



# Regenerative Agriculture enhancing water quality in New Zealand's dairy sector

## OVERVIEW

Milk stands as one of the world's most valuable agricultural commodities, its demand perpetually increasing amidst evolving consumption patterns and rising disposable incomes (FAO, 2016; IDF, 2024). However, this growth in the dairy sector comes at a cost, with escalating pressure on our planet's finite resources (WWF, 2024). The rapidly growing demand for dairy products globally exacerbates environmental challenges, notably water and air pollution stemming from manure, nutrient mismanagement, and bovine emissions (OECD, n.d.). Consequentially, this pressing scenario necessitates a paradigm shift towards regenerative agriculture.

The dairy industry stands as a cornerstone of the New Zealand economy. Accounting for approximately 20% of exports and contributing around \$17 billion annually, alongside 3% of GDP, it underscores its essential role in driving economic growth and stability (TDB, 2020). At the heart of this industry lies Fonterra, the largest dairy cooperative in New Zealand, comprised of numerous farming families deeply rooted in pasture-based systems. With increasing environmental and societal pressures, the co-operative has built on the natural advantage of New Zealand dairy by supporting and guiding more efficient farming systems by local farming communities to safeguard environmental resources.



Figure 1. SAI Platform's Regenerating Together global framework for regenerative agriculture process flow

Aligned with **SAI Platform's Regenerating Together global framework for regenerative agriculture**, this case study brings to life the paramount importance of understanding the local landscape. By embracing a four-step approach (as illustrated in Figure 1), it accentuates the imperative for farmers to immerse themselves in the intricacies of their immediate environment.

## 1 CONTEXT ANALYSIS

With high rainfall, water scarcity is not an inherent problem for farmers in New Zealand. However, historically there was little focus placed on mitigating nutrient and effluent run-off and local water sources were becoming increasingly impacted.

In 2010, Fonterra offered plans to support farmers in becoming compliant with Government regulation and accelerated the pathway toward protecting New Zealand waterways. In 2018 these evolved into Farm Environment Plans and Nitrogen Risk Scorecards. After analysing the local context of the production systems, the thousands of Fonterra farms spread across New Zealand began to focus their management practices on **protecting and enhancing the water quality of surrounding water bodies**, while ensuring high-quality milk.



## 2 OUTCOME SELECTION

## 3 PRACTICE ADOPTION

Given their local context, Fonterra’s Sustainable Dairying Advisors work with farmers to prioritise the implementation of certain practices to monitor and report progress against key environmental indicators.

Such practices focus on:



### Limiting water nutrient loading

through over 40,000km of fences and 8,400ha of riparian planting and buffer strips to exclude stock and reduce effluent run-off.



### Maintaining healthy soils

through low cultivation and minimum tillage methods, incorporating stock on land using rotational grazing practises, and maintaining 96% grass-fed diets and 97% non-milking time spent on pasture.



### Maximising nitrogen use efficiency

by following fertiliser, agrichemical and manure management plans.



### Optimising emissions

per kilogramme of milk solids produced through improved feed efficiencies and a focus on animal health and wellbeing.

## 4 MONITOR PROGRESS

With these practices implemented, the following results have been obtained, both on prioritised outcomes and other environmental performance indicators:

### WATER

A decrease in **nutrient leaching** and **nitrogen load** by reducing Purchased Nitrogen Surplus per hectare by 20% since 2021.



### SOIL HEALTH

An increase in **soil cover** by 0.5%, with the area of cultivated land (6%) using minimum tillage increasing by 36% since 2020.

### CLIMATE

A 2% reduction in **greenhouse gas emissions** per unit of production since 2018.



### ANIMAL HEALTH AND MILK QUALITY

A 7% increase in kg **milk solids** produced since 2018 (390 kg milk solids/cow on average in 2022/23)[1].

A 4.4% decrease in **somatic cell count** [2] since 2018.

[1] Milk solids production per cow are used as a key indicator of milk quality and composition.

In general, a higher number milk solids indicates better quality of milk.

[2] The main indicator of milk quality is the somatic cell count (SCC), i.e., the number of cells per quantity of milk.

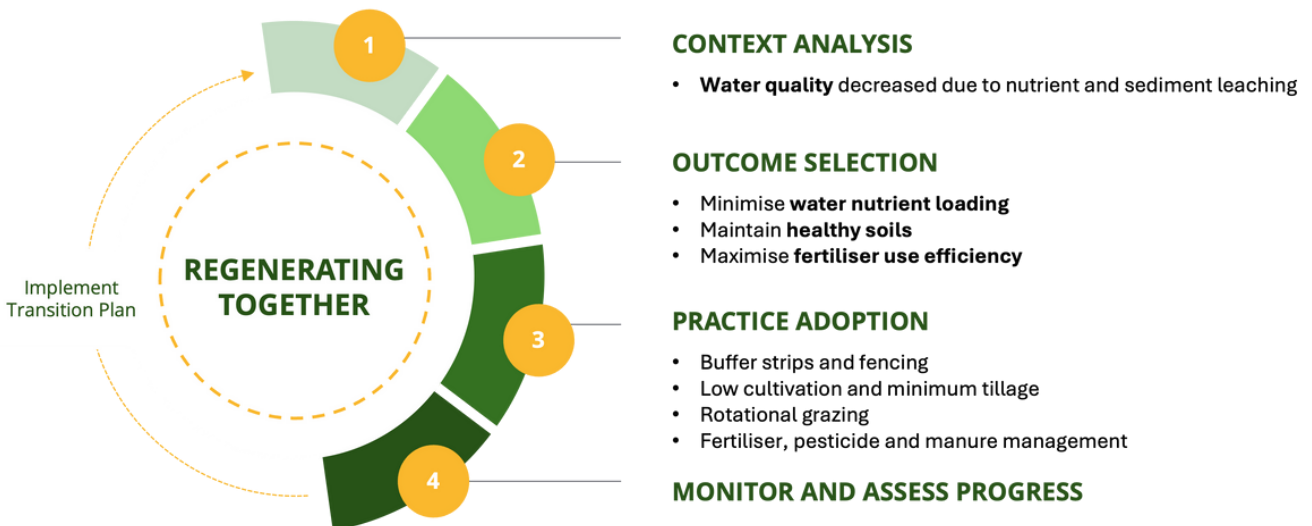
In general, a lower SCC indicates better animal health and higher quality milk.



# CONTINUOUS IMPROVEMENT

By working together with Fonterra’s Sustainable Dairying Advisors, Fonterra dairy farmers have been able to identify environmental risks and address these by co-creating local action plans. With an initial focus on safeguarding water sources, the agricultural practices implemented are showing signs of several additional benefits for the farm, farmer and cows.

Regenerative agricultural practices are improving the environmental conditions of the farms and surrounding environment and lead to improved emissions efficiency of milk production and improved animal health and wellbeing. Acknowledging regenerative agriculture is a journey, the farmers will continue their focus on freshwater, biodiversity and ecosystem health restoration on-farm and in catchments by monitoring their progress and investigating different technologies and innovations.



**Figure 2.** The regenerative agriculture process of dairy farmers in New Zealand, using the SAI Platform’s Regenerating Together framework process flow and indicating major decisions at each step of the process.



## ACKNOWLEDGEMENTS

This case study assesses the efforts of New Zealand dairy farmers and cooperative to transition towards regenerative agriculture. Thank you to Fonterra for sharing your insights to co-develop this case study! Special appreciation goes to Charlotte van der Lee, Charlotte Rutherford and Alison Watters for their time and expertise. All images used throughout this case study belong to Fonterra.

To learn more about Fonterra's regenerative agriculture position, which is aligned to SAI Platform's Regenerating Together global framework for regenerative agriculture, click [here](#).

We are eager to build out more case studies to demonstrate regenerative agriculture across a variety of production systems and geographies. If you are implementing regenerative agriculture using our framework and would like to showcase your learnings, please reach out!



If you have questions or feedback on SAI Platform's Regenerating Together global framework for regenerative agriculture, get in touch:

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To get more information about SAI Platform's Regenerating Together programme, visit our website:

<https://saiplatform.org/regenerative-agriculture-programme/>

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