Closing the yield gap: Maximising Water Productivity on Irrigated Dairy Farms

1. What is the project about?

Optimised dairy irrigation farms established under Smarter Irrigation for Profit Phase 1 found most operators were not getting the basics right. Conducting annual system checks including pumps, getting the start-up time right and avoiding the ‘green drought’ increased water productivity by 40% on some farms.

On-farm audits of energy efficiency and irrigation uniformity (checking irrigation systems are performing as they were designed to) found big variations in efficiencies – even with recently installed systems. Energy savings of up to $20,000/pivot were identified.

Working with farmers, researchers and agronomists the project team have established 10 farmer and service provider led ‘optimised irrigation sites’ on dairy farms in SA, WA, Victoria and NSW. Each site reference group has selected the irrigation skills and technologies they want to learn more about with a focus on the ‘yield gap’.

Other selected areas of interest include pump efficiency, minimising energy costs, new irrigation scheduling technologies, water balance platforms and automated pasture measurement systems.

The ‘optimised irrigation sites’ are located on commercial farms, with sites located near Dandalup, Mount Compass, Mount Gambier, Mepunga East, Tatura, Maffra, Yarram, Tocal, Jelgowry and Casino.

2. How will the demonstration sites benefit irrigators?

These sites provide an opportunity for irrigators to check their operating practices against good practice whilst building skills in how to manage existing irrigation systems more efficiently. They also provide an opportunity to assess new irrigation technologies and decision support platforms such as Pasture.io and IrriPASTURE and discuss their potential usefulness for their system. All sites are supported by experienced agronomists and irrigation consultants.

Cross sector and within industry bus tours to visit other industry irrigation farms and regions are a key feature of the project. These tours are open to all interested farmers and service providers.

3. Key results to date

On-farm data collection periods for the year one irrigation season were shortened due to Covid-19 restrictions from March 2020. The project has taken actions to identify how gaps in existing data will be addressed in the next phase of the project.

Baseline activities completed on all sites include: Establishment of reference/ farmer groups, installation and calibration of soil probes (incl. setting of accurate refill/ full-points for each probe location), soil sampling/ testing to determine Readily Available Water (RAW) in each probe location, establishment of the optimisation farmers on the technology platforms, infrastructure/ site mapping and determination of data collection protocols for dry matter (DM), power and water measurements in order to report against the project metrics.
All ten sites are actively using the following technologies to better inform irrigation decisions: soil moisture monitors with telemetry (at least 3 per site), site rain gauges with telemetry (at least 1 per site), water balance platforms IrriPasture (for pasture) or IrriSAT (for crops), Pasture.io (validation of NDVI as an accurate pasture monitoring tool) and SWAN Systems daily weather notifications (BOM 3 or 6 km grid modelling).

Preparations are also underway to increase the level of real-time technology accessible to the participating farmers of the Bega and Mepunga East (WestVic) sites, with installation of the automated SWAN System underway, in collaboration with the Tasmanian Institute of Technology (TIA). Contracting is now also in place for the project to work with the Centre for Engineering in Agriculture, University of Southern Queensland, to develop version 2 of the IrriPasture tool to improve capability and functionality to better reflect the pasture and soil systems of the dairy industry.

For more information visit the Smarter Irrigation for Profit website and watch the webinars and videos:


For further information or project progress updates, contact:
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