

Systematic Advantages of Organic Agriculture in New Zealand

A Review of Published Research and Evidence

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March 2026

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Executive Summary

Organic agriculture in New Zealand has evolved from a marginal movement in the 1980s into a sector worth over NZ\$1.1 billion.¹

Drawing on peer-reviewed research, government reports, and the work of leading New Zealand scientists — including freshwater ecologist Dr Mike Joy (Te Herenga Waka–Victoria University of Wellington) and organic agronomist Dr Charles Merfield (BHU Future Farming Centre, Lincoln) — this report identifies five systematic advantages that organic agriculture offers New Zealand: environmental and ecosystem benefits, soil health improvements, economic and market premiums, climate resilience, and public health outcomes.

These advantages are reinforced by a distinctive national context — geographic isolation, a strong clean-green brand, and the Organic Products and Production Act 2023 — that positions New Zealand organics favourably in global markets. At the same time, Merfield and colleagues caution that organic certification standards alone are not sufficient to guarantee all sustainability outcomes, underscoring the importance of the regulatory framework now being developed under the Act.

1. Background and Context

1.1 Historical Development of Organic Agriculture in Aotearoa

New Zealand's organic sector has deep institutional roots. The Soil & Health Association, founded in 1941, was among the world's earliest advocates for organic growing. Lincoln University's Biological Husbandry Unit (BHU) — founded in 1976 by Bob Crowder — created an early research base and has been home to leading organic scientists including Dr Charles Merfield.²

BioGro New Zealand was founded in 1983 as the country's first organic certifier, the same year commercial organic production began to take hold. A pivotal moment came in 1994 when the Ministry of Agriculture and Fisheries published *Towards Sustainable Agriculture: Organic Farming* — described as a seminal paper confirming that organic farming was viable in New Zealand, that organic methods enhanced soils and nutrient recycling, and that the approach would benefit future farmers and society.³

The sector was further catalysed by opposition to genetic modification. Following the 2001 Royal Commission on Genetic Modification, domestic organic sales grew from approximately NZ\$32 million in 2000 to NZ\$259 million in 2006. By 2020, the sector reached NZ\$723 million. The most recent industry data places total sector value at NZ\$1.1 billion.⁴

1.2 The Regulatory Milestone: Organic Products and Production Act 2023

¹Organic Exporters Association of New Zealand. *Organics in NZ*. organictradenz.com. Retrieved March 2026.

²Biological Husbandry Unit / BHU Future Farming Centre. bhu.org.nz. Lincoln University, Canterbury. Founded 1976.

³Ministry of Agriculture and Fisheries (1994). *Towards Sustainable Agriculture: Organic Farming*. Wellington: MAF.

⁴Te Ara – The Encyclopedia of New Zealand. 'Organic Farming'. teara.govt.nz. Retrieved March 2026.

A foundational regulatory development arrived with the Organic Products and Production Act 2023 (OPPA), in force from April 2023. The OECD notes that this legislation helps develop standards for organic products and set requirements for businesses in the organic sector from production through to sale.⁵

The legislation brings New Zealand into alignment with major trading partners and supports expanded export opportunities, particularly given the near-simultaneous conclusion of free trade agreements with the United Kingdom (February 2022) and the European Union (June 2022). Both agreements expand the importance of organic equivalence recognition for New Zealand exporters.

2. Environmental and Ecosystem Advantages

2.1 Biodiversity Conservation

Organic farms demonstrably support higher on-farm biodiversity than their conventional counterparts. The Agricultural Research Group on Sustainability (ARGOS) — a major longitudinal study covering over 96 kiwifruit, sheep/beef, and dairy farms in New Zealand from 2004 to 2012 — documented that organic farms support superior ecological processes and greater biodiversity than conventional systems.⁶

In practice, New Zealand organic farms maintain diverse crop varieties and incorporate natural habitats such as hedgerows and wetlands. Organic crop farming employs crop rotation to prevent the build-up of crop-specific pests and diseases, reducing the need for chemical intervention.

2.2 Water Quality: The Work of Dr Mike Joy

New Zealand faces a severe freshwater quality crisis, the dimensions of which have been extensively documented by Dr Mike Joy, freshwater ecologist and Senior Research Fellow at Te Herenga Waka–Victoria University of Wellington. Dr Joy's research establishes the systematic link between agricultural intensification — particularly high-stocking-rate dairying and synthetic nitrogen fertiliser use — and the degradation of New Zealand's rivers, lakes, and groundwater.⁷

In his 2022 Newsroom analysis, Dr Joy demonstrated that the production of one litre of Canterbury milk requires approximately 11,000 litres of water to meet ecosystem health standards under New Zealand's National Policy Statement for Freshwater Management — a figure far exceeding industry representations. He has also drawn attention to the displacement of nitrogen-fixing clover by synthetic nitrogen fertiliser since the 1990s as a key driver of nitrate pollution.⁸

⁵OECD (2023). Agricultural Policy Monitoring and Evaluation 2023: New Zealand. Paris: OECD Publishing.

⁶ARGOS Research Programme (2004–2012). Agricultural Research Group on Sustainability. Lincoln University / University of Otago / AgriBusiness Group.

⁷Joy, M.K. (2015). Water quality issues in New Zealand — monitoring methodology and approaches to improving quality. Presented to Parliamentary Commissioner for the Environment.

⁸Joy, M.K. (2022). New Questions About Water Impacts of Dairying. Newsroom, 30 May 2022. newsroom.co.nz.

In a 2022 policy paper co-authored with colleagues, Dr Joy argues for structural reform of the financial incentives that make agricultural intensification economically rational while externalising its environmental costs.⁹

His edited book *From Mountains to Sea: Solving New Zealand's Freshwater Crisis* (2018) provides the most comprehensive scientific overview of the problem, drawing on contributions from leading researchers across the country.¹⁰

Dr Joy's research makes the converse case for organic agriculture powerfully: by prohibiting synthetic nitrogen fertilisers and constraining stocking intensity, organic systems avoid the primary mechanism by which conventional dairying and horticulture degrades New Zealand's freshwater resources.

As OANZ notes, at least 45% of New Zealand's rivers are no longer considered swimmable, and two-thirds of freshwater native bird species face extinction risk — deterioration driven predominantly by the agricultural intensity that organic systems structurally exclude.¹¹

3. Soil Health Advantages

3.1 Superior Soil Quality: The Reganold Study

Perhaps the most rigorously documented advantage of organic systems in New Zealand is the consistent improvement of soil quality. A landmark study published in *Science* by Reganold et al. (1993), comparing biodynamic and conventional farms in New Zealand, found that organic and biodynamic farms had measurably better soil physical, biological, and chemical properties than adjacent conventional farms — and were equally financially viable per hectare.¹²

The ARGOS longitudinal research — covering over 96 farms across the kiwifruit, sheep/beef, and dairy sectors from 2004–2012 — found consistent differences in soil quality between organic and conventional farming systems, with the magnitude of advantage increasing in more intensively managed production sectors.

3.2 Dr Charles Merfield and the BHU Future Farming Centre

Dr Charles Merfield, Head of the BHU Future Farming Centre at Lincoln and one of New Zealand's leading organic agronomists, has made important contributions to understanding the conditions under which organic farming delivers genuine sustainability outcomes. In a key 2015 paper co-authored with the ARGOS team, Merfield and colleagues concluded that organic standards need to account for a broader set of criteria in order to retain claims to

⁹Joy, M.K., Marriott, J. & Chapple, C. (2022). Levelling the Grazing Paddock. *Policy Quarterly*, 18(4). DOI: 10.26686/pq.v18i4.8015.

¹⁰Joy, M.K. (ed.) (2018). *From Mountains to Sea: Solving New Zealand's Freshwater Crisis*. Massey University Press, Wellington.

¹¹Organics Aotearoa New Zealand / OANZ (2023). *Sowing Sustainability: 10 Positive Impacts of an Organic New Zealand*. Wellington: OANZ.

¹²Reganold, J.P., Palmer, A.S., Lockhart, J.C. & Macgregor, A.N. (1993). Soil Quality and Financial Performance of Biodynamic and Conventional Farms in New Zealand. *Science*, 260(5106), 344–349.

sustainability — a nuanced finding that supports the importance of the OPPA 2023 regulatory framework in codifying performance expectations beyond input substitution.¹³

Merfield's 2019 analysis of regenerative agriculture for the BHU Future Farming Centre — which overlaps substantially with organic principles — identifies healthy soils, reduced tillage, cover cropping, and enhanced biological activity as the foundational mechanisms through which farming systems can genuinely improve environmental outcomes.¹⁴

In his public-facing writing, Merfield argues that organics represents not merely a production system but a philosophy: a values-based approach to how farming should be done, one that places the long-term health of soil, ecosystem, and community ahead of short-term yield maximisation.¹⁵

3.3 Soil as a Foundation for Resilience

Research from Manaaki Whenua – Landcare Research demonstrates that organic farming contributes to healthier soils that are more resilient to erosion and degradation. Improved soil structure enhances water retention capacity — research from Canterbury found that compost-amended soils held up to 30% more water than non-amended soils — reducing irrigation requirements and buffering against drought.¹⁶

4. Economic Advantages

4.1 Sector Scale and Growth

The organic sector's economic significance has grown substantially. Fruit and vegetables lead the export sector at approximately NZ\$274 million, followed by dairy at NZ\$187 million. New Zealand's two largest organic certifiers — BioGro New Zealand and AsureQuality — are both IFOAM accredited, providing market access to the USA, EU, Australia, South-East Asia, the UK, and Japan.¹⁷

New Zealand's export markets for organic products span more than 98 countries. Geographic isolation has helped New Zealand avoid many pests and diseases common elsewhere, enabling agricultural products to gain an international reputation for safety, quality, and natural goodness that underpins premium pricing.

4.2 Financial Viability

The economic viability finding from the Reganold et al. study published in Science is foundational: biodynamic farms were equally financially viable on a per-hectare basis as

¹³Merfield, C.N., Moller, H., Manhire, J., Rosin, C., Norton, S., Carey, P., Hunt, L., Reid, J., Fairweather, J. et al. (2015). Are Organic Standards Sufficient to Ensure Sustainable Agriculture? Lessons From New Zealand's ARGOS and Sustainability Dashboard Projects. *Agroecology and Sustainable Food Systems*, 39(7), 776–812.

¹⁴Merfield, C.N. (2019). An Analysis and Overview of Regenerative Agriculture. BHU Future Farming Centre Report 2-2019. Lincoln: BHU Organics Trust.

¹⁵Merfield, C.N. (2022). The Future Is Organic. OANZ/NZ Gardener Magazine (republished). oanz.org.

¹⁶Manaaki Whenua – Landcare Research. Soil, Water and Land Use Research. landcareresearch.co.nz. Various publications.

their conventional neighbours, despite different input structures. This challenges the assumption that environmental benefit necessarily comes at economic cost.¹⁸

Input cost savings reinforce this picture. The cost of synthetic fertilisers in New Zealand ranges from NZ\$500 to NZ\$1,000 per hectare annually. Organic systems that substitute composting, cover cropping, and biological nutrient cycling significantly reduce this recurring expenditure.

4.3 Industry Evidence: Pamu and Fonterra

The most compelling commercial evidence for organic profitability in the New Zealand dairy context comes not from academic studies but from two of the country's largest agricultural enterprises: Pamu (Landcorp Farming Limited) and Fonterra Co-operative Group.

Pamu — New Zealand's largest farmer as a State-Owned Enterprise — began its organic conversion programme in 2016, starting with two farms: Earnslaw at Wairakei near Taupo and Tasman in the Manawatu Moutoa Complex. The explicit objective was to pilot a farming system with a lower environmental footprint that had equal profitability to conventional. By 2024, Pamu had grown to 11 organic farms and three runoffs, with 6,430 dairy cows on 4,190 hectares, making it the largest organic dairy farmer in Aotearoa New Zealand.¹⁹

Pamu's published farm performance comparisons show that while stocking rates have declined and the cost of production has risen, the organic milk price premium more than compensates for lower per-hectare output. A secondary driver was regulatory risk management: the Proposed Waikato Regional Plan Change 1 (PC1) made it commercially rational to de-risk the Wairakei portfolio through reduced environmental intensity.²⁰

In November 2025, three further Moutoa dairy farms achieved organic certification, bringing Pamu's organic portfolio to its current scale. Chief Executive Mark Leslie stated directly: 'Organic production is a strategic lever for Pamu. By supplying organic milk, we not only meet growing consumer demand but also secure higher premiums that strengthen profitability and long-term resilience.'²¹

Pamu's FY2025 earnings forecast illustrated the premium gap clearly: organic milk was forecast at NZ\$10.90-\$11.90/kg MS against NZ\$9.00-\$10.00/kg MS for conventional milk — a premium of approximately NZ\$1.90/kg MS at mid-range, or around 20% above the conventional price.

Fonterra's organic programme, which began in 2002, provides the most extensive dataset on organic milk premiums in New Zealand. In the 2023-24 season, Fonterra paid NZ\$10.92/kg MS to more than 100 organic supply farms — a record premium of NZ\$3.09 above the conventional farmgate price and the largest margin since the market-based organic milk price was introduced in 2016-17.²²

¹⁹Pamu (Landcorp Farming Limited) (2024). Organics - Profitably Farming More Sustainably. pamunewzealand.com, 5 July 2024.

²¹Pamu (Landcorp Farming Limited) (2025). Three More Pamu Dairy Farms Achieve Organic Certification. pamunewzealand.com, November 2025.

²²Henderson, A. (2024). Fonterra Makes Record Organic Milk Payout. Farmers Weekly, 1 October 2024. Organic milk price NZ\$10.92/kg MS in 2023-24; record premium of NZ\$3.09 above conventional farmgate price.

In 2024-25, that record was surpassed: Fonterra's organic payout reached NZ\$12.35/kg MS — a fifth consecutive year of price increases — with organic dairy sales growing 27% year-on-year, driven particularly by the United States market. Organic milk collections rose 7.5% to 9.7 million kg MS.²³

The sustained commercial strength of organic premiums has prompted Fonterra to expand its organic collection to the South Island for the first time, from the 2028-29 season. Since the organic milk price was established in 2016-17, it has delivered an average premium of approximately NZ\$2/kg MS above the conventional milk price. Fonterra's General Manager for Organics, Andrew Henderson, describes organic as evolving from a niche play into a resilient, high-margin category for New Zealand dairy.²⁴

4.4 Regulatory Alignment as an Economic Asset

The enactment of the OPPA 2023 creates a new economic dimension: regulatory equivalence with major trading partners. The EU and UK both require foreign equivalence frameworks before granting preferential treatment to organic imports. OECD analysis identifies the OPPA as enabling expanded export opportunities precisely through this equivalence pathway.²⁵

5. Climate Resilience and Emissions Advantages

5.1 Carbon Sequestration and Emissions Reduction

Agriculture represents a significant share of New Zealand's total greenhouse gas emissions, primarily through methane from ruminant livestock and nitrous oxide from nitrogen fertilisers. New Zealand is notable internationally for having moved to price agricultural emissions, as the OECD records.²⁶

Organic systems offer direct emissions-reduction advantages: eliminating synthetic nitrogen fertilisers (which produce nitrous oxide during nitrification), reducing average stocking rates, and building soil organic matter that sequesters atmospheric carbon. Farms already operating under organic standards are better positioned for a compliance-cost environment that progressively prices agricultural emissions.

5.2 System Resilience

Dr Merfield's analysis of regenerative and organic systems emphasises that the diversity of plant species, the soil's improved water retention, and the absence of reliance on imported

²³Henderson, A. (2025). Fonterra Organic Dairy Farmers Receive Record Milk Price. DairyDimension, September 2025. Organic milk NZ\$12.35/kg MS for 2024-25; organic dairy sales up 27% year-on-year; collections 9.7 million kg MS.

²⁴Henderson, A. (2026). Fonterra Greenlights South Island Organic Milk Uptake. Farmers Weekly, 21 January 2026. Average organic premium approximately NZ\$2/kg MS above conventional since 2016-17; expansion to South Island from 2028-29 season.

synthetic fertilisers all reduce farm vulnerability to supply disruptions and extreme weather events.²⁷

6. Public Health Advantages

Organic food is produced without synthetic pesticides, herbicides, and growth hormones. Research from Plant & Food Research New Zealand indicates that organic foods often contain higher levels of certain nutrients — particularly antioxidants — attributed to farming practices that enhance soil health and plant resilience.²⁸

Dr Joy's research adds a further public health dimension: his work on nitrate contamination and human health — including emerging evidence linking elevated nitrate in drinking water to bowel cancer risk — makes explicit the public health cost of conventional agricultural intensification, and by extension, the public health benefit of organic systems that structurally exclude synthetic nitrogen.²⁹

New Zealand's commitment to being GMO-free — strongly reinforced by organic sector advocacy — provides a further public health and market differentiation advantage, particularly for export markets in Europe and Japan where GMO concerns significantly influence consumer behaviour.

7. New Zealand's Structural Advantages

Several features amplify organic agriculture's systematic advantages in the New Zealand context specifically:

- Geographic isolation: Physical separation has naturally constrained pest and disease spread, reducing the baseline pressure for agrichemical intervention that exists in other agricultural nations.³⁰
- Brand equity: The clean-green brand is a genuine economic asset. Organic certification adds a verifiable, internationally recognised layer to this brand promise.
- No input subsidies: New Zealand is unique among developed economies in having removed all agricultural subsidies in the 1980s. Organic farmers therefore compete on genuine cost and price structures.³¹
- Indigenous knowledge alignment: Organic agriculture's emphasis on working with natural systems resonates with Māori land stewardship values — kaupapa Māori —

²⁸Plant & Food Research New Zealand. Nutritional Profile of Organic Foods Research. plantandfood.com. Various publications.

offering authentic grounding for organics that has both domestic and international appeal.³²

- Strong research infrastructure: The BHU Future Farming Centre at Lincoln, the ARGOS programme, Manaaki Whenua – Landcare Research, and Plant & Food Research collectively constitute a substantial research base for organic and sustainable systems.³³

8. Conclusion

The systematic advantages of organic agriculture in New Zealand operate across five interconnected dimensions: environmental outcomes (particularly freshwater and biodiversity), soil health and long-term fertility, economics and market access, climate resilience, and public health. Research from Lincoln University, Massey University, the ARGOS programme, Manaaki Whenua – Landcare Research, and the work of scientists such as Dr Mike Joy and Dr Charles Merfield converges on a consistent finding: organic systems generate genuine systemic benefits that conventional systems cannot easily replicate.

Dr Joy's water quality research makes the implicit case for organic systems explicit: the primary environmental damage caused by conventional agriculture — nitrate leaching, freshwater degradation, biodiversity loss — is structurally excluded by organic production standards. Dr Merfield's nuanced contribution is to note that certification standards alone are not a sufficient guarantee of all sustainability outcomes, making the regulatory rigour of the OPPA 2023 framework all the more important.

New Zealand's structural advantages — geographic isolation, the clean-green brand, an unsubsidised farming sector, strong certification infrastructure, and the newly enacted OPPA 2023 — position the country as a natural leader in organic production and export. As global demand for premium, traceable, environmentally credible food continues to grow, these advantages represent an increasingly significant strategic asset for the New Zealand primary sector.

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