

Nyngan CWFS Site - Phosphorous Carryover

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Key Points

- It was difficult to see the carryover of residual P into 2003 in this trial as some plots were affected by crown rot or common root rot (still to be determined).
- The maximum wheat yield was achieved when 5 kg P/ha was applied in 2003 on top of 11 kg P/ha applied in 2002.

Introduction

Previous work conducted on the carryover of phosphorous (P) from a drought year into a recovery year suggested that a certain amount of residual P from the drought year was available in the recovery year. This leads to the question - "Can fertiliser rates be reduced after a drought year to allow for the use of residual P?"

The Nyngan regional site group conducted a trial in, what we hoped would be the recovery year, 2003 to test what fertiliser recovery there may have been following the drought, and failed crops, of 2002.

Method

The trial was located at 'Coreen' on the main Nyngan Regional Site. In 2002 the trial site had a variety by fertiliser trial, which failed and was not harvested. The varieties used in the 2002 trial were Strezlecki, Sunmist, Cunningham, Sunbrook and Sunstate, whilst the fertiliser rates were 60 kg/ha, 100 kg/ha and 130 kg/ha of DAP sulphur (16N:17.8P:11.7S), which gave 11, 18 and 23 kg P/ha respectively. In 2003 the trial was sown to Strezlecki with 3 rates of Triphos fertiliser (0N:20.7P:1.3S) - 0, 25 and 50 kg/ha, which gave 0, 5 and 10 kg P/ha respectively. The trial was sown on 2nd May with 50 cm of subsoil moisture. The rainfall figures for the Nyngan site can be seen in Figure 1.

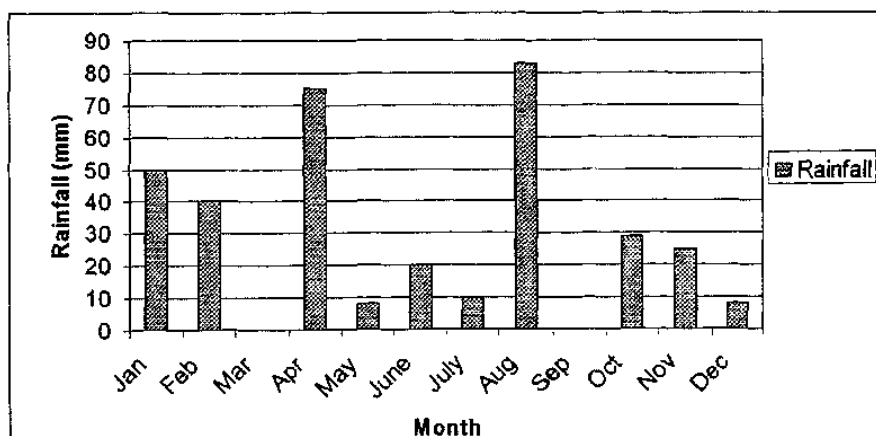


Figure 1. Nyngan Regional Site Rainfall 2003

Results

The wheat yields in 2003 with varying fertiliser rates in 2002 and 2003 can be seen in Figure 2. In these results there

was no interaction between wheat yields in 2003 and the fertiliser rates of 2002 and 2003.

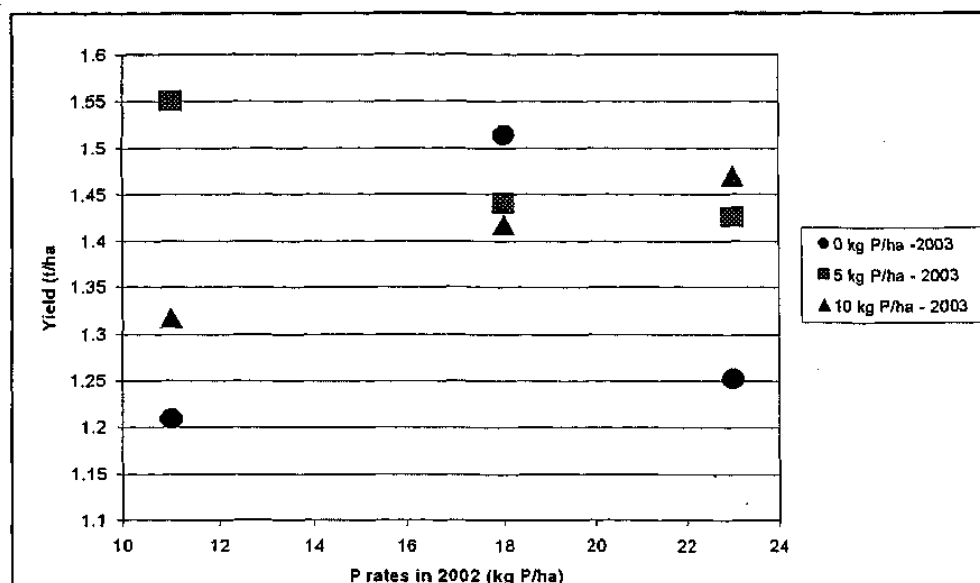


Figure 2. Grain yield of wheat (t/ha) in 2003 with varying rates of fertiliser in 2002 and 2003

Discussion

The residual effect of P from 2002 on 2003 wheat yields is not clear in this trial. It is difficult to determine the carryover of P from 2002 onto 2003 as areas of the trial were affected by crown rot or common root rot (still to be determined). The disease was worst in some of the plots which had 0 kg P/ha in 2003, but not all of them. This may explain the high yields when there was 0 kg P/ha in 2003 and 18 kg P/ha in 2002. These plots may not have been affected by disease and the residual P may have allowed the crop to achieve a yield of 1.51 t/ha. But it is difficult to determine if this is the case.

From these results, however, it can be concluded that the maximum yield was achieved when 5 kg P/ha was applied in 2003 on top of 11 kg P/ha in 2002, whilst the lowest yield was achieved when no P was applied in 2003 on top of 11 kg P/ha in 2002. This indicates that it may be possible to decrease fertiliser rates after a drought but there still is a need to apply P.

Acknowledgement

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