The Progression of CTF Systems on the Liverpool Plains

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HISTORY OF CONTROLLED TRAFFIC FARMING (CTF) AND PRECISION AGRICULTURE (PA)

Our system has evolved from 2m (non matched) controlled traffic farming (CTF) in the early 1990s to 10cm accuracy auto steer in 2003. The CTF layout was re-designed using elevation data from topography mapping using an RTK GPS (2cm accurate). All equipment has been matched to multiples of 9m, and runs on 3m wheel centres. Wheel tracks are not cultivated or sown. Zero-till practices have now been used across Ian's farms since the 1980's.

Precision Ag (PA) equipment has gradually been upgraded to increase accuracy. In 1998 we purchased a yield monitor and GPS unit for guidance and yield mapping, and a light bar was used for spray guidance. In 2000 guidance with sub-1m accuracy was purchased, and in 2003 the John Deere auto steer system with 10cm accuracy was installed. With the addition of a base station this system can achieve 2cm accuracy.

"If I was starting today I would go straight for 2cm auto steer to gain all the benefits"

On our farm, we run all John Deere equipment. Due to difficulty in moving the displays and control units between the header, self-propelled spray rig and the tractor that pulls the Excel double disc planter, three units have been purchased.

"Having the same system in each machine is very useful for all members of the team, and the fact the system is based on one monitor makes learning how to use it much simpler."

In 2005/2006 summer crop, an average of 6.5t/ha was achieved across our farming country on only 51mm of in-crop rainfall. If we assume soil water storage of 220mm at planting (near the maximum), the Water Use Efficiency (WUE) was 38kg/ha/mm across the farm. We attribute this to the extra soil moisture storage from the CTF and zero-till practices allowing greater infiltration.

INVESTMENT AND RETURNS FROM CTF AND PA

The GPS on the self-propelled sprayer is not only vital for auto steer but also for precision spraying. Many of our paddocks have irregular shapes and, even with CTF, overlap on edges and headlands could not always be avoided, especially when using the 27m boom. The boom has five sections and we have purchased a Rinex auto-section controller, which switches off any boom section that is covering an area already sprayed.

"Basically the GPS continuously registers the location of each section of the boom, if that location has already been logged the controller switches off the overlapping section(s)."

The addition of the spray controller means there is no need to switch off the boom when turning, as it will automatically register that the headlands have already been sprayed. This allows the operator to concentrate on turning, eliminates misses and overlaps. Auto steer has also helped increase the accuracy of night spraying.

Although we have not used yield maps to create management zones we still finds the maps a useful management tool immediately after the season. As well as harvesting with our own machine, we use

one or two contracted headers, all of which run the same yield monitor and software. Having the same systems means the data can be integrated and mapped using JD Office. We find these maps especially useful to assess areas of the paddock where we did not harvest.

"I use yield maps to assess trials and differences in management. For example, in an area of the paddock burnt by a neighbour's fire, we recorded a yield reduction of 2 t/ha, most likely due to the lack of moisture storage and subsequent evaporation without the stubble cover. Without a yield map we would not have quantified the impact of stubble removal."

WHERE TO FROM HERE

More education on the use of PA equipment is one area that I would like to see the industry develop. I feel most farmers using PA today have learnt by their own experience and then trained their employees. Having an experienced local dealer is invaluable.

I believe one of the biggest changes that are required for wider adoption of PA is in the area of software. I would like to see software that offers pre-operating check wizards and also that is more 'Windows' based. I would also like to see the creation of PA schools to provide employers and employees with an opportunity to learn how to strategically maximise the value of PA rather than learn by mistakes.