



Case Study 013. Using Nitrogen Removal Maps to apply Variable Rate Nitrogen Fertilization prescriptions for top dressing a wheat field in central NSW

Introduction:

Interpreting yield maps for future Variable Rate Applications has proven to be difficult for farmers. A major limitation is that yield alone does not tell the entire story of how Nitrogen has been utilized in the field by the crop. Protein maps when combined with yield maps can make interpretation of Nitrogen utilization easier and more accurate. The case study shows how a NSW farmer used his protein and yield maps collected from the 2016 harvest to develop VRF prescriptions for the 2017 crop.

Description:

Broden Holland, Young, NSW, installed a Model 3000H Grain Analyser with his new CaseIH 7240 Combine leading up to the 2016 harvest. The Model 3000H collected protein, oil and moisture data at approximately

every 15-20 meters across their 4500ha farm where they grow wheat and canola. Combining historical yield data and protein data they have been able to develop three zones to apply Urea at three different rates as top dressing. Broden quickly linked low protein response to crop performance, he developed a simple application strategy:

Urea Application (kg/ha)

Blue Zone: Protein < 10.5 = 120 kg

Yellow Zone: Protein 10.6 - 11.5 = 100 kg

Red Zone: Protein 11.5 - 13.0 = 80 kg

Results:

By simply converting protein data collected from the Model 3000H into a Nitrogen Replacement or Top Dressing application, he was able to increase the protein levels across the fields. In 2016 the field

shown in Figure 1.0 had only .21 hectares that produced H1 grade wheat. Where as in 2017, 87.9 hectares realized H1 grade. As well, there were 38.8 hectares of that realized APW grade in 2016 and H2 grade in 2017. A rough estimate of the increase in crop payments form this field were \$2482, or \$13.60 /ha.

Assessing the yield and protein response post harvest is critical to assess whether the VRA had a positive or negative outcome. Figure 1.1 shows the protein and yield response and statistics from the variable rate application of Urea in 2017.

The 2017 yield response shows to be 40% reduction in the variation in yield across the field as compared with the 2016 yield map.

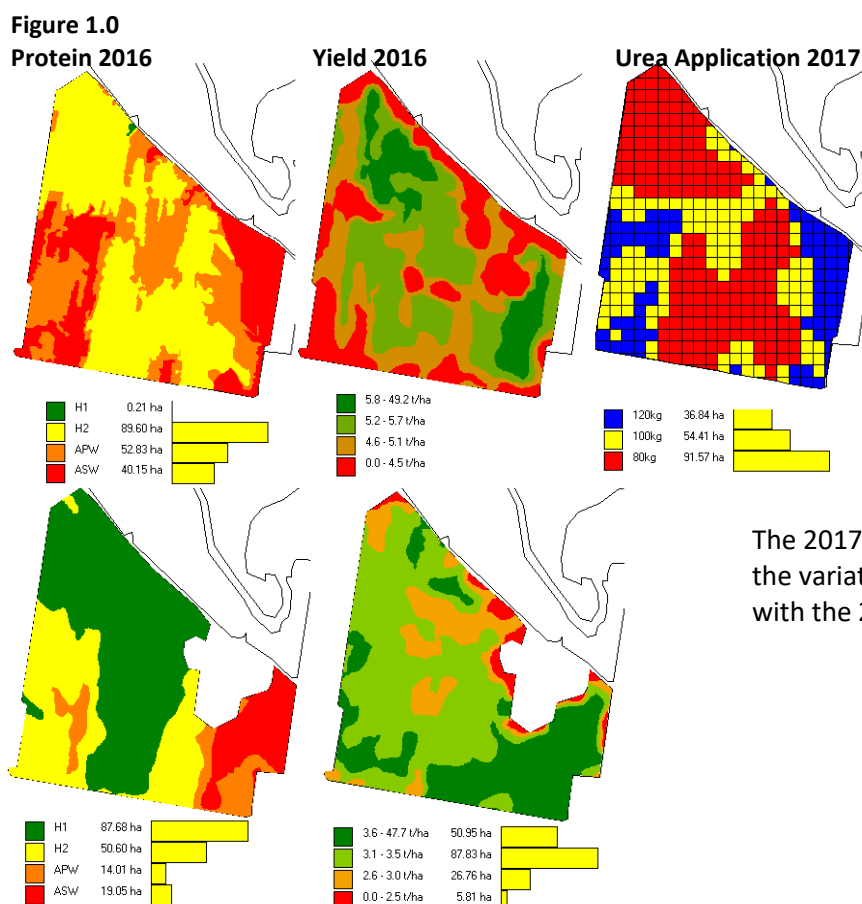


Figure 1.1