



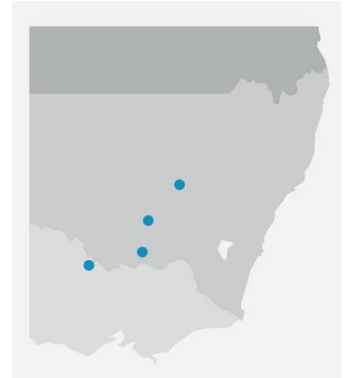
## Closing the yield gap: Key Learning Sites Southern NSW (making the most of water)

### 1. What is the project about?

This project aims to increase water productivity and profitability by expanding growers' knowledge of irrigation technology and best practice management.

The project is grower driven with grower groups involved with the management and activities at each of the key learning sites located in the Lachlan, Murrumbidgee, and Murray valleys. A range of technologies are being used to demonstrate best practice management including soil moisture monitoring and automation. The aim being to optimise the limited availability of water resources to obtain maximum dollars per mega litre in a range of irrigated cropping systems.

Project sites are located near Condoblin, Kerang, Darlington Point and Finley.



### 2. Why do irrigators need to know about it?

In 2014 - 2017 64% of monitored crops in the Murray and Murrumbidgee Valley's should have produced higher yields based on the volume of irrigation water applied. Many of the irrigation crops monitored suffered from drought stress before the first spring irrigation reducing the yield potential of the crop. These sub-optimal yields could have been avoided through better paddock drainage, sowing early in the sowing window, matching row spacing to the target yield and better scheduled irrigations<sup>1</sup>.



### 3. How will the research benefit irrigators?

The project aims to lift grower's knowledge so they can make more informed management decisions, optimising their return/ML water applied. Grower groups involved in the management of the sites are the Irrigation Research and Extension Committee (IREC), Central West Farming Systems (CWFS), Irrigated Cropping Council (ICC) and Southern Growers (SG).

An annual field day is being held at each of the key learning sites, in addition to inter-valley tours to enable growers from other regions to gain knowledge from work done outside their district.



A feature of the project is the establishment of the [Murray Valley Soil Moisture](http://murrayvalleysoilmoisture.site/) website (<http://murrayvalleysoilmoisture.site/>). The website provides real time information from soil moisture monitoring equipment installed at each of the Key Learning Sites (KLS) as well as two case study farms. The website allows growers to see how soil moisture data is used for scheduling irrigations, and how to monitor the effect and extent of rainfall events and plant growth on soil moisture.

<sup>1</sup> [https://www.researchgate.net/publication/327828505\\_Soil\\_under\\_an\\_irrigated\\_environment\\_ICF\\_00008\\_final\\_technical\\_report\\_201](https://www.researchgate.net/publication/327828505_Soil_under_an_irrigated_environment_ICF_00008_final_technical_report_201)



### 4. Key results to date

#### Central West Farming Systems:

In 2020 CWFS aimed to determine what are the best dollars returned per ML spent considering physical delivery of water is not promised past March 31. This is a scenario that their growers face in dry years. "If I plant long season crops early and graze them, what kind of money can be made, what is the best grazing strategy and what crop type would be best choice between canola and cereal?"

#### Irrigation Research and Extension Committee:

The 2019/20 summer saw a modest area of 14 ha of cotton planted at the IREC Field Station, due to low water allocation. The variety selected was 714 (short season variety), which proved to be wise decision given the difficult cotton year due to cooler growing conditions. The crop yielded 11.2b/ha with excellent quality, low micronaire was linked to the higher yielding varieties which have a longer growing season. Pressure based probes in each bay were used to aid the decision-making process on when to irrigate, and ensure the crop was not over irrigated. In previous seasons soil moisture probes showed that the IREC crop was being over irrigated and two full irrigations could be saved as a result.

IREC have also found at their site that the bankless channel system has improved water efficiency compared to the pipe-through-the bank (PTB). Unlike PTB, bankless channel layout can hold the water on the field longer so giving the opportunity to infiltrate or sub into the bed. IREC also found that PTB has greater pumping costs due to the higher volumes of water recycled.

#### Southern Growers:

Three winter crops were sown for the 2020 winter cropping season (Canola, Faba bean and Barley), these were sown in beds in bay layout alongside a fallow bay that has now been sown to rice (Reiziq) for the 2020/21 season. Analysis of the practicalities and cost benefits will be completed after the rice has been harvested and yields and quality and water use for each treatment are known. Two flow meters have been installed (one in the supply and one in the drain) to allow for accurate measurement of water used by each rice bay, this will give much better accuracies when assessing economics of each scenario.

#### Irrigated Cropping Council:

In 2020 the ICC's aim was to highlight the importance of avoiding drought stress / waterlogging at key growth stages and how knowledge of available soil moisture can improve scheduling. The aim was to reduce the number of irrigations the crop receives to maximise profitability in low allocation or high-water price years.

For more information visit the [Smarter Irrigation for Profit](https://smarterirrigation.com.au) website and watch the videos or listen to the podcast:

- <https://smarterirrigation.com.au/how-do-we-use-data-to-make-irrigation-decisions/>
- <https://smarterirrigation.com.au/alex-schultz-from-nsw-dpi-talks-about-the-smarter-irrigation-for-profit-phase-2-key-learning-sites-in-southern-nsw/>
- <https://smarterirrigation.com.au/rob-houghton-the-chair-of-irec-talks-about-the-fully-automated-irrigation-demonstration-site-at-whitton/>
- <https://smarterirrigation.com.au/murray-valley-soil-moisture-monitoring/>

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