

New technology improves irrigation practices in South West Victoria

CASE STUDY



Graeme Ward, SIP2 optimisation site co-ordinator taking pasture measurements.

One South West Victorian dairy farmer is looking to invest in variable rate irrigation technology following his participation in an innovative industry program.

Stephen Smith, from Mepunga East, said this new technology would be the most logical evolution in his family's dairy farm irrigation program as it would lead to energy cost savings and improved water application.

The Smith family milk 650 Holsteins and have irrigated for more than 20 years.

Their farm was the 'optimisation site' for the Smarter Irrigation for Profit phase 2 program (SIP2), funded by the Department of Agriculture, Fisheries and Forestry, and Dairy Australia.

Dairy Optimisation Site Coordinator Graeme Ward wasn't surprised the Smiths were considering an investment in variable rate irrigation (VRI) technology.

He said it ensured maximum efficiencies when irrigating paddocks with undulating topography and a variation of soil types.

"VRI ensures that the correct amount of water is applied to the varying soil types, so they receive the optimum amount of irrigation water," Graeme said.

"For example, typically for the sand ridges, irrigation start-up time at the beginning of the season was too late, with traditional irrigation methods. Also, the depth of irrigation water applied per week during the season was insufficient to maintain adequate soil moisture compared to the mid slopes and the soils on the flats. So having the ability to adjust irrigation to account for these differences will be useful.

"VRI also means farmers stop watering things like tracks and gateways, where irrigation water doesn't need to be applied, so that's also an additional saving."

Energy costs and technical improvements to irrigation infrastructure also came under the microscope as part of this irrigation efficiency project.

Graeme said while improving water use efficiency remained an industry priority within South West Victoria, there were opportunities for additional economic gains when it came to enhancing energy efficiency.

"Research suggested that improvements in the energy efficiency of these centre pivot irrigation systems offers the potential for greater cost savings and lower costs of irrigated pasture dry matter production in this region," he said.



Australian Government
Department of Agriculture,
Fisheries and Forestry



This project was supported by funding from the Australian Government Department of Agriculture, Fisheries and Forestry as part of its Rural R&D for Profit program.

“There are further recommendations from the two *Irrigation System Evaluation* reports completed by the project that can be implemented to make additional gains in reducing energy consumption and improve energy efficiency. These include better matching the pump and the motor to the irrigation application, and the fitting of a variable speed drive (VSD) to the pump motor.”

Work at the Mepunga East optimisation site showed electricity costs were considerably more expensive than the cost of bore water that supplied centre pivot irrigation systems in South West Victoria.

Analysis, as part of the project, showed water costs were \$4 a tonne of dry matter during January and February 2022 – the peak irrigation months in what was a dry season – while electricity costs were nearly \$60/t DM.

A year earlier, electricity costs were nearly \$50/t DM.

Other findings from the Smarter Irrigation for Profit phase 2 program included farmers' appetite for immediate and accurate irrigation data.

Graeme said farmers were not interested in irrigation software that required manual data input, rather they wanted to take information from soil moisture monitoring and combine it with local weather observations to make decisions.

“Irrigation scheduling in an environment like South West Victoria, with different topographies and soil types, requires an element of art as well as science,” he said.

“It needs a bit of a gut feel based on experience and circulating between different observations and sources of data to make decisions.”

MORE INFORMATION

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