

# Optimising homegrown feed in WA

## CASE STUDY



Adopting new technology and altering irrigation practices has helped one Western Australian dairy farmer grow more pasture.

In doing so, he now has robust irrigation data to demonstrate a responsible use of natural resources – something he said was vital to maintaining the dairy industry's 'social licence'.

Dardanup milk producer, Michael Twomey, now uses deeper soil moisture probes to inform irrigation timing and SWAN system forecasts as a guide to watering volumes applied to his homegrown feed.

These tools help him maintain the readily available water (RAW) – a measure of water in the soil available for extraction by plants – to ensure maximum irrigation efficiency.

"With the probes up to 400mm 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."

These changes resulted in Michael growing 59 per cent more dry matter (chicory and white clover) per day under centre pivot irrigation.

**This additional feed reduced the amount of silage and grain required to maintain the diet of his 400 head Holstein-Jersey herd.**

Michael adopted this technology and practices following three seasons as an "optimisation site" for the Smarter Irrigation for Profit phase 2 program (SIP2), funded by the Department of Agriculture, Fisheries and Forestry, and Dairy Australia.

This program ran across three seasons and was designed to improve the knowledge and practices of local dairy industry irrigators and service providers.

Michael's 220-hectare dairy farm includes 100ha of irrigation watered by three centre pivots.

This irrigation system was designed to enable all pivots to operate concurrently to maximise the use of off-peak power.

A centre pivot irrigating 12ha was the focus of the "optimisation site" trials.



Guided by the soil moisture probes and SWAN Systems weatherwise daily forecasts, Michael irrigated this trial area earlier and used more water to meet the plants' RAW.

He said this change meant he grew more pasture, but it also proved "quite costly" to grow grass across the summer.

Decisions about feed were not however always straight forward.

"There are so many factors that go into feed, for example fertiliser is ultra-expensive and we've been able to buy good hay for \$200 a tonne," he said.

"If it is costing \$300-plus per tonne to grow grass, getting good quality hay might be an option.

"But this is a year-by-year decision. I like direct grazing and watering it should be the most efficient way to farm."

## The variability of seasons also adds another dimension to feed budgeting and irrigation planning.

While "every year is different under the pivot," Michael said a run of 10 days of 32 to 35 degrees Celsius often shuts down the growth of the chicory and white clover.

In contrast, millet, which wasn't part of the trial but was grown under other irrigation, appeared to thrive – even during hot periods.

As part of the search to find more irrigation-efficient plant species, in the second and third season of the Smarter Irrigation for Profit phase 2 program, millet was over-sown into the white clover and chicory in early spring.

This wasn't however successful due to the strong competition from the white clover and chicory, while growth of other millet under irrigation was limited by soil and water quality.

Michael said the white clover and chicory delivers production benefits of 1 litre per cow per day, so he has no plans to remove this feed mix and replace it with something more heat tolerant.

Looking ahead, Michael will continue to use the soil moisture probes and combine them with his existing GDot soil moisture technology – shallower probes with a light-guide as an indication of soil RAW – to advise irrigation scheduling.

The SWAN system will also continue to be used to advise irrigation volumes.

"It's quite a good guide," Michael said.

"Sam Taylor, the agronomist (and optimisation site coordinator) compared it against the weather data, and it came out pretty good. It would be even better if we could also get rainfall and evaporation data after the fact too. That would make irrigation scheduling even more accurate."

### MORE INFORMATION

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