

# The economics of controlled traffic and precision agriculture on Branson Farms

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Branson Farm, a 1200-hectare parcel of land, is located between Stockport and Giles Corner in the Lower North of South Australia. Annual rainfall is 475mm, which predominantly falls in the winter months; growing season rainfall (GSR) is 350mm which falls from April to October. As such, the farm is in the high rainfall zone for cropping in South Australia.

The Bransons have been early adopters of new technology throughout the generations, including Mark the 5<sup>th</sup> generation farmer on this family property, and current manager. The inclusion of modern farming methods includes proactive moves to using superphosphate, the ley farming system, the use of grain legumes, nitrogen-based fertilisers, no-till, precision agriculture (PA) and controlled traffic farming (CTF).

The initial journey into PA started in 1997 with the purchase of a yield monitor, but PA was not widely adopted until 2006 after Mark completed a Nuffield Scholarship on precision agriculture technologies and conservation agriculture (CA). No-till was initially adopted on some crop types during the 1980s and increased to include the whole cropping program from 2002, after the purchase of a tined seeder bar. With the purchase of an RTK autosteering system (to 2cm accuracy) in 2004, CTF was introduced, and mostly the same CT lines are used today. The PA on the Branson Farms now includes a full variable rate (VR) program for phosphorus and nitrogen fertilisers, seeding rates and some chemical applications.

The Branson Farm is now one of the leading farms in Australia in the integration of new cropping technologies into a modern grain growing system. With 10 years experience with CTF and 8 years with PA technologies, adequate system data now exists to generate accurate economic patterns. This study includes an investigation into improvements in crop yields by assessing crop water use efficiency (WUE) performance, and crop inputs before and after 2004, when no-till, CTF and PA were introduced.

A summary of the economics:

Savings/Year	Yield Gains/Ha	\$7.87/Ha	
	Input Overlap Savings	\$7.24/Ha	
	PA Savings		
	Phosphorus	\$16/Ha	
	Nitrogen	\$33.78/Ha	
	Gypsum/Lime	\$4.36/Ha	
		Total Savings	\$69.45/Ha
Expenses/Year	Machinery Purchases	\$11.11/Ha	
	RTK GPS Signal	\$0.17/Ha	
	Data Management	\$1/Ha	
		Total Expenses	\$12.28/Ha
	Estimated Annual Benefit from CT and PA		<b>\$57.17/Ha</b>