

# Update on CTF and gps uptake by farmers in SA

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## SHORT HISTORY OF CTF IN SA (2001-2005)

CTF systems have rapidly developed at various levels across SA in the past 5 years, which has coincided with the adoption of no-till cropping systems (Table 1).

Table 1. % hectares under different systems (75,000 ha total)

	2001	2002	2003	2004	2005
<b>No Till</b>	16%	26%	29%	37%	51%
<b>Up and Back</b>	7%	28%	39%	48%	57%
<b>GPS Guidance</b>	3%	13%	20%	37%	40%
<b>Wheel Tracks</b>	2%	10%	10%	8%	8%
<b>Autosteer</b>	0%	0%	4%	15%	25%
<b>Wheel Tracks + Autosteer</b>	0%	0%	2%	6%	6%

note: source = Ag. Consulting Co. clients

Early adopters of CTF in SA placed permanent wheel tracks in their paddocks, although interest in this has waned due to the dramatic price drop in gps equipment in the last few years e.g. 2 cm Auto-steer has dropped from \$90,000 to \$45,000 in three years. Some farmers have even removed their wheel tracks due to various problems (weed control, wind erosion). Marker arms and basic light bar systems are rapidly being superseded by auto-steer technology because it is now within reach of many broadacre farmers. The current driving forces behind adopting CTF in SA are,

- Increase in the number of in-crop operations (fungicides, N top-dressing) and the later timing of these operations in relation to crop growth stage
- Ability to operate at night
- Reduction in overlap (5-8% cost savings) and underlap (weed nurseries)
- Greater overall efficiency of operations in larger paddocks
- Reduced fatigue

During the last 4 years Ag. Consulting Co. in partnership with the YP Alkaline Soils Group have conducted a range of research projects aimed at investigating the benefits of gps and CTF systems and at overcoming some of the problems. These projects include,

- Solutions to overcoming weeds in wheel tracks
- Evaluating the use of herbicides at night
- Assessing the potential of wide row cropping of pulse crops
- Agronomic benefits of 2 cm auto-steer e.g. inter-row sowing

## WEEDS IN WHEEL TRACKS

Weeds in wheel tracks (especially ryegrass), is the single biggest barrier to the adoption of permanent tracks. Fuzzy tramlines provided adequate weed competition/control in the dry year of 2002, but not the more favourable season of 2003. High rates of particular soil applied herbicides (e.g. Simazine @ 2L) applied on wheel tracks provided adequate weed control in both years of the trial (2003 and 2004). These herbicides can be applied at sowing or soon after.

## NIGHTSPRAYING

A range of herbicides from all major groups were tested for their suitability for use at night i.e. whether any product had reduced efficacy when sprayed at night compared to day. Key results and observations from this research were,

- Group A (Targa®, Select®): OK at night, except Targa® had reduced efficacy once under frost conditions at night at Ardossan in 2002
- Group B (Midas®, OnDuty®, Ally®, Hussar®, Oust®, Atlantis®): OK at night, except Midas® had reduced efficacy under frost conditions at night at Ardossan in 2002
- Group C (Lexone®): OK at night, although symptoms of herbicide action may be delayed
- Group G (Goal®, Affinity®): Bit of a mystery? Not recommended at night due to reduced efficacy in some cases under good spraying conditions. This has also been observed by others.
- Group F (Sniper®, Brodal®): OK at night
- Group I (2,4-D amine): OK at night
- Group L (Sprayseed®): OK at night, although symptoms of herbicide action may be delayed
- Group M (Roundup Max®): OK at night, although symptoms of herbicide action may be delayed

## **WIDE ROW CROPPING**

CTF and auto-steer allow farmers to apply row cropping techniques to their broadacre crops. Farmers in WA are continuing to adopt wide row technology in lupins. This is primarily used as a strategy to overcome herbicide resistant wild radish, and ryegrass to a lesser extent. Shielded sprayers can be used for inter-row spraying of knockdown herbicides during the season on wide rows. We have investigated the suitability of chickpeas and faba beans as wide row cropping options for SA farmers. Conclusions to date are,

- Yield penalties can occur (but not always) when faba bean and chickpea are sown on wider row spacings (0.5 to 1.0 m)
- Yield penalties are more likely and are generally greater for chickpea compared to faba bean
- Wide rows generally increase pod height for faba bean (up to 10 cm), which may improve harvestability
- Faba beans at 0.5 m spacings appear to be the most promising wide row cropping strategy at this stage.

## **INTER-ROW SOWING WITH 2 CM AUTO-STEER**

2 cm Auto-steer allows farmers to sow between the rows of last year's stubble. This can improve the stubble handling ability of sowing equipment and may also increase the yield of cereal on cereal crops due to less soil borne disease on the "inter-row" compared to "in the row" of the previous year's crop. Two wheat-on-wheat experiments in 2004 proved this to be the case, Sandilands SA (Ag. Consulting Co., YP Alkaline Soils Group) a yield increase of 0.23 t/ha (3.88 vs. 4.11 t/ha) was measured for wheat-on-wheat due to less take-all on the inter-row Tammworth NSW (NSW DPI) a yield increase of 0.2 t/ha (2.3 vs. 2.5 t/ha) was measured for wheat-on-wheat due to less crown rot on the inter-row

## **SOIL COMPACTION AND CTF IN SA**

Reducing soil compaction is not a major driving force behind the adoption of CTF in SA. This is despite the research by Tim Ellis at Roseworthy (1989 to 1994) that showed a 2-5% yield increase of crops under controlled traffic. Furthermore, the work of David Malinda and co. in which compaction layers were progressively tilled deeper each year have produced remarkable yield increases (10-50%) at Halbury. However, Malinda could not repeat these yield increases on sites which had soils with other subsoil constraints besides compaction e.g. Minlaton (limestone subsoil) and Hart (boron and salt). This could explain why some farmers that have adopted CTF for at least 5 years can't prove yield increases due to reduced compaction.

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