

First Steps in CTF for Vegetables in Tasmania

John McKenna

'Echobank', Gawler, Tasmania

INTRODUCTION

We farm 160 ha of land, growing vegetable crops such as potatoes, onions, peas and cauliflowers, as well as poppies and cereals. We also graze sheep and cattle on both the cropping land and steep grass country.

- Number of farms 3
- Area cropped 120 ha
- Area leased 20-40 ha
- Livestock 130 beef (Fresian and Hereford) and Merino wethers
- Years farming 24

WHY AM I INTERESTED IN CONTROLLED TRAFFIC FARMING?

Our current production methods for vegetables have big inputs and are hard on soil. Most harvest operations are done by contractors. Harvest schedules are often determined by factory intake schedules, so sometimes we have to harvest when we really shouldn't in terms of the soil conditions. Intensive tillage is an accepted part of life in the vegetable industry.

The current system has many limitations – high fuel and time use, with many tractor passes, soil compaction and declining soil quality. Rising fuel costs are just one of the reasons to look at other ways to do the job.

GETTING STARTED

Discussions about soil management and the potential of CTF have been going on for a few years. The current work started through involvement in a National Land Care Program Project that assists with adoption of sustainable practices on-farm. A 8 ha paddock was chosen to trial CTF in an onion crop in the 2007-08 season. The paddock was divided into areas of conventional practice and CTF based on 1.6 m track width, which is the current standard in the industry.

The paddock was sown to pasture in March 2006, and cut for silage early October 2006 and late December 2006, and then sprayed off for onions in March 2007. Two tractors were fitted out for GPS guidance. Initial cultivation was done with a 3.2 m wide Agroplow in August 2007. In the CTF area, the tynes that would normally follow directly behind the tractor wheels were moved sideways so the wheel tracks were left intact. The second tillage operation was with a power harrow – 3.5 m wide in CTF and 2.9 m wide in the conventional area. Once again, the tynes following directly behind the tractor wheels were removed so the wheel tracks were left intact. A lot of dirt was thrown over the wheel tracks in this operation, so they weren't really visible after tillage, but the compacted track was left intact. Onions were sown in August.

DURING THE SEASON

Irrigation monitoring indicated that the CTF area retained moisture better, but we weren't able to alter the irrigation applications between the conventional and CTF areas. There was also some evidence that the onion roots in the CTF were finer and more numerous.

HARVEST

A few different types of harvesters are used in the onion industry, but none of them are suited to CTF work in their current setup. A centre-pull direct loading Top Air harvester was leased by the project, with wheel tracks set to 1.6 m. Onions were loaded directly to a box trailer, which is not a commercial arrangement, but all we could do at this stage in an effort to maintain the CTF wheel tracks.

AFTER HARVEST

It is obvious that filtration in the CTF area is much higher than in the conventional area. Run-off during heavy rainfall has been observed in the conventional area, but not in the CTF area. Because there was wheel compaction on parts of the bed, it was necessary to rip the beds again with the Agrow plow tynes moved away from wheel tracks. Fuel savings for this operation were about 20% compared to the conventional area. It was also a faster operation. The tilth of the soil was much better in the CTF area.

SOME TEETHING PROBLEMS

There have been some reliability problems with the GPS guidance system. Mostly works well, but at critical times has gone off track. It is an intermittent problem that is taking a lot of sorting out.

Removing the tynes from the rotary harrow gave a deep friable seedbed tilth, maybe too soft for onions. We think this led to some depth control issues compared to a more conventional seed bed, and may have led to early irrigation issues, but it was difficult to maintain adequate moisture in the seed zone.

The tractor used for lifting and turning windrows was not GPS equipped, and windrows were shifted sideways. The harvester elevator and box trailer were not a good match, and with the windrows shifted from their original line, we ended up with more wheel compaction than we had wanted.

LESSONS LEARNED

- CTF is all possible, with the right equipment. This is one of the key issues in the vegetable industry, because there are so many different pieces of equipment used (particularly harvesters) and they are not designed with any thought given to common wheel track widths or working widths.
- Always use guidance – never let a tractor in the paddock that is not guided and working off the same A-B lines.
- Get guidance issues sorted early and properly.
- Different seedbed conditions due to CTF may require adjustments to planter setting and irrigation management.

WHAT NEXT?

The paddock is currently sown to grass as a green manure crop. We plan to grow potatoes in the coming summer. This is presenting us with some challenges with planting machinery to set up to avoid taking too much soil out of the wheel track. Harvest is also a challenge, as we need to get different equipment than that used for onion harvest.