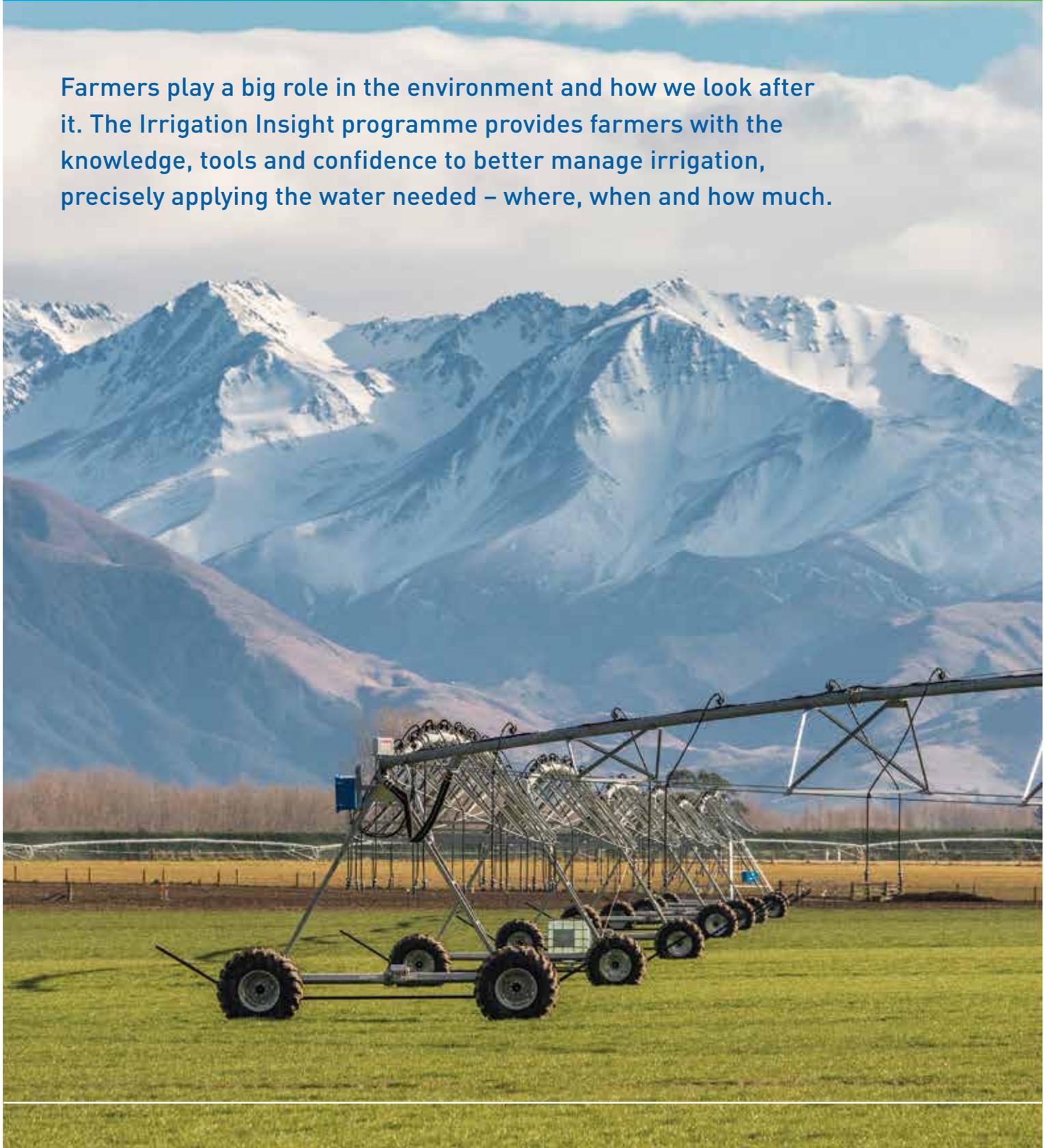


Irrigation Insight Programme

Farmers play a big role in the environment and how we look after it. The Irrigation Insight programme provides farmers with the knowledge, tools and confidence to better manage irrigation, precisely applying the water needed – where, when and how much.





Irrigation Insight is a joint industry-CRI research and extension programme funded by the Ministry of Business, Innovation and Employment (MBIE) to examine, on working farms, the ease and effectiveness of using improved weather forecasting and drainage estimations for on-farm water management.

The five-year programme focuses on environmental, social and economic aspects of irrigation management. It will do this by working with a collective of stakeholders in quantifying the economic and environmental benefits of improved water use efficiency from integrating high-resolution weather forecast data with on-farm irrigation scheduling decisions. It also aims to translate data, information and findings into beneficial tools and knowledge for dairy farmer use throughout New Zealand.

Led by NIWA, in collaboration with DairyNZ, Fonterra, AgResearch and IrrigationNZ, the programme builds on NIWA's earlier pilot work in Canterbury.

Informing and refining irrigation decision making

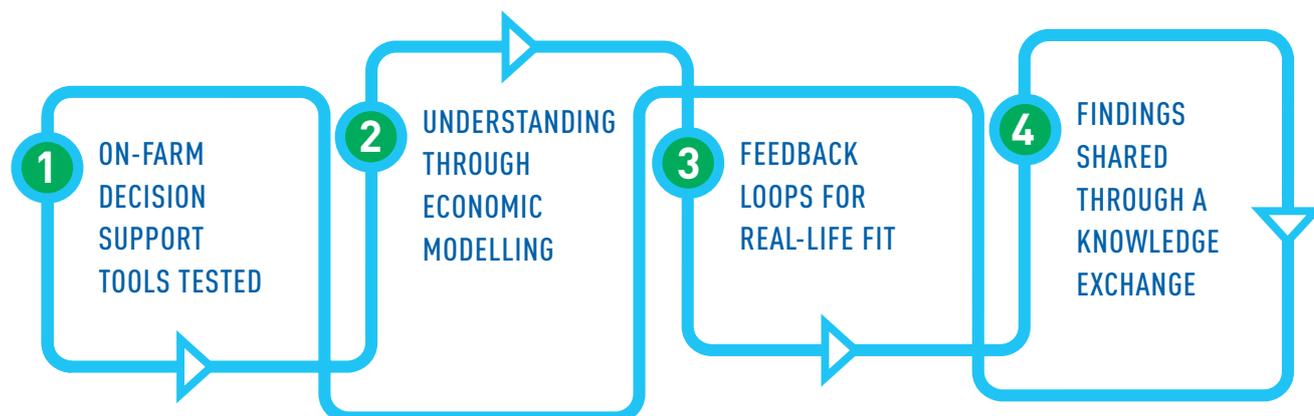
The programme aims to support farmers in moving towards an irrigation approach that is both current supply and future demand driven.

Decisions about each irrigation event will consider actual current soil and/or crop water demand along with the forecast water supply as well as other elements including climate, hydrology and economics. When these elements are put into practice in a unified approach farmers achieve benefits for both the farm business and the environment through water use efficiency.

Economically sound and environmentally responsible results are achieved by reducing water and nutrient losses from the root zone and by using less water for irrigation while maintaining pasture growth.

About the programme

The Irrigation Insight programme has four inter-linked components:



1. On-farm decision support tools tested

The programme will provide a farm-specific water balance model that will inform farmers of current irrigation demand and future water supplies. We are piloting this study in 10 irrigated dairy farms across Canterbury.

On-farm technology

One irrigated paddock on each farm will have a profile soil moisture sensor and rain gauge installed. Data from these instruments will be telemetered in near-real time and combined with up-to-date high-resolution weather forecast to present a snapshot of past, current and future soil moisture demands and forecast rainfall and evaporation.

State-of-the-art forecasting

Weather forecasts will be provided by NIWA's state-of-the-art weather prediction systems. This will include forecasts from a large domain model, which can accurately describe the evolution of weather systems that affect New Zealand, and a high-resolution terrain-resolving model to ensure that estimates of rainfall, temperature and wind are as precise as possible, even in complex terrain. These place-specific forecasts will include estimates of the reliability of the predictions and will be bias-corrected using locally collected weather data.

2. Understanding through economic modelling

The economics component will use modelled and actual data to understand how management of pilot farms changes in response to improved soil moisture and weather forecast information. The aim is to help farmers understand the economic impacts of irrigation management choices to enable better, more informed decisions. It will capture changes in cash costs (e.g. electricity), changes in pasture growth owing to changes in irrigation and the cost of water and nutrients lost below the root zone.

3. Feedback loops for real-life fit

The programme will also test that the irrigation scheduling processes or solutions identified are a good fit for the farmer and farm system, as well as the irrigation scheme and regulatory authority. The social component will involve interviews and workshops with farmers and other relevant stakeholders (industry, regulators, researchers) throughout the programme to ensure understanding of the real-life application. Feedback loops will enable barriers to be addressed along the way. This knowledge will contribute to the design of more useful tools and practices. In addition, a programme evaluation component will measure how much change is occurring.

4. Findings shared through a knowledge exchange

Knowledge will be shared through a variety of communication channels to keep farmers, regulatory and industry stakeholders up-to-date with the progress of the programme and informed about significant findings. This will include the development of educational and training programmes to encourage information dissemination as well as providing the basis for wider discussion. We will also be working with industry partners to share knowledge and ensure that farmers have clear, science-based messaging and that knowledge resources are not duplicated.

Find out more at:

www.irrigationinsight.co.nz

IRRIGATION *Insight*

ECONOMICALLY SOUND & ENVIRONMENTALLY RESPONSIBLE

A co-innovation project

Our programme will bring together multiple stakeholders with diverse perspectives on water management including Māori-owned farming enterprises to work together in a co-innovation approach. This approach relies on research organisations, agricultural industry stakeholders, regulators, resource managers and farmers **working together** within the programme to co-develop knowledge, share learnings and co-design solutions, which will accelerate the pace and uptake of innovation.

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Find out more at www.irrigationinsight.co.nz



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