wheat yields, test weight, protein and

screening levels were not significantly different in 2004. This has shown in 2004, that the choice of alternative crop in 2003 would not have had an effect on wheat

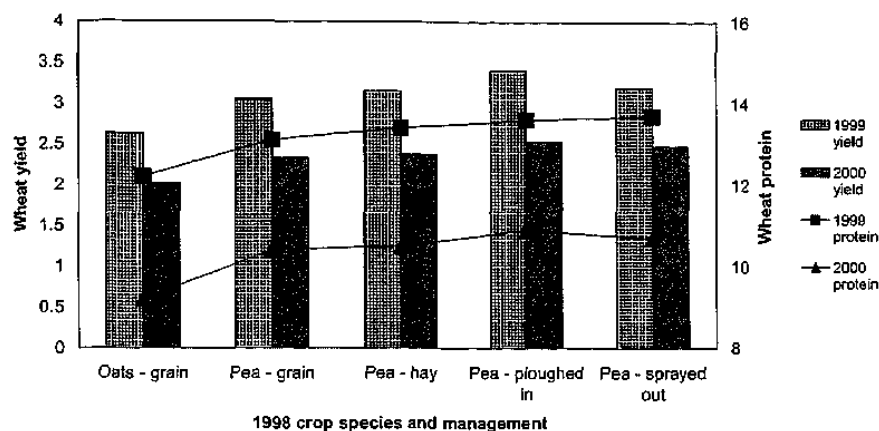


Figure 4. Wheat yield and protein response to crop species and management in Condobolin

yields in 2004. As there were no wheat yield or quality differences, it would be recommended to farmers that they recall the pulse trial results in 2003 to assist in selecting an alternative crop for their system.

The trial in 2003 concluded that field peas and undersown barley yielded the highest with the best gross margins. Therefore, based on these results the alternative crop that would be best suited to Tottenham cropping rotations would be field peas. Field peas had a better yield and gross margin than lupins and vetch in 2003, whilst providing the same follow-on benefits to wheat in 2004.

Before deciding to grow field peas, or pulse crops in general, farmers need to remember the following management issues are extremely important: time of sowing, paddock selection, species selection and disease and pest management. For further information please refer to page 93 of the CWFS Research Compendium 2003-2004 (Taylor 2004).

In respect to Fettell's (2003) research it was concluded that wheat produced after field peas yielded higher than after cereals, when additional nitrogen fertiliser was not applied. This result occurred

because field peas fixed nitrogen, therefore leaving nitrogen for the following crop.

Other factors

One factor to be considered was the fact that this area, in 2004, was in their 3rd year of drought. Therefore the conditions were extremely tough for the trial. A second factor to consider is the conditions in 2003 and 2004 produced low yields that have affected the results of this trial. In an average rainfall year these results could be different.

Acknowledgements

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References

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