Optimising Irrigated Grains

GRDC GRAINS RESEARCH & DEVELOPMENT CORPORATION

# ADAPTABLE FARM SYSTEMS

**IRRIGATION| INNOVATION | MIXED FARMING**

## CASE STUDY FARM

**Location:** Durham Ox, Victoria

**Farmers:** Todd Martin

**Total Area:** 750ha (plus 650ha Feb 2021)

**Area Under Irrigation:** 350ha

**Irrigation Infrastructure:** Centre pivot - 2 areas covering 94ha, remainder flood

**Total Water:** 600ML (plus optunistic temporary water)

**Average Annual Rainfall:** 350mm

**Soil Type:** Brown clay loam to black self mulching soils

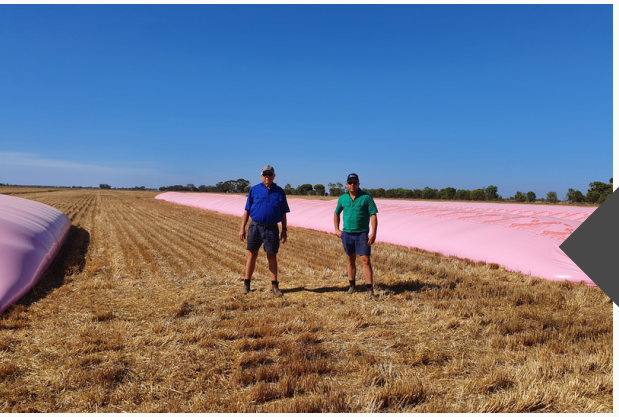
**Crops:** canola, barley, wheat, faba beans, vetch

## DEVELOPING A FARM SYSTEM TO ADAPT TO CHANGING ENVIRONMENTS

When Todd came back to the farm 14 years ago, it was a traditional sheep farm running merinos. He had a vision that they could improve profitability with a cropping enterprise to compliment the sheep operation. Together with his father they started on a small scale and built cropping into the system. After a few years they decided to scale up, putting in new irrigation infrastructure and purchasing the appropriate machinery, They installed a towable centre pivot for two sites that is fully automated on land that could be irrigated but was not suitable for lasering and a flood system. They grow crops (barley, canola, wheat, Faba beans and vetch) on the dryland and irrigation using a minimum till stubble retention system.

There is a great synergy between the enterprises that allows for a sustainable, profitable system that maximizes the farm area. The sheep enterprise comprises of 750 ewes is self replacing merinos, a dual purpose flock. They utilise areas not suitable for cropping and the sheep clean up in the cropping areas. Lambing is set up around being able to utilise off season feed.

The mixed enterprise increases adaptability of the system and allows decisions to be made based on water price and availability and the comparative commodity prices of the two enterprises. The new irrigation system provides more flexibility to pre-water crops and fully irrigate over spring to maximise yields and opens up options for incorporating different crop types into the system, including summer crops.



With an increase in summer rainfall we found that cropping was better suited to our area, as we could control weeds and conserve moisture to grow crops the following season. Sheep need to be fed 12 months of the year, whereas crops only 5-6 months. Particularly on the dryland we found that we could make the most of the moisture available, we could grow a good crop on 150mm (at the right time of year) compared with feeding sheep. I worked out that we would need to run 1 ewe to the acre on our dryland to beat the crops and that is just not possible, you'd have bare paddocks and have to feed all the time.

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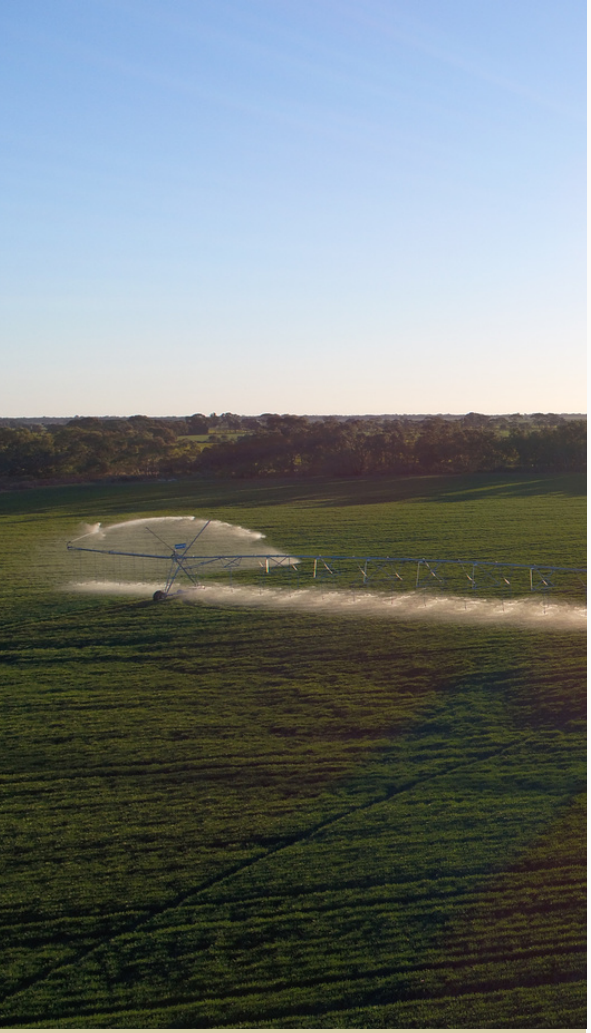

## WHAT WAS YOUR MOTIVATION TO MAKE THIS CHANGE?

Water became harder to come by, although we always had permanent water, we increasingly found the price of water meant it wasn't always viable to feed sheep, even with good meat prices. Introducing cropping into the system meant we could adapt to fully utilise our water for maximum results.

We had reached the maximum that could be achieved with the flood irrigation system, so the overhead system provided more flexibility to expand our irrigation area while also increasing watering efficiencies.

Labour efficiency was also a key driver, we decided if we were going to expand we would ensure it was not too labour intensive and that the system could be managed remotely.

## WHAT KEY BENEFITS WERE YOU LOOKING FOR?

We were looking to expand our system and putting in an overhead system allowed us to do that, given our land wasn't suitable for further lasering and flood. The key benefits we were looking for included:

- Expanding the area of irrigation on the farm to make better use of water available
- Strategically applying water at either end of the season
- Reduced workload, more effective use of our labour
- Flexibility with managing the cropping system and rotations

## RESULTS SO FAR

There is a great synergy between the sheep and cropping enterprises, it allows flexibility to value add our water to grow crops when the viability of growing sheep feed with irrigation is not there.

We haven't been through a full irrigation season to be able to measure any results in terms of crop performance. The system hasn't been pushed hard, we are still learning about how much water to apply and when. But there has been a noticable difference in our labour requirement to manage irrigations, the biggest labour input is moving the pivot between sites, which takes about 4 hours and can be done with one person. The system has also allowed us to have more control over when and how much water is applied.

"Be open-minded and adapt the system to the situation and economics"

"We are not doing anything exceptional, just trying to get the basics right!"

"You've got to have an adaptable system that can move with water, price and commodity markets"

## What's next? Do you have any additional changes planned?

We have just expanded our land area by purchasing a neighbouring farm, a farm we had been leasing. That essentially doubles our area, the property is very similar to ours and has a fairly modern flood irrigation system. The next stage for us is to upscale our current system to include the extra 650ha and consolidate to get the farms operating as efficiently as possible. The expansion was a strategic decision, we had been looking for land when the property next door came up, it provided the perfect opportunity. The plan is to effectively double what we are doing with the crop and sheep enterprises.

How water is utilised across the two farms will depend on availability and price of temporary water and commodity prices. There is definitely scope to play around with other crops in the future that are not suited to flood irrigation, possibly lentils or chickpeas. In years with an abundance of water, summer crops are also an option.

When the new irrigation system was installed, we planned ahead and it was all piped up and the infrastructure put in place so that we could easily have two pivots operating instead of the one.

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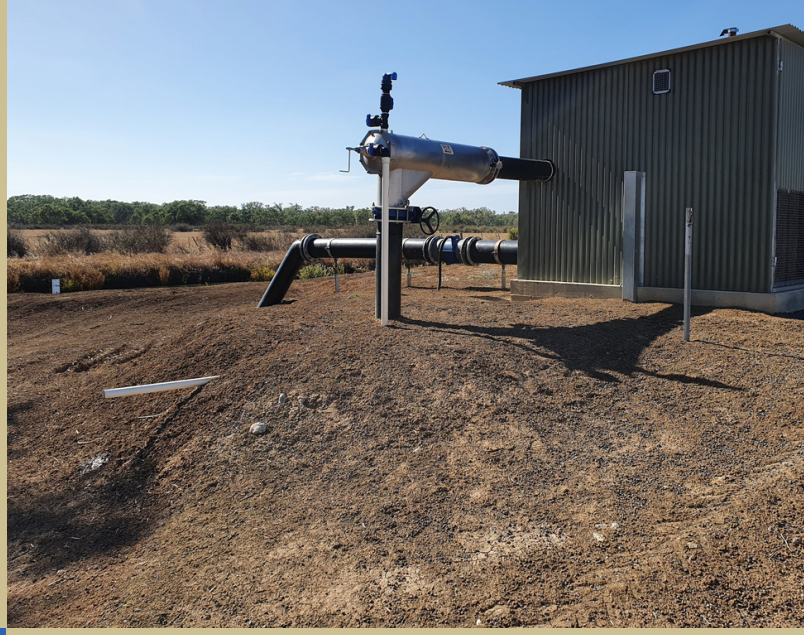
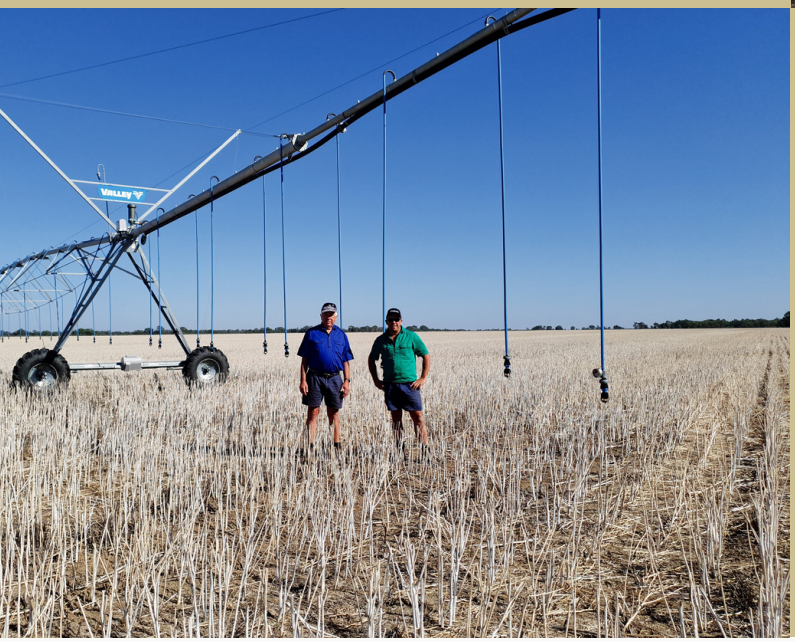
## WHAT INFORMATION DID YOU CONSIDER BEFORE MAKING THE DECISION TO CHANGE?

Firstly it was looking at our landscape and options for improving the farming systems.  We had an area that would allow us to expand the irrigation area, so after considering different systems

Research results from trials is a source of information we value to provide the information we need to make informed decisions..

We also use an Agronomist to bounce ideas off and to help keep us up to date with the latest industry information.





## WHAT KEY ADVICE WOULD YOU GIVE TO OTHERS LOOKING TO DEVELOP ADAPTABLE FARM SYSTEMS?

- Information has never been easier to come across with research and the internet. Seek out the information needed.
- Get the basics right and do it well.
- Research to ensure you get the right irrigation system for your farm.
- Be adaptable to deal with the variations in water price and availability.
- Think ahead about water availability (irrigation and rainfall) and plan rotations based on the best information available.

## MORE INFORMATION

Thinking about looking into upgrading your irrigation system?  Here are some resources you might find useful.

Booklet to help navigate planning irrigation set-ups and upgrades produced by Ag Vic & the North Central & Goulburn Broken CMAs - read more
Centre Pivot or Lateral Move – what to consider? - read more
Satellite Irrigation Advisory Service and Irrigation Monitoring - read more

Irrigated Cropping Council

The Irrigated Cropping Council in collaboration with key industry partners conducts research to assist farmers with making decisions and manage their water and crops efficiently to optimise profitability.

VISIT SITE

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The optimising irrigated grains project is part of the GRDC investment in ICF1906-002RTX, FAR1906-003RTX and UOT1906-002RTX

Irrigated Cropping Council
Promoting irrigated agriculture

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