

Predicting yield variability across paddocks

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Key findings

- There was good correlation between yield predicted from historical yield maps and actual yield data.
- Wind during harvest caused over 0.5t/ha yield loss in the lower yielding areas of the paddock.

Why do the trial?

To assess the usefulness of using historical yield data to predict future yields and adjust fertiliser rates according to production zones.

How was it done?

Historical cereal yield data from seasons 2004, '05, '07, '08 and '10 were used to create production zones based on a mid-year prediction that the paddock would average 4t/ha grain yield. The data years utilised had previously produced complete and realistic yield maps.

The historical production zones were compared with the actual yield map from harvest.

Results

The paddock was harvested over several days. Harvest began on 29th November but was stopped by windy weather and completed on the 1st and 2nd of Dec. Arrows on Figure 1 (see last page of this article) indicate the areas harvested before the wind, ie. the head lands and the western side. The thinner lower yielding areas that were standing suffered more yield loss due to head loss as the plants were able to shake more. The losses in these areas were over 0.5t/ha and equated to 110 heads per square metre that were on the ground and not able to be harvested in the worst areas. The thicker higher yielding areas had already lodged and did not shake as much and the yield loss in these areas due to head loss was negligible.

The production zone map created mid-year had a good correlation with the actual yield map, although there are some discrepancies, some of which can be explained by the effect of head loss due to windy conditions (Figure 2).

This result demonstrates the usefulness of previous yield maps and the potential accuracy of this data. It is important to remember that the production zone map was created for above average season (4 t/ha) and that it may look different in other seasons.

Acknowledgement:

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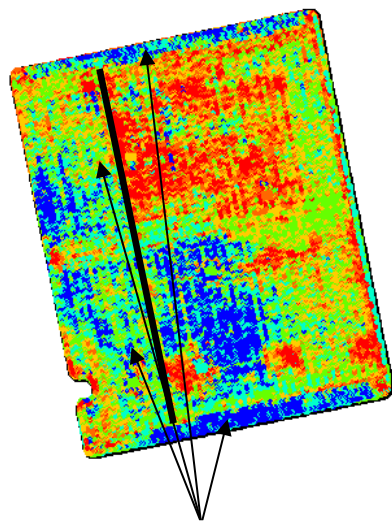


Figure 1: The 2011 yield map showing the effect of wind on yield loss due to barley head loss.

Areas harvested before wind.

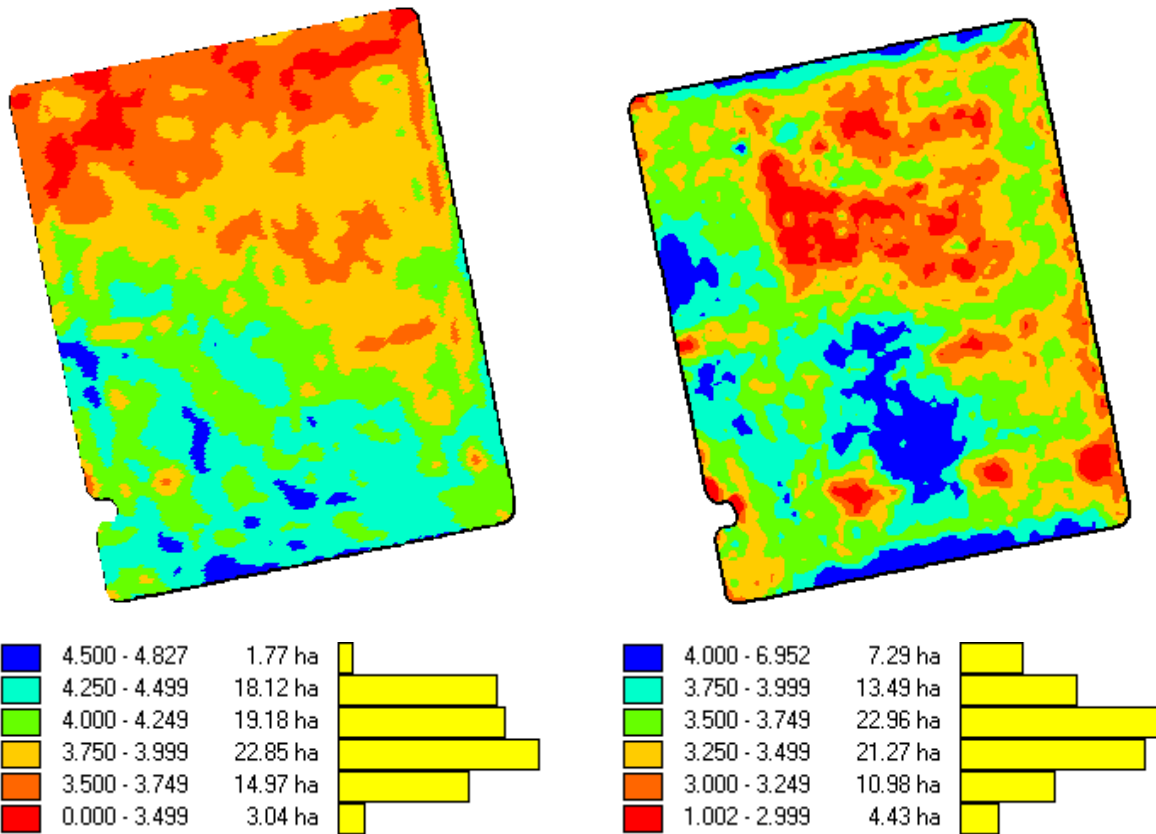


Figure 2 a) The production zone map based on historical cereal yield data from 2004, '05, '07, '08 and '10 and an average expected yield of 4 t/ha, b) the actual 2011 barley yield map, with errors due to barley head loss.