HAWKE'S BAY FUTURE FARMING
TE MATAU A MĀUI AHU WHENUA-HĪKINA TAIAO

**Hawke's Bay Future Farming Trust**
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**Annual Report – 30 June 2021**

The Trust held twelve monthly meetings over its last financial year, ending 30 June 2021.

Current Trustees are John van der Linden (chair), vice-chair Phil Schofield, treasurer Scott Lawson, Liz Krawczyk, Greg Hart, Tom Belford and Will Foley. Backgrounds of all Trustees are furnished in the Trust website: www.hbfuturefarming.org

The Trust also maintains a Facebook page at: www.facebook.com/HBFutureFarming-104458421275553/

Since date, Trust activities have been supported on a contract basis by David France, serving as project manager, as described further in this report.

Our mission is to:

"Promote, inspire and celebrate profitable farming systems that enrich the environment and the community."

We see our work as falling into two categories – communications and evidence-building, the former to receive roughly 25% of our resourcing, the latter, 75%.

**Projects Underway**

**1. Communications**

From a communications standpoint, we want to recognise and celebrate all sorts of initiatives Hawke's Bay farmers and growers are making to improve – which means lessen – their environmental footprint. Those could range from riparian planting or establishing wetlands to improving water efficiency or planting erosion-prone hillsides.

**Website**
We have begun to provide such examples on our website via case studies and videos, with the intention of stepping this up in the coming year.

**Workshops**
Over the last two years we have sponsored and/or organised a series of face-to-face forums to present alternative grazing and pasture management approaches to Hawke's Bay farmers. Taken together, over 200 HB farmers have participated in these workshops.

Our most recent workshops in Waipukurau, Wairoa and Rissington, featured regenerative soil expert Siobahn Griffin and attracted over 50 attendees.

## 2. Evidence-building

The Trust aims to establish to farmers and growers – using evidence we develop here in Hawke's Bay – that more beneficial environmental practices and better financial performance go hand-in-hand.

We plan to work with leading edge farmers and growers, documenting the success of their overall farming systems and – hopefully – making their practices irresistible to others who are watching expectantly or sceptically from the sidelines.

Our Trustees are united in the belief that our long-term focus must be on healthy soils, and the land, plant and animal management practices – label them however you like – that yield healthier, carbon-enriched soils.

To that end, we have committed limited funding to preparing two major, multi-year demonstration project proposals to MPI, and we have completed an analysis of soil carbon potential on a set of dairy farms in the region. Starting with the latter …

### Soil carbon

This project, led by Trustee Phil Schofield is designed to measure with scientific rigour the ability of farm practices to increase soil carbon. We have measured soil carbon across three properties at various stages of organic/regenerative development owned by farmer John Kamp in Patoka. These farms were formerly high chemical input dairy operations.

Our carbon measurement methodology utilises the approach 'blessed' by MPI for nationwide application. In our view, soil carbon is a key indicator of overall soil health, which we regard as the prime driver of farming success. Additionally, as is well-known, the current Government has an interest in assessing whether carbon sequestered in soil (and potentially increased) can eventually be factored into its carbon neutrality objectives.

Our soil samples have been analysed by Landcare Research and indeed provide strong evidence that alternative land management can build soil carbon (and better fix nitrogen) in the pastoral setting. The differences in soil carbon stocks between the three farms are large, with 64 Tonne per ha more soil carbon under the farm that has been managed under various components of regenerative farming for 10 years. This work will be published in the coming year.

### Economic/environmental assessment

Another project is targeting ten dairy and sheep & beef farms across Hawke's Bay. We are selecting farmers who are committed to change – who want to improve both their environmental and economic performance, measuring both with greater rigour to establish the 'evidence base' mentioned earlier.

Utilising HB farm economist Barrie Ridler, we commissioned reports on four local farming operations who have or are introducing alternative farming practices.

The first phase of this project is to complete a holistic economic and environmental assessment of the overall farming system for each farm, measuring all inputs and outputs, modeling how various interventions might improve performance, and then monitoring the outcomes from changed or alternative practices. This will be a multi-year project, and at this point four farms have been assessed, with reports prepared for the participating farmers and an overall project summary posted on the Trust website.

In this work, the Trust not 'selling' a solution. But that said, we expect that the practice changes that will be indicated will fall in the category currently labelled 'regenerative farming'.

**Major Project Proposals**

**MPI applications**
The Trust has developed two major projects and funding proposals for MPI aimed at demonstrating the viability of alternative farming practices in the region. Both of these have involved considerable interaction with regional and national sector and research partners, as well as MPI. Both presently sit in the MPI assessment process.

**Project 1 – Mangaone Catchment Group**

**Model for sustainable, resilient pastoral farming in NZ**

**Problem:** Increasingly BAU pastoral farming cannot meet the manifold challenges placed upon it:

- tighter environmental quality standards,
- need to account for and reduce GHG emissions,
- soil loss and diminished quality,
- water constraints exacerbated by climate change,
- animal welfare concerns and,
- more demanding expectations by consumers regarding performance in all these areas.

Yet, faced with these challenges, why have some farmers in our region had shin-deep grass during drought, while others have parched pastures? Farms under regenerative management in this catchment that we have already studied show more soil carbon and have grown more pasture during the last two droughts than their neighbours.

**Where to:** We want to build on this work throughout the catchment. To rigorously examine and test alternative 'farming systems' – such as those termed 'regenerative agriculture' – that offer promise anecdotally for improving multiple environmental outcomes while simultaneously improving farm economic performance and resilience. We deem this holistic approach – addressing the full range of real world challenges faced by farmers – is critical to changing farmer practices.

This undertaking joins:

- Hawke's Bay Future Farming Trust,
- Top-class independent soil science team including experts from Landcare and Lincoln University, among others,
- B+L NZ and DairyNZ,
- Hawke's Bay Regional Council,
- Commercial partners in the environmental monitoring space, and
- Mangaone Catchment Group, representing all 25 farmers in 25,000ha catchment (conventional sheep & beef, organic dairying & regenerative practices), ready to consider change.

Ours is a bellwether catchment for NZ. Sheep and beef plus dairy represent 66% of NZ farms and 81% of NZ's agricultural area. How well these farms cope in the near-future will determine whether they – *and other pastoral farms throughout NZ* – survive.

Using state-of-the-art farm planning tools, real-time measurement technology & science-led soil sampling, our team aims to:

- Test current conventional pastoral farming practices against regenerative soil and pasture management and water/energy efficient alternatives, aiming for improvement in both environmental (water quality & retention, soil health/carbon, GHG footprint) and economic/productivity performance;
- On a catchment-wide basis;
- With a farm-by-farm measurement rigour and comparability that can withstand sceptical academic, regulator and farmer scrutiny (requiring 6-7 years of evidence building to establish causal relationships and trends);

- Leading to adoption of more sustainable farming systems throughout pastoral NZ. Our objective is real world behaviour change.

The opportunity we have here is a biophysical and human 'field lab' that could be a model for pastoral NZ. MCG farmers want to be environmentally responsible, market-responsive (i.e., profitable), *and proud of what they do*.

**National relevance & significance**

Our project is totally aligned with strategic objectives of the Government as set forth in the Fit for a Better World vision.

Likewise, the Climate Change Commission recommends a path in which the farming sector pulls its full weight, including farming practices that optimise carbon sequestration and minimise GHG emissions.

Because we expect to demonstrate and evangelise the effectiveness of alternative practices, B+L New Zealand and DairyNZ are committed strategic partners.

B+L NZ strongly support the project given their sector's high priority for examining regen ag potential, including possible on-farm carbon sequestration. They are keenly interested in trialling alternative practices such as suggested by the He Waka Eke Noa guidance document in the scientifically rigorous, 'controlled' context this project offers. That guidance broadly identifies these opportunities for mitigating GHG emissions and potential carbon capture:

- Reduce use of N-fertiliser & supplementary feeds;
- Improve crop husbandry;
- Adjusting stocking rates, converting less productive land;
- Optimise pasture quality;
- Minimise periods of bare land;
- Capture and store carbon in indigenous and exotic trees.

These alternative practices overlap considerably the RA practices reviewed in the MPI-commissioned, *Regenerative agriculture in Aotearoa New Zealand* (co-authored by a member of our research team). Together, the He Waka Eke Noa guidance and the MPI RA white paper lay out a clear menu of alterative practices to be investigated on the ground.

Our alignment extends to the strategic priorities of the HB Regional Council – water security/resilience, targeting of erosion and nutrient loss from pastoral land, achieving a carbon neutral region by 2050. Hence HBRC's willingness to contribute ongoing funding and in-kind support to the project.

In sum, our project will advance these nationally significant goals for the sector:

- Establish the benefits of regenerative agriculture relative to individual farm performance.
- Greater water security and resilience in the face of climate change.
- Demonstrate potential for on-farm carbon sequestration and GHG offset value.
- Curb the massive fertile soil loss suffered by NZ each year.
- Rid freshwater streams of unwanted nutrients.
- Affirm the exceptionality of our food to overseas consumers.
- Improve farm profitability.

- Instill farmer confidence, mental resilience and pride.

**Budget:**

$7,964,000 over 7 years

MPI Funds requested $3,990,320 = 50.1%
Co-investor cash $1,707,750 = 21.4%
Co-investor in-kind $2,265,930 = 28.5%

**Project 2 – Carbon Positive – LandWISE**

With all work to be directed by LandWISE, the Carbon Positive project identifies SOIL, WATER and ENERGY as key influencers in the carbon cycle. It aims for net positive carbon storage.

The project will scientifically compare the effects of alternative "conventional" vs "regenerative" field cropping systems, increase carbon sequestration and seek to remove fossil fuels from the system. Water and energy efficiency studies extend to horticulture and pastoral farms. It will leverage regional skills, talent and world class innovators, challenging the boundaries for improvement. Outputs are applicable to all farming sectors. The project will span a six-year timeframe to allow time and seasonal fluctuations to moderate the results.

**Activities**

- Operate the LandWISE Micro Farm as a detailed case study of the effect of alternative management strategies on soil quality, carbon levels and water holding, opportunities for irrigation and energy efficiency and potential to be carbon-positive, and water and energy self-sustaining. Aim to maximise soil health, nutrient and water buffering and minimise need for external inputs. The MicroFarm will be a living case study, encouraging visitors and providing outreach to share lessons from trials, engaging with a wider audience, and supporting farmers making changes.

- Conduct 12 full irrigation system, soil, and management evaluations to baseline performance, investigate new high efficiency technologies and other opportunities for improvement and support farmers to make and integrate changes that save applied water and energy and increase resilience to drought. Monitor results, prepare extension resources, and share lessons with a wider audience.

- Conduct 12 whole-farm energy use surveys, identify highest energy use aspects and opportunities for improvement and on-farm generation, and opportunities to shift from fossil energy to alternatives. Support farmers to investigate, plan and make changes. Monitor results, prepare extension resources, and share lessons with a wider audience.

**Output of Activities**

- MicroFarm research will document rigorously monitored systems and effects and generate information to lead development and adoption of new best practices. Lessons will be disseminated via presentations at field days and conferences, web-resources, papers and popular articles and podcasts.

- Aggregating results from individual farm irrigation system evaluations will indicate the regional potential for water and energy efficiency and production gains achievable through adoption of a range of alternative technologies, soil management and irrigation scheduling practices.

- Aggregating results from individual farm energy surveys will indicate the regional potential for energy efficiency gains achievable through adoption of a range of alternative technologies. Investigations into de-fossilisation of energy will identify farm-practical and commercially viable (or nearly viable) energy options including opportunities to on-farm generation.

**Outcome**

- The key outcome of the MicroFarm studies will be adoption of new, best farm systems for field crop production that are environmentally, economically, culturally and socially sustainable. Soil resilience and soil carbon stocks will increase, providing more stable production with less exposure to adverse climate change effects and contributing to the country's nett carbon reduction. No case will be the same, but the principles will be widely applicable allowing adoption and benefits beyond the project focus areas.

- Upgraded irrigation systems and enhanced system and soil management will maximise water and energy efficiency, crop production and quality. There will be maximum utilisation of on-farm water, minimised reliance on water from surface or sub-surface takes, and reliable yields of higher value products with sustainability credentials.

- Farm energy consumption and costs, and the proportion sourced from fossil fuels, will be reduced, lowering nett emissions, and adding value to exported products. Opportunities for novel systems and equipment will be identified enabling establishment of new high-tech businesses serving the sector and exporting globally.

**Budget**
$4,537,284.00 over 6 years

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| MPI Funding Request | $3,619,284.00 | 80% |
| Co-Investor Cash | $645,000.00 | 14% |
| Co-Investor In-Kind Funding | $273,000.00 | 6% |

**Financials**
The Trust's financials fiscal year through 30 June 2021, are prepared by BM Accounting and now under independent review, as required by our charter. After review, they will be published on the Trust website.

**Next Steps**

Our immediate focus in the coming year is coming to closure with MPI on our two major project proposals, and formalise and activate the working relationships with our wide range of partners involved in those projects.

We plan to conduct farmer workshops on a bi-monthly basis to demonstrate alternative farming practices, as well as sponsor broader public education events regarding Hawke's Bay's farming challenges and future.

We will expand the content on our website and Facebook page, and begin a bi-monthly e-newsletter to reach HB framers and growers and the wider agribusiness community.

We will also review Trust composition and continue to explore ways to involve Maori landowners in our mission.

Submitted by:
John van der Linden (Chair) and Scott Lawson (Treasurer)
Hawke's Bay Future Farming Trust