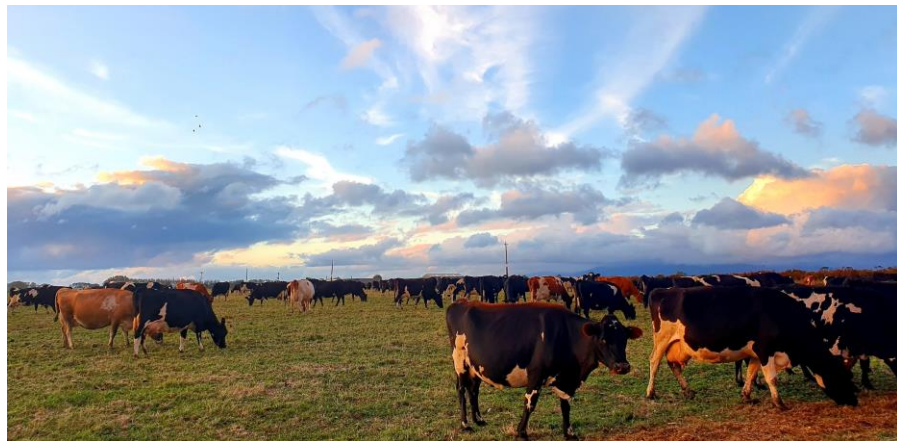




Greenhouse Gas Emission Reduction Case Study

Pouarua

Hauraki dairy, arable and horticulture

Overview

Pouarua Farms are jointly owned by Ngāti Maru, Ngāti Paoa, Ngāti Tamaterā, Ngāti Tara Tokanui and Te Patukirikiri. The CEO of Pouarua is Jenna Smith. The farms lie within the Māori land blocks known as Ngarua, Waitakaruru and Puhangateuru. The farm is located on the Hauraki Plains just southwest of Ngatea, and consists of 8 dairy farms, a dairy beef unit, various cropping (maize) blocks, and a horticultural unit (blueberries).

The land is all flat, based on drained peat lands, and vulnerable to drying out over the summer. The enterprise mix of the farm is presented in Table 1 below.

There is one split calving and one autumn calving block and the remainder are spring calving. There are a mix of straight jersey A2 herds and cross bred A2 herds with the cross bred herds moving to A2 jersey in near future.



Table 1: Pouarua Land Areas (ha)

Enterprise	Land area (ha)
Dairy	1,775
Cropping	225
Horticulture	10
Dairy-Beef	200
Wetland	10
Retired	23
Non-productive (races, drains) etc	7
Total	2,250

In 2018 the operation of the land was fully undertaken by its Iwi owners. At the time, essentially the whole property was in dairying.

Table 2: Cow Numbers and Production

	Cows	kg MS	kg MS/cow
2018	4,851	1,431,202	295
2019	4,623	1,446,694	313
2020	4,595	1,539,676	335
2021	4,743	1,658,866	350
2022	4,311	1,440,226	334

Biological greenhouse gas emissions across the whole farm have decreased by 14% since 2018, with some “ups and downs” related to the level of production achieved. The 2021 emissions climbed on the back of increased cow numbers and a very good production year as shown in Table 2. Over this period, farm profitability across the individual farms has increased by 60-100%.

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What changes have been made?

Since 2018, a number of changes have been made which have led to a reduction in greenhouse gas emissions. These changes were not made on all blocks but were applied where the land use decisions were sensible. These include:

- Reduced cow numbers (350 total) and improved per cow production (increased by 39kgMS/cow)
- Increased the area of maize cropping (for internal use, and for sale)
- Removed 200ha from one block's dairy platform to develop a dairy-beef block, and
- Retired unproductive dairy area to develop a 10-hectare blueberry unit.
- Moved one herd to once-a-day.

In addition, Pouarua have embarked on a Tangata Whenua outreach programme to help reconnect Mana Whenua back to their land.



Why were the changes made?

There were a range of reasons for making changes. Some of the changes were driven by being proactive in response to expectations around freshwater resources and Pouarua's proximity to important wetland ecosystems. Other changes were driven by a need to improve profitability and labour efficiency (e.g. reducing walking time for cows, reducing inputs, feeding animals better to improve performance).

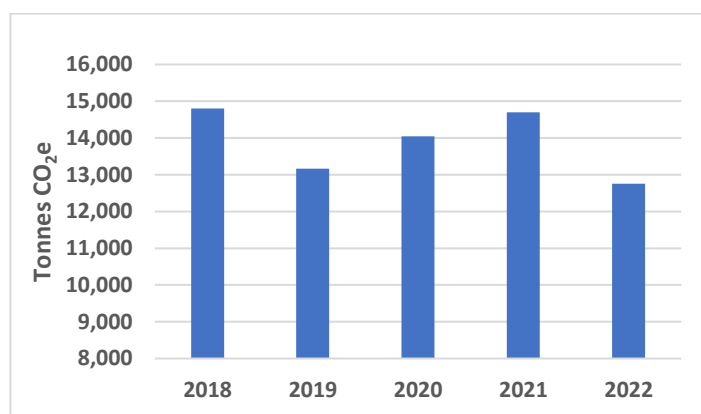
Overall the changes were made to ensure that the most appropriate landuse was in place to match the land and water resources.

GHG modelling method

The farm was modelled in OverseerFM for the 3 years being analysed.

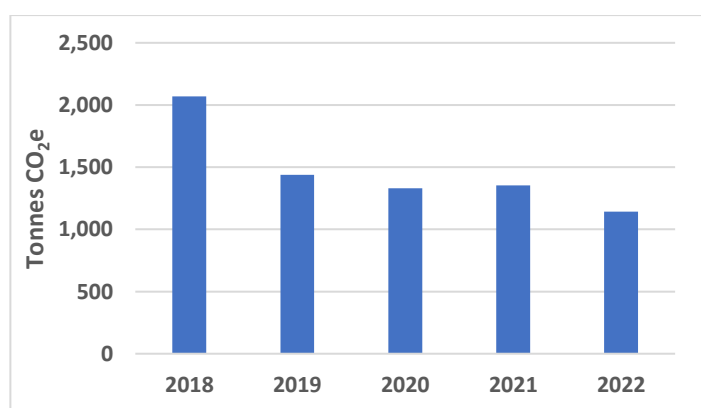
What have been the impacts of the changes?

Figure 1: Total Biological Emissions (methane and nitrous oxide) across the whole farm (all blocks).



Within the individual farms, most have shown a reduction in GHG emissions since 2018, with a couple showing a slight increase as farm areas have been adjusted. Two of the farms that have shown the largest decreases are Pouarua H (45% reduction) and Pouarua J (39% reduction).

Figure 2: Total biological greenhouse gas emissions from Pouarua Block H



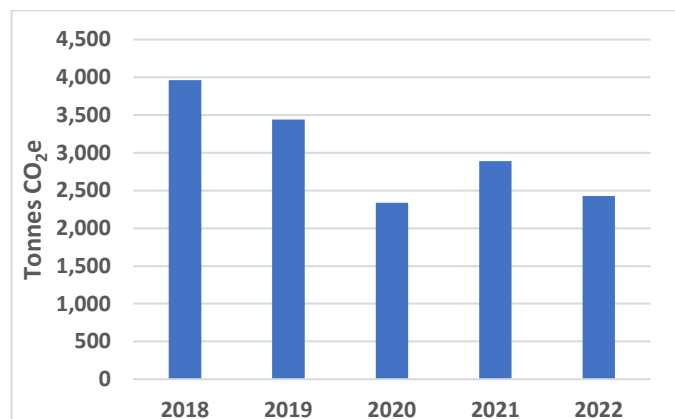
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Figure 3: Total biological greenhouse gas emissions from Pouarua Block J



These reductions have been achieved largely by reducing the area of the farms and diverting the land use to other activities, e.g. cropping or retirement. Average emissions per pastoral hectare have decreased, as has the emission intensity.

Table 3: Average per pastoral hectare emissions and emission intensity

	Emissions/ha (T CO ₂ e/ha)	Emission Intensity (kg CO ₂ e/kg MS)
2018	7.5	9.1
2019	6.6	9.0
2020	7.1	8.8
2021	8.3	8.8
2022	7.2	7.9

In addition to the resulting reduction in emissions, Pouarua are seeing increased profitability, better cow condition which in turn is improving reproductive performance. The once-a-day has reduced time for cows and staff in sheds leading to happier, less stressed staff. The areas that have been retired have native vegetation and bird life coming back improving biodiversity.

What process did they go through to make the changes?

All of the changes needed to be resourced through cashflow. The changes were sensible to make to achieve the outcomes required, but started with the easier areas to demonstrate success (e.g. increasing maize area). This enabled the remaining changes to be made a lot faster and provided Partners with the confidence to continue.

It was also important to have buy-in from the whole team, ensuring that they understood why changes were being made and how they could support the changes.



What other changes are planned?

Pouarua have been focused on ensuring that land is utilised in a way that provides long-term sustainability for the land and the people. The changes that have been made since 2018 reflect this and the same mentality will be utilised. There are areas of land which are still not best suited to dairying, at least not in the long-term. They are currently undertaking a land use review to identify how those areas could be farmed.

There are also plans to double the area under canopy of blueberries.

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Overall, the team at Pouarua are trying to create a business that's really agile so that it can exist in an uncertain world and respond to opportunity.



What drives or constrains these changes?

The lack of certainty with policy is a significant constraint. It is difficult to make significant land use decisions without knowing where the regulatory framework will end up.

There are perception challenges to overcome. There is a strong focus in the industry on productivity rather than profitability and this can influence decision-makers.

It has also been challenging to make many of the efficiency changes in relation to getting the appropriate equipment (e.g. direct drilling maize or being able to apply fertiliser little and often). This has meant having to increase internal resources to be able to enable some of the change rather than fully relying on outside contractors.

What are they doing to ensure climate resilience for Pouarua?

- Continually assessing land use in relation to inherent characteristics of the land and water resources, alongside market and regulatory drivers.
- Riparian areas are retired and planted with natives.
- Retired areas are regenerating into native vegetation.

- Direct-drill all pasture and summer brassica.
- Diversified pasture species (e.g. chicory, fescues, plantains etc).

What advice do they have for other farmers?

- Rather than continuing to farm the land the same as always, reflect on what is right for the land and your values as a farmer to help determine if your land use is appropriate. If it doesn't feel right, it probably isn't.
- If you are looking at changes, and trying to make the numbers work, don't be afraid to bring in some outside advice or support to provide a different perspective.
- Consider what happens to your product beyond the farm gate, don't just farm the animals on your land, you need to understand the market you supply to and the responsibilities that come with that.
- Don't be driven by fear – there are plenty of people trying to fear-monger. Focus on what you can do, and what you can control.

