On the right track: how to fit large machinery into a controlled traffic system

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A gain of $50,000 per year and seeing depleting soils turn into healthy bowls of life has Corrigin, WA, farmer Wes Baker confident he is on the right track.

WES BAKER'S SHIFT TO CTF HAS HELPED IMPROVE HIS CROPPING SOILS, WHICH ARE 'FULL OF ORGANIC MATTER AND SOIL AGGREGATES'.

The benefits of controlled traffic farming (CTF) are widely known, but uptake of the practice has been slow in most southern grain-cropping regions.

Wes Baker, who farms Travstar Valley farm at Corrigin, WA, about 200 kilometres east of Perth, with his wife Meg, believes that if farmers understood how to fit wide air-seeders into a CTF system, many more could benefit from the concept.

"I have noticed there are some farmers that are very close to fitting into a tramline (controlled traffic) system, but don't realise it," he said. "There is a way of using the more common-width header fronts and still use the wide tool bars for seeding."

The second-generation farmer and WANTFA Chair, grows wheat, barley, canola, oats, lupins and hay on a 2,280 ha property of which 2,135 ha are arable. Some of his paddocks are cropped continuously; others are part of a cereal/pasture rotation that provides feed for the sheep that are also part of his farming system.

He has been using a CTF for 12 years and credits the system with a $50,000 a year increase in income and the healthiest soils he has ever had; full of organic matter and soil aggregates.

Wes put sidearm markers on his seeder in 2002 and in 2005 decided to go one step further and fit 2 cm RTK autosteer.

At that stage 41% of the farm was covered in wheel tracks, with compaction being caused by the air-seeder, sprayer, header and spreader all being on different working widths and wheel tracking widths. The air-seeder was 11 m, sprayer 28 m, spreader 16.5 m and header 9 m.

Conversion

Wes believes converting old machinery is the most economical way to make the change to CTF unless you're in the market for new machinery. "I couldn't afford new machinery so I just converted what we had."

"Working out how to convert your machinery to a tramline system starts with configuring your machinery width

ratios," he said.

"When we changed we started with an 11-metre air-seeder and the header was 9 metres. We needed to upgrade the header, so we purchased a used machine with an 11-metre front, which matched the seeder width."

He also had to adjust wheel-track widths, with the sprayer pretty easy but the spray tractor more challenging.

"We considered getting engineers to do it, but ended up doing it ourselves," he said. "We cut through the front wheel centres with the oxy and welded a section of pipe onto it to extend it out to give us a 3 m track width to match the header and the seeder."

Getting a centre-mounted header front was practical but uneconomical, so they stayed with the offset header front. "It is possible to fit the machine you currently own into a CTF system."

If you can get compaction down to 15% then you are doing very well.

Their seeding tractor is running on dual tyres but Wes would like to go to single tyres eventually to reduce the area of compaction even more.

The last thing on the list of conversions is the fertiliser spreader, which has a track width of 2.5 m and spreads at 16.5 m. Wes wants to change it to a 3 m track width for pre-seeding spreading and change from granular nitrogen to liquid nitrogen so post-seeding applications of fertiliser can be done with the sprayer, which fits neatly into his CTF system.

He is aiming to reduce his wheel-track coverage, and so machinery compaction of his soils, to 13% of the total cropping area; a target he believes he can achieve by converting the spreader to fit the CTF system and running the seeding tractor on single tyres.

"It can be expensive and sometimes difficult to create a perfect CTF system, but getting everything lined up and having less compaction than you previously had is progress," he said.

Wes believes it's better to sow crop in the wheel tracks rather than leaving them bare. This ensures weeds that establish on tracks are subject to crop competition and produces more grain.

WES BAKER'S TWO HEADERS ARE ON THE SAME THREE-METRE TRACK WIDTH AS HIS SEEDING EQUIPMENT AND SPRAYER.

WES'S FERTILISER SPREADER IS THE ONE MACHINE ON THE PROPERTY YET TO BE CHANGED TO THE STANDARD THREE-METRE TRACK WIDTH.

Getting started

One of the main reasons farmers aren't confident they can get into CTF is that they can't match up their machinery without spending a lot of money, Wes said.

He advocates that anyone wanting to adopt CTF start with their header because header fronts can't be altered and the header creates the most compaction. "Start with the header if you want the system to work."

The last thing on the list of conversions is the fertiliser spreader.

The most common CTF system machinery ratio is 3:1, with the sprayer three times the width of the seeder and the header, but there are other options. It is possible to work with a 2:1 ratio, and some growers with particularly large-scale operations are using a 3:1.5:1 (6:3:2) ratio of the sprayer, seeder and header working widths.

"Many farmers have seeders with widths of about 18 m and find it difficult to develop a CTF system around a machine of that size. However, with the size of their cropping programs they would reduce productivity to an unviable level if they down-sized their machine to fit a smaller-scale CTF system.

However, with a bit of engineering it is possible to adjust the seeder and sprayer widths to suit,Wes said.

"If you have a 42' header, start with that, which gives you a 63' seeder and a 126' sprayer. If you have a 40' header, then you can have a 60' seeder and a 120' sprayer.

'In my case, I could change my seeder over to a 54' machine, which works with the 36' header front and keep the sprayer width as it is."

Using an irregular ratio is a compromise and will result in extra tracking at the start of the paddock until the machinery lines up and every second run with the seeder will create another set of wheel tracks, he said. However, he sees this as acceptable where the scale makes it necessary.

"Working with a 60' seeder, a 40' header, a seeding tractor on singles or tracks and matching wheel tracks you can confine compaction to 11% of the paddock area, which is an excellent result," Wes said. If you can get compaction down to 15% then you are doing very well, and if you can get it below 10% then you are doing exceptionally well."

"A lot of farmers out there already have autosteer, so it's only a matter of thinking about how they can match machinery.

"Anyone can do it. All you have to do is work on the ratio of 3:1.5:1 for your machinery and adjust your wheel tracks afterwards if you want to fine-tune the system."

Benefits

Wes is seeing a huge improvement in trafficability as the permanent wheel tracks get firmer, improving his ability to operate in soft sand soils and in wet conditions.

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The cropping soil between the wheel tracks on Travstar Valley Farm has softened up so much Wes has had to select field bin locations during harvest to the trucks carting grain don't get bogged in the soft cropping soil.

"Whether there is better water infiltration I don't know, but the soil is definitely softer and there is less water runoff than before we started CTF.

KEY POINTS

- Many farmers are already close to CTF but don't realise it.
- CT improves trafficability in sandy areas or when soil is wet.
- It is easy to convert old machinery; no need to buy new.
- Start with the header when converting to CTF.

"People often ask about compaction from sheep. Sure, the sheep cause some compaction, but we have noticed quite pronounced compaction from wheel tracks across paddocks that have been in a cereal/pasture rotation, indicating the machinery is compacting the soil far more than the sheep traffic.

"However, the compaction from wheels is more noticeable in the continuous cropping paddocks where there is no sheep compaction."

* *Lauren Celenza is WANTFA Extension Manager. This article was originally published in the June edition of the WANTFA journal 'New Frontiers'.*

ABOVE: UNDERSTANDING HOW TO FIT WIDE AIR-SEEDERS INTO A CTF SYSTEM WOULD OPEN THE WAY FOR MANY MORE FARMERS TO ADOPT AND BENEFIT BENEFIT FROM CTF, ACCORDING TO WES BAKER.

ABOVE RIGHT: WES'S TRACTOR WAS MODIFIED TO FIT THE STANDARD TRACK WIDTH BY CUTTING THROUGH THE FRONT AXLE AND WELDING IN A SECTION OF PIPE TO PUT THE FRONT WHEELS ON THREE-METRE CENTRES.