

ctf PROFILES

Case Study 1



Producer: Paul Adam
Location: Tottenham, NSW
Soil type: Red-brown earth
Average annual rainfall (mm): 425
Growing season rainfall (mm): 200 on average, but can be as low as 110 mm



Current farming enterprises

Cropping contributes to approximately 90% of his farming system. In most years this usually consists of wheat, canola and a grain legume break crop sown on one-third each of the total cropping area. This year (2017) the balance is a little different with wheat sown on 500 ha, canola 810 ha and lentils 260 ha as a result of market prices and seasonal conditions. Livestock contribute to 10-15% of the farming business and are run on lease country.

When did you commence CTF and why?

Paul commenced CTF in 2009 with total conversion of all cropping land occurring in that year. The conversion to CTF allowed for consolidation of machinery assets. Four items of machinery that were either due for replacement or surplus to requirements were sold and replaced by two. This reduced depreciation and maintenance costs. Analysis of past research and experiences of other farmers also indicated that CTF would be a good fit for the soil type, climate and cropping systems being run at that time.

Were there any issues that you encountered with the conversion to CTF?

Some trees had to be cleared but these were generally old and were

suffering from die-back. Prior to converting to CTF, there were areas of gilgai country that had not been farmed. These areas were levelled and have been included as part of the cropping program since 2009. Initially there were patches of soft ground where the gilgais were filled and this was also an issue in the very wet 2016 season where tracking was an issue in the gilgai country.

Has your farming system changed since converting to CTF?

Prior to CTF, Paul's cropping program included only wheat and barley grown in rotation with a lucerne phase of varying intervals, incorporated for a disease break and to build soil nitrogen. Since adopting CTF, Paul has removed barley and lucerne from the cropping rotation and incorporated canola and grain legumes. Paul feels that this rotation is a better fit in his soils and climate and gives improved options for weed and disease control. The mix of crops also gives a better economic risk profile than previously.

Describe your machinery set-up and any changes you had to make to convert to CTF.

The seeder is 12 m wide, converting it for use in CTF required removal of four discs. The tractor required

wheel spacing conversion at a cost of around \$3000 and operates on 3 m centres. The spreader is 36 m. The self-propelled sprayer is 36 m wide and was purchased during trade of old/surplus machinery when the decision to convert to CTF was made. It is also used for the application of nitrogen fertiliser (UAN). The header front is 12 m wide and a new front was purchased when converting to CTF. The cost of the sprayer and header conversion was covered by the sale of surplus machinery when converting to CTF. All machinery operates on a 2 cm GPS auto steer.

Describe any changes you have seen in terms of fuel costs and work rate.

Paul estimates the conversion to CTF has resulted in a one-third reduction in fuel costs which he attributes to the tracks being harder, therefore with better traction there is less fuel used covering ground. He has been able to increase his speed at sowing from 10 to 14 km/hour, but estimates actual sowing time has not changed significantly as the bin size has remained the same and therefore fill-up time has increased slightly. He hasn't seen any change in work rate in terms of harvesting. The tracks have improved access significantly in wet conditions which has enabled better timeliness with cropping operations.

Describe any impacts CTF has had on soil characteristics

There has been a considerable improvement in water infiltration and moisture storage in recent years though Paul does not attribute this to CTF alone. He believes that the combination of better summer weed fallow management has also contributed significantly to moisture storage. He commented that the use of a self-propelled sprayer combined with the ease of CTF operations has improved timeliness of weed control practices which has contributed to better infiltration and soil moisture storage.

Paul has not reported any issue with erosion along tracks. Tracks are left bare and are about 480 mm wide. He believes the good ground cover between the tracks and reduction in run off achieved through better infiltration minimises water movement and hence erosion along tracks.

Overall, Paul believes more time is needed to evaluate the effect CTF alone has had on soil characteristics on his farm.

How has CTF impacted weed control and the weed spectrum encountered?

Paul believes the use of a self-propelled sprayer has significantly improved the ease of management of weed issues. This particularly relates to timeliness of weed control, with weeds controlled earlier in the growing season (both winter and summer growing weeds). The CTF

system allows for easier management in combination with the sprayer.

Paul adopted CTF at the same time as zero-till and therefore there has been a significant change in the weed spectrum across the farm. Prior to the adoption of zero till, skeleton weed (*Chondrilla juncea*) and saffron thistle (*Carthamus lanatus*) were two of the main problem weeds. Since converting to zero-till, sow thistle (*Sonchus oleraceus*) and fleabane (*Conyza* spp.) have become two of the main weed problems, while there are still areas where spiny emex (*Emex australis*) is still problematic. The weed spectrum change is attributable more to zero-till practices than to CTF.

How has CTF changed your weed control practices?

Paul indicated his herbicide use has increased by about 30% since adoption of zero-till and CTF. Paul said the main reason for the increase in use of herbicides is due to increased ability to control weeds in a timely manner as a result of the purchase of the self-propelled sprayer used in combination with CTF. He says prior to this, the timeliness of weed control practices was not as good and weed control was more difficult due to equipment issues. In essence weed control is now easier, he is seeing results from increased efforts in weed control and the ability to control weeds in a timely manner leading to a greater willingness to undertake larger spray programs.

Paul strategically rotates chemical groups incorporating those from Groups A, B, C, I and M in his weed control program.

Do you have any weed resistance issues?

There is some resistance starting to appear in ryegrass (*Lolium rigidum*) on some areas of the farm. In these areas Paul is using a double-knock strategy of glyphosate followed by paraquat to control any survivors of the initial treatment. There is also some resistance in windmill grass populations which appears to be common across the district.

Double knocks are commonly used on problem weeds such as fleabane. Are you using this tactic?

Paul does not routinely use double-knock strategies on fleabane. He has found that if this weed is controlled in early spring using a phenoxy herbicide with a clopyalid spike, he achieves a very high level of control. Paul believes that use of double-knocks can be avoided in most cases if the fleabane is controlled early in the season.

Describe the impact CTF has on your crop yields.

Paul says that CTF has led to an increase in wheat yield of 0.5 – 1.0 t/ha compared to his previous cropping practices. Canola and grain legume break crops were not grown prior to adoption of CTF. E.g. "Canola and grain legume break crops were not grown prior to adoption of CTF, but with improved soil structure, moisture retention and timeliness of operations offered by CTF, these crops now play an important role in the rotation and diversity of Paul's cropping program".

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