

# Milking water efficiencies with moisture probes

## CASE STUDY



When it comes to improving irrigation efficiencies, dairy farmers couldn't go past one small piece of technology – soil moisture probes.

These in-ground sensors enable easy and accurate measuring and monitoring of readily available water (RAW) in the soil.

They are also the best way to determine if a paddock requires irrigating.

Most farmers involved in the Smarter Irrigation for Profit phase 2 program (SIP2), funded by the Department of Agriculture Fisheries and Forestry, and Dairy Australia, will continue to use soil moisture probes after learning how they contribute to irrigation efficiencies.

For some dairy farmers like Shelley Field at Yarram Victoria however the probes have not only helped make accurate decisions about irrigation, they've also reduced the on-farm workload.

"I've learnt I don't have to irrigate as soon, or as early, as I thought," she said.

"We needed less water to keep the grass happy – keep the moisture up to it.

"This gives me more time to go and do something else, like ride around and make sure there's grass in front of the cows. But at least now, I won't have to carry a shovel to dig a hole in the paddock.

"It's about working smarter, not harder."

It was a similar story for Mosquito Hill dairy farmer Ben McHugh.

**The Adelaide Hills milk producer found that better soil moisture monitoring led to improved irrigation scheduling and ultimately increased productivity and reduced costs.**

"Starting-up irrigation a couple of weeks earlier than we traditionally would have meant production growth rates stayed a lot higher for longer," Ben said.

"We didn't let the soil dry out as much as we would have prior to the probes. We got more grazings and more growth, which meant we could come back and graze those paddocks faster and it also meant less supplementary feed."

Dardanup, Western Australia dairy farmer Michael Twomey had always used some form of soil moisture monitoring, but the soil probes trialled as part of the industry irrigation efficiency research delivered additional benefits.



"With the probes up to 400 mm deep we were able to monitor the RAW in the ground which meant we basically started watering a lot earlier than we did historically because we were keeping the RAW available to the plant," he said.

"It's a different approach to when we started (irrigating) and we'd just go by eye, until we'd think the soil was dry enough.

"Generally, if we are waiting for this (the soil to dry out), it was too late and then we'd spend all summer catching-up the water starved plants. It meant the pasture looked green, but it wasn't growing. Keeping the water up to the plant meant it kept growing."

"Proactive" watering was something NSW Department of Primary Industries Tocal dairy farm manager Matt Brett also learnt as part of the Smarter Irrigation for Profit phase 2 program.

He found, especially in the drier years, that he could have been irrigating two-to-three days earlier in some cases, according to information from soil moisture probes and pasture irrigation software IrriPasutre.

Beginning irrigations a little earlier also meant there wasn't any decline in pasture growth.

"It made sure we optimised every bit of pasture growth," Matt said.

"Basically, that means getting the maximum amount of dry matter which helps push towards an extra cut of silage over the year.

"Maximising the amount of conserved feed helps profitability."

For one farm in Victoria's Macalister Irrigation District in Gippsland however making the most of water meant ceasing irrigation during summer.

Garry Cook and Colleen Laws manage a 550-cow farm at Cobains.

They'd suspected drying-off their pasture during the Summer was the best way they could use their irrigation water allocation across the year as ceasing irrigation enabled them to reallocate water to autumn or "start-up" irrigation.

"We knew it was the right thing to do," Garry said.

"I actually think other people are going to start doing it. Sure you can grow grass over Summer if you have the water, but water is going to become scarce and expensive – it is going to have to happen."

In the NSW Bega Valley, Will Russell now has a better understanding of the RAW beneath the centre pivot irrigator at his family's Jellat Jellat dairy farm thanks to the irrigation efficiencies program.

RAW is the measure of water available for extraction by plants and it varies between soil types, crops and seasons.

It is measured by soil moisture probes and is a guide to how often irrigation is required.

The RAW under the centre pivot at Will's family farm is 19mm. Understanding this number has helped his family dairy farm improve water efficiency.

"Now we know the RAW for this part of the farm, we have a range of millimetres we put on under the pivot – between 12 and 19mm per pass – and we have learnt not to go above that," Will said.

## The Smarter Irrigation for Profit phase 2 program was run across three years at 10 dairy farms across Australia.

SIP2 was a partnership between the irrigation industries of sugar, cotton, grains, dairy and rice, research organisations and farmer groups. The objective of SIP2 was to improve the profit of over 4,000 irrigators. It had 14 sub-projects covering three main components:

- Development of new irrigation technologies including new sensors, advanced analytics to improve irrigation scheduling and strategies to reduce water storage evaporation.
- Cost effective, practical automated irrigation systems for cotton, rice, sugar and dairy.
- Closing the irrigation productivity yield gap for cotton, rice, dairy, sugar and grains irrigators through a network of 46 farmer led optimised irrigation sites and key learning sites located on commercial farms across Australia.

### MORE INFORMATION

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