

## How much Yield will you leave in the Field this harvest?

How much Yield will you leave in the field this harvest? GRDC and ABARES data shows that Australian grain farmers produce on average 1.7T/hectare at a Protein level of 9.5%. Agronomists and Ag Scientists around the world have shown that if the Protein content of cereal grains is less than 11.5%, then the Full Yield Potential has not been achieved in the field. By applying more Nitrogen fertilizer to those zones where the Yield is low and Protein is low, will result in a Positive Yield Response and an increase in Protein content.

In 2016 a farmer, Matt Hill, Esperance, WA, conducted strip trials to see how much Yield increased with the application of higher rates of Flexi N Nitrogen fertilizer. He applied 50, 100, 120 and 200 l/ha rates in the Red Zones of the adjacent field. The Red zone had previously produced Low Yield and Low Protein wheat, and thereby was projected to produce a Positive Yield Response to increased Nitrogen fertilizer.

Table 1 shows the Yield Response to increases in the rate of Nitrogen applied across the field. Figure 2 is the plot of the Yield vs Nitrogen Rate, which shows that approximately 100 litres of Flexi N fertilizer produces an additional 0.6T/ha and approximately 1% higher Protein.

Mr. Hill realised that he could have “gone harder” and increased the Nitrogen rate even further. With the cost of the Flexi N at \$.69/l, then the cost of under fertilizing can be shown in table 2.

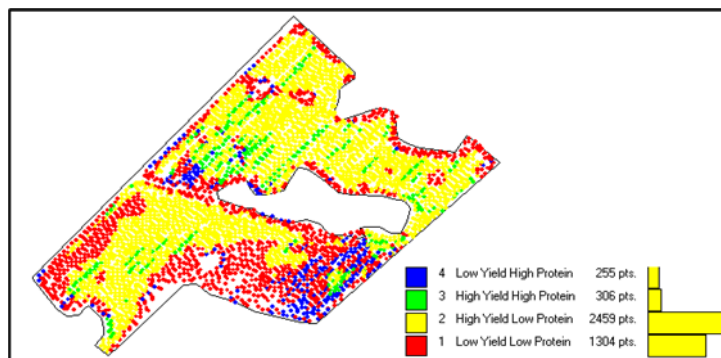
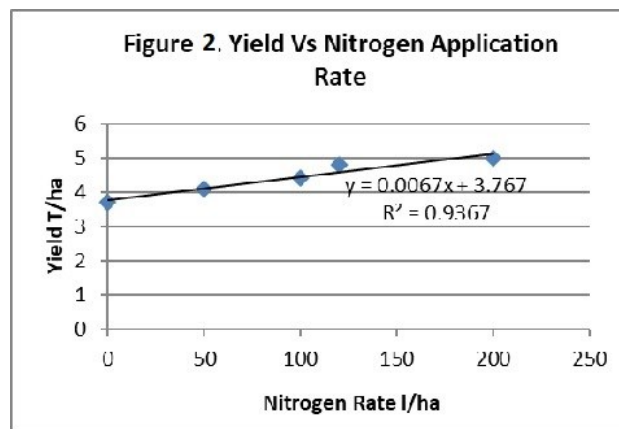


Figure 1. Protein/Yield Correlation Maps, Wheat Field, Esperance, WA.

| Protein (%) | Applied Flexi N (l/Ha) | Yield (t/Ha) | Flexi N Cost \$ | Payment \$/ha | Additional Profit \$/ha |
|-------------|------------------------|--------------|-----------------|---------------|-------------------------|
| 8.3         | 0                      | 3.7          | 0               | 1184          | 0                       |
| 8.7         | 50                     | 4.1          | 34.5            | 1312          | 94                      |
| 9.1         | 100                    | 4.4          | 69              | 1408          | 155                     |
| 9.6         | 120                    | 4.8          | 82.8            | 1536          | 269                     |
| 10.1        | 200                    | 5            | 138             | 1600          | 278                     |
| 10.6        | 250                    | 5.3          | 172.5           | 1696          | 340                     |
| 11.1        | 300                    | 5.6          | 207             | 1792          | 401                     |
| 11.6        | 350                    | 5.8          | 241.5           | 1856          | 431                     |

Table 1. Yellow represents actual field data. Green



| Protein % | Dollars Left in the Field per ha |                |               |               |                |               |                |
|-----------|----------------------------------|----------------|---------------|---------------|----------------|---------------|----------------|
|           | Yield 3.5 T/ha                   | Yield 4.0 T/ha | Yield 4.5T/ha | Yield 5.0T/ha | Yield 5.5 T/ha | Yield 6.0T/ha | Yield 6.5 T/ha |
| 8.5       | -\$330                           | -\$275         | -\$220        | -\$165        | -\$110         | -\$55         | \$0            |
| 9         | -\$275                           | -\$220         | -\$165        | -\$110        | -\$55          | \$0           | \$0            |
| 9.5       | -\$220                           | -\$165         | -\$110        | -\$55         | \$0            | \$0           | \$0            |
| 10        | -\$195                           | -\$130         | -\$65         | \$0           | \$0            | \$0           | \$0            |
| 10.5      | -\$130                           | -\$55          | \$0           | \$0           | \$0            | \$0           | \$0            |
| 11        | -\$65                            | \$0            | \$0           | \$0           | \$0            | \$0           | \$0            |
| 11.5      | \$0                              | \$0            | \$0           | \$0           | \$0            | \$0           | \$0            |

Table 2. Cost of the lost Yield and Protein Payments.