In-field wheat segregation brings extra protein profits

Jonathan and Alwyn Dyer operate a 2800 hectare family farm in Kaniva, north west Victoria where they grow bread wheat, durum and canola, along with rotation crops such as lentils and chickpeas. In 2016, the Dyers upgraded their CropScan 1000G On Farm NIR grain analyser to the CropScan 1000H On Combine Analyser.

The original CropScan 1000G was returned to Next Instruments for the upgrade which included new electronics, a fibre optic cable, remote sampling head and a touch screen PC.

The CropScan 1000H was installed into one of their two John Deere S670 combines.

Jonathan – a Nuffield Scholar – is a passionate precision agriculture practitioner. He set out to use the new instrumentation to generate paddock maps for protein allowing him to better evaluate the performance of his crops. But once the CropScan 1000H started to generate real-time protein maps on the screen, he could see how much the protein varied across the paddocks.

Large protein variation across the paddocks

Jonathan identified that the high protein wheat was grown in low lying areas where there had been some frost and the soil was heavier clay, (Figure 1). The protein percentage in the blue and green areas varied from 11.5 to 16.0 per cent with an average yield of 4.0 tonnes per hectare.

The yellow and red areas varied in protein content from 9.5 to 11.5 per cent, but with an average yield of 6.0 tonnes per hectare.

The Dyers run two John Deere combines, so they used one combine to strip the areas where the protein was low – those areas where protein was less than 11.5 per cent.

The other combine – which had the CropScan 1000H installed – stripped the high protein areas.

Blending for profit

The chaser bin was used as a means of blending the wheat by alternatively sending the chaser bin to collect the wheat from each combine

"Successful in-paddock grain blending needs good information and good communication between the harvest team," Jonathan says.

Figure 1 shows the protein map for a 174 hectare paddock on the Dyer farm which produced 800 tonnes of wheat for an average yield of 4.6 tonnes per hectare.

Table 1 details how the revenues generated off this paddock compare between in-field blending and aggregating the wheat as harvested.

If there was **no in-field blending**, the Dyers would have delivered:
• 350 tonnes at ASW grade returning $180 per tonne;

• 200 tonnes as APW at $210 per tonne;
• 200 tonnes as H2 at $230 per tonnes; and,
• 50 tonnes as H1 at $240 per tonne.

The total revenue would have been $163,000 for this paddock.

But by **in-field blending** the wheat, the Dyers were able to decrease the amount of ASW and APW graded wheat and dramatically increase the amount of the H2 grade to 600 tonnes.

The net result from this one paddock was an additional $12,500.

Jonathan says that he has never made an equipment purchase that had such an immediate return on investment. Although he could not expect to realise the same return across all his paddocks, the CropScan 1000H made a 7 per cent difference to the bottom line. ■

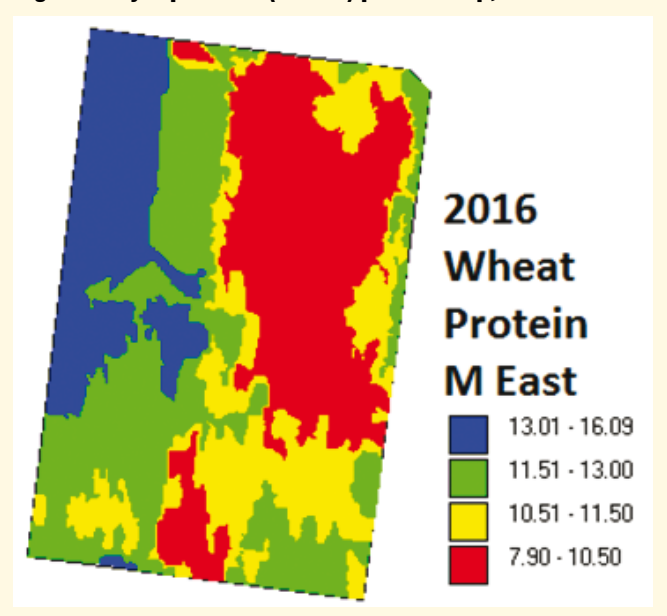## Figure 1: Dyer paddock (174 ha) protein map, 2016 harvest

2016 Wheat Protein M East

■ (blue)	13.01 - 16.09
■ (green)	11.51 - 13.00
■ (yellow)	10.51 - 11.50
■ (red)	7.90 - 10.50

Table 1: With and without in-field protein blending							
	If sold as harvested				**In-field blended**		
Grade	ASW	APW	H2	H1	ASW	APW	H2
Tonnes	350	200	200	50	150	50	600
Price $/t	$180	$210	$230	$240	$180	$210	$230
Paddock return	$63,000	$42,000	$46,000	$12,000	$27,000	$10,500	$138,000
Total return	$163,000				$175,000		

There was a 7 per cent increase in total paddock return by in-field protein blending.