

ROI for Variable Rate Nitrogen Fertilization across a 4500ha farm:

Chris and Broden Holland operate a 4500ha (11000ac) farm in the Young district of New South Wales, Australia. They installed a CropScan 3300H On Combine Grain Analyser in 2016 and a second in 2020. In 2016 and 2017, they used the technology to segregate wheat and barley in the field and thereby increase their crop payments. Over the last three harvests, Broden has been collecting Protein and Yield maps across their farms and experimented with Variable Rate Nitrogen Fertilization applications.

In 2020 they implemented a simple VRF application strategy based on Protein. Where the Protein levels were lowest in the 2019 crops, he applied a higher rate of Urea fertilizer.

Using 6 rates of Urea across the farm, Broden calculated the increase in Yield achieved over the five years of using the CropScan technology.

Results:

The table below shows Broden's calculations converted into US dollars, bushel and pounds. It shows that they increased the Urea application rate across the farm from 28lb/ac to 38lb/ac at a cost of \$30,730.

The average increase in Yield across the farm was 14.9lb/ac for an increase in revenue of \$341,519 or \$76.81/ac

2016 Blanket Rate Urea Fertilization



2020 Variable Rate Urea Fertilization



Yield	72.8bu/ac	87.7bu/ac
Urea Rate	28lb/ac	38lb/ac
Cropping Area	4446 ac	4446 ac
Wheat Price	\$5.66/bu	\$5.66/bu
Revenue	\$1,831,965	\$2,206,914
Urea Cost	\$96,303	\$127,033
Net Revenue	\$1,738,362	\$2,079,881
Gain		\$341,519 \$76.81/ac

Comment:

Broden Holland acquired their first CropScan analyser because he wanted to collect Protein maps across their farms to understand the variation in Protein. The Hollands did not expect to realise such a significant increase in income generated through the use of this technology. They had been collecting Yield maps for 20 years. Chris Holland made the comment, "2 years of Protein maps and it all makes sense."