MAINTAINING PROFITABLE FARMING SYSTEMS WITH RETAINED STUBBLE

Warwick & Di Holding

PHOTO: WARWICK HOLDING

In full control

Meticulous record keeping and a philosophy of continuous improvement is central to the success of Warwick and Di Holding's full controlled traffic cropping operation.

Warwick and Di Holding crop a total of 2700ha at Yerong Creek, south west of Wagga. They grow wheat, canola, lupins, field peas and faba beans on a full controlled traffic, stubble retention system.

When they purchased their first block in 1996, it was a mixed farming operation. However just two years in, Warwick and Di took the sheep out of the system.

"They seem to be compromising what we were doing, rather than complementing it," Warwick says.

Throughout the late 1990s and early 2000s, they direct drilled on 228mm rows and burned stubbles. They were having trouble deciding what width to run their machinery and they already had a tramline system in place.

Then in 2005, FarmLink sponsored Warwick to attend a controlled traffic farming conference in Gatton, Qld. The trip proved a watershed in the way Warwick thought about farming.

"We had some bogged up, compacted paddocks and random tracks, and after the conference, we knew that controlled traffic and standing stubble was the way to go," he says. "It showed us that we could get all our machinery to line up and, by doing that and getting permanent tracks and repeatability, we could inter-row sow to keep stubble."

In 2006, they embarked on a change to 308mm row spacing and a 12m seeder. They invested in 2cm RTK autosteer with

PHOTO: DI HOLDING

SNAPSHOT

Property: Glen Lynn

Owners: Warwick and Di Holding

Location: Yerong Creek, NSW

Farm size: 1950ha (owned, leased and share farmed) + 750ha full contract for absentee landlords

Annual rainfall: 520mm (333mm GSR)

Soils: sandy loam, loam, clay loam and sodic red clay

Soil pH: 4.5 – 5.8 (CaCl2)

Enterprises: Wheat, canola, lupins, field peas and faba beans

Equipment: JD 8295RT, JD8330 & JD8110 tractors, JD S670 & JD 9670STS headers with 12m draper front and chaff deck. Flexicoil (red) tyne & JD 1895 single disc seeder on 308mm row spacing, Simplicity trailing 6000L aircart 3 bins plus small seed bin to suit both bars. Goldacre 6500L 36m trailing, SP SpraCoupe 24m 12m trailing for tow behind windrower or airseeder. Landaco 12T trailing belt spreader 12m for lime and gypsum, 36m deck for urea, Leyly linkage 24m spreader. Macdon M150 windrower with 12m draper front and trailing sprayer

Above left: These Samira faba beans were inter-row sown with a tine machine into standing wheat stubble.

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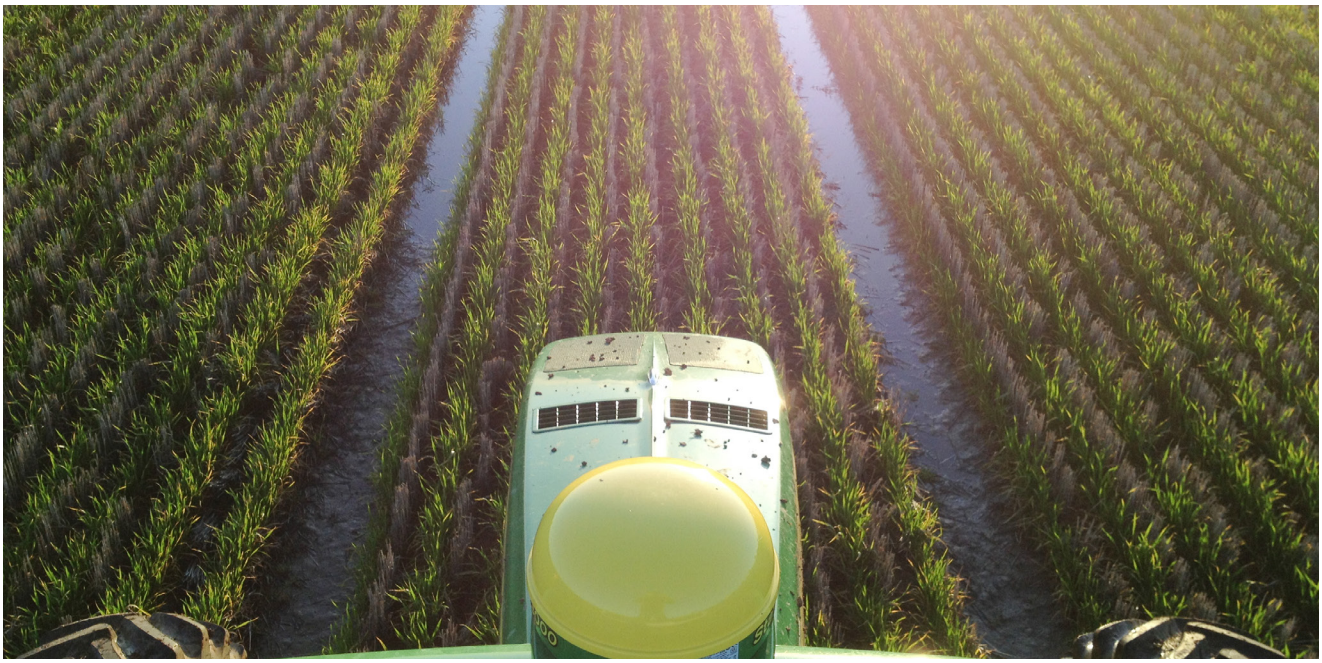

PHOTO: WARWICK HOLDING

The 3m permanent wheel tracks have been valuable in getting on wet paddocks, but still have their limits, as in this instance where Warwick got bogged while spraying.

their own base station and started seeding on those rows with 2cm repeatability.

It was a difficult financial decision to make in the middle of the drought but Warwick says, "We are a bit crazy like that. We just had to protect our bottom line in those tough years and we had to spend money to do it and survive."

"We tried to keep as much stubble from the 228mm row spacing width in the transition to the 308mm width, but we had to burn a bit to get through it. We set everything up on repeatable straight lines so we could inter-row sow after that," he says.

"We calculated that if we could get a one kilogram per millimetre improvement in our water use efficiency it would pay for the RTK installation and the system in one year," he says. "We were pretty confident that we were achieving that in some of those drier years with full stubble retention and some timely summer spraying."

NITROGEN MANAGEMENT

During the drought, crop nutrition was not top of mind, because moisture was limiting the crops, rather than nutrients.

"When we changed systems, we ran into quite a run of very dry, tough sort of seasons," Warwick says. "We didn't have a great nitrogen strategy because there wasn't a lot of yield potential, or money to chase yield potential."

Once the seasons improved, Warwick and Di started thinking about augmenting their nitrogen program to lift the yields.

"We were able to apply more nitrogen, but we were still falling behind where we expected to be. We realised we needed to keep a pulse in the system," Warwick says.

So in 2010, they reintroduced pulses into the rotation, and have been growing them every year since.

"They don't reduce our nitrogen input, but we get a better bang for our buck from applied nitrogen when we start with background nitrogen from the pulses. And the following wheat crops are generally healthier."

Warwick says, "When we started to see high prices for urea and we had no other way of getting nitrogen on our crops, we realised it was too expensive and too risky. So we started to increase the area we planted to pulses. Now we try to run around 25 per cent pulse, 25 per cent canola and roughly 50 per cent wheat."

They run rotation trials on farm, splitting paddocks and doing replicated 36m strips alternating between lupins and canola. Once these are harvested, they calculate the gross margin on the crops, then follow that paddock for another two years, also doing gross margins on the following wheat crops.

"This allows us to put a value on how much the lupins are contributing to our yield and our wheat quality," Warwick says.

They have always kept comprehensive records, so soil testing is a natural fit. They generally soil test the paddocks earmarked for canola each year, addressing pH and aluminium issues with lime if necessary.

Wheat sown with the tine machine receives 70kgs per hectare of MAP and 50kg of deep-banded urea per hectare.

To gain more flexibility at seeding, this year Warwick and Di bought a John Deere single disc seeder.

Wheat sown with this disc machine receives 70kg per hectare of MAP and 50kg per hectare of urea, applied with the mid-row banders – a separate set of disks out the front that put urea between every pair of seed and fertiliser discs.

"We then topdress 100kg. In an average year we would wait and see if we had a profile coming later in the season, but in a wet year like this we go a lot earlier. The potential was there and the nitrogen helps the crops handle the wet conditions far better."

Canola sown with the tine machine

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Right (top to bottom): Some on-farm trials where Warwick and Di looked at the ability of growth regulators to manage stubble height, strength and standability with a view to making it easier to get through with a tine machine. They found no significant advantage for the cost involved, so opted for a disc seeder instead.

receives 80kg of MAP treated with flutriafol at seeding. Canola sown with the disc machine receives only 50kg of flutriafol-treated MAP at seeding, because the narrow row created by the disc has a higher concentration of fertiliser near the seed, so the lower rate avoids fertiliser burn.

At the five-leaf stage, the canola receives 100kg of urea per hectare. Once all the in-crop spraying is done, another 100kg is applied at stem elongation.

Warwick and Di have increased their rates of applied nitrogen because they believe the canola has never quite yielded what the seasons should allow.

"We can only put it down to not enough pulses in the rotation. Our canola usually follows a cereal, so we have to put urea on to get the yield," Warwick says.

Their yields are starting to sneak up as nitrogen levels are sneaking up.

"There is less of a gap now. Some of the gap last year could be explained by just the hot weather at flowering. It's usually a frost or heat that explains the difference now with the levels of nitrogen we are applying."

STUBBLE MANAGEMENT

The Holdings' decision to retain stubble was made for the usual reasons: to maintain ground cover and retain moisture, and to move away from stubble burning.

"Burning stubble is very risky in that hotter, drier part of the season," Warwick says. "It's time-consuming to do it safely. We were over the stress, the risk and the loss of ground cover."

In the early years of transition to controlled traffic, the decision to retain stubble was made easier by the light stubble loads. They didn't grow many big crops in those years, so inter-row sowing was relatively straightforward.

However they knew eventually they would be faced with heavier stubble loads, and seeding and herbicide efficacy would become an issue. Before reintroducing pulses into the rotation (in 2010), they would often have two cereal crops in a row.

"We got to a point where we thought we could inter-row sow most crops most years, but then we hit some better seasons. So we had two years – 2014 and 2015 – where we had to burn a lot of stubble just to get through, which was against what we were trying to do. We tried to persist with them but we could not plant a crop to get it established. It was making a mess," Warwick says.

"I still don't like having to burn stubble, but establishing a crop is the priority," he says. "We burnt one small 70ha area this year (2016). We were trying to sow it with a tine machine and it just would not go through this long, lanky Gregory stubble. We had to just drop a match in it."

"The disc seeder has allowed us to sow all our lupins and canola and some of

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Sowing canola in mid-March 2016 into two years of standing wheat stubble. The Holding's new disc seeder, purchased in the past year, has made it possible to get through huge quantities of trash. Despite the dry conditions, the stored moisture here established a good canola crop.

our very early wheat into stubble, without having to burn," Warwick says. "It has worked well."

"It also minimises disturbance, because we are trying to move from minimum till back to almost zero till with the disc."

They sowed around half of the program with the new disc seeder, and the other half with the existing tine machine. Next year, their goal is to sow the whole program with the disc.

From a herbicide perspective, this means they will have to move from using trifluralin, which needs to be incorporated into the soil with tines. But Warwick believes that he has enough alternative chemicals and methods to control ryegrass that it will not be an issue. And he doesn't rule out strategic burning.

"In some areas, we have creek country and we can run into trouble with slugs. If we also have resistant ryegrass in those areas, and a higher frost risk area, we may consider some strategic burning," he says. "We wouldn't burn for just one of those things, but if we had all three we would definitely consider it, although we would keep it to the absolute minimum area."

LIFELONG LEARNING

By any standard, Warwick and Di are very connected to the Australian – and international – broadacre cropping community. At a local level they receive much of their information through the network of Greg and Kirrily Condon, who are the Holdings' consultants and agronomists.

"Greg is involved in the GRDC updates and he feeds information back to us from those forums," Warwick says. "We also get information from our reseller agronomist, and we keep in touch with like-minded farmers either by phone or via Twitter."

Warwick is an active Twitter user, and while he bemoans the amount of time he spends on there, he concedes that the information it yields has been invaluable.

"The Twittersphere is an overload of information," he says. "Twitter has made not only this country, but the world, such a small place. It doesn't matter whether the farmer is in WA or Ontario or Spain, they are at your fingertips. You can throw a question out there and get between one and 50 responses. Or you can send a direct message to someone you know runs a machine similar to yours and ask, how have you done that? It's just unbelievable."

The way they tap into information sources has allowed them to fast-track improvements to their operations.

"Our main focus is trying to have a sustainable and profitable rotation," Warwick says. "Profitable means it has to make money so we can continue to improve, and sustainable means we're not trying to extract the maximum dollar every year, but looking at it from a long-term view. So, there have been years when the pulse crops are not so profitable, but they are important in the rotation for the sustainability and profitability of future wheat crops."

"We are still learning, we are still changing and improving and I think we are getting better."

MORE INFORMATION

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CSIRO

FarmLink
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GRDC
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PRODUCED BY: SARAH CLARRY

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Warwick Holding

Timeline of Warwick and Di Holding's transition to full controlled traffic and stubble retention.

1990s

1998
Removed livestock from system

2000s

2003
Purchased new airseeder and began sowing on 228mm row spacing.

2004
Added guidance system, subscription 10cm differential GPS.
Introduced grain yield monitoring.

2005
Added tines to the airseeder (seed 11.75m, spray 24m).
Introduced EM38 soil mapping.

2006
2cm RTK Autosteer.
Rearranged tines on Flexicoil from 228mm to 308mm.
Made a new axle for the 24m Goldacre boomspray to spread the wheels to 3m.
Installed cotton reels on spray/spreader tractor to spread wheels to 3m spacing.

2007
Removed inner wheels of duals on the sowing tractor to have 3m outer wheel spacing.
Purchased a 12m draper front for harvest.

2008
Spray application mapping.

2009
Purchased a second header and a 12m front for contract harvesting.

2010-present

2011
Purchased a John Deere 8295 RT track tractor on 3m narrow tracks.

2014
Purchased a 36m Goldacre trailing boom.
Purchased a 12m draper front for windrowing.
Started spraying under the cutter bar at windrowing.
pH mapping and variable rate lime and gypsum.
Introduced narrow windrow burning.

2015
Purchased a 24m SP SpraCoupe for in-crop high clearance spraying.

2016
Purchased a 12m John Deere single disc seeder on 308mm with mid-row banders.
Purchased Emar chaff decks for the headers.

PHOTO: WARWICK HOLDING