Māori cultural values and soil fertility management – An exploratory study

Xiaomeng K. S. LUCOCK[1,*], Jim L. MOIR[2], Diane RUWHIU[3]

[1]*Faculty of Agribusiness and Commerce,* [2]*Faculty of Agriculture and Life Sciences, PO Box 85084, Lincoln University, Lincoln 7647, Christchurch, New Zealand*
[3]*Otago Business School, University of Otago, PO Box 56, Dunedin 9054, New Zealand*
*Corresponding author: sharon.lucock@lincoln.ac.nz

Highlights

- There have been limited studies to date specifically relating Māori cultural values to soil fertility management practices on farms.
- The deep-rooted connection between Māori people and the land is a critical feature of their land management decisions.
- Farms are food baskets for whānau and the wider community, as well as sources of income to provide other services and desired outcomes (e.g., social, cultural, environmental).
- Soil fertility maintenance is a high priority for Māori land managers, but there is a fine balance to strike between this, farm cashflow and other responsibilities (e.g., whānau, community, kaitiakitanga).
- Current environmental regulations present many complex challenges to Māori farms.
- Potential exists in unlocking Māori provenance through seeking business partners who share the same cultural values.

Keywords: Māori agribusiness, soil fertility, tangata whenua, mauri, cultural values

Background

Collectively owned Māori farming entities work much of the remaining Māori freehold land in Aotearoa New Zealand (~5% of total) and the majority of these are registered in the Māori Land Court. The effective and sustainable management of these farms is vital to landowners (e.g., whānau/hapū/iwi) whose prosperity is dependent on the wealth and strength of connection generated from this land (whenua), which is also a source of wellbeing. There are some distinct features of the institutional factors of Māori farms that impact on how they are managed. For example, because Māori land can never be sold (Te Ture Whenua Māori Act 1993), realising capital gain is not an option for Māori farmers. Māori farm managers hence focus on cashflow and profit within the farming operations, which can sometimes put pressure on important yet discretionary investment expenditures, such as fertiliser costs (Cottrell 2016). However, as nutrients are taken off farms through animal products, soil fertility management is fundamental to the replenishing of nutrients on farms to maintain productivity and profitability (Haynes and Williams 1993). Consequently, fertiliser costs take up a significant proportion of farm expenditure for most New Zealand farms, impacting on their profitability (Hedley 2015). The retention and control of Māori land remains a top priority for Māori land managers, with whom the continuous provision of return through productivity or profitability is seen as essential for landowners (e.g., whānau), and the long-term sustainable management and delivery of services is largely driven by cultural values. So, where does the balance lie between ongoing provision and potentially discretionary expenditure? The present research set out to explore the nuances behind such a question.

Māori agribusiness in Aotearoa New Zealand is diverse, with several unique characteristics that resonate with resilient farming systems (Kingi 2013). The objectives of Māori farming enterprises goes beyond profit to embrace social, environmental, cultural and spiritual outcomes (Phillips et al. 2016). Māori cultural values advocate that ecosystems, farming, urban living and all other land use be part of a greater whole. This perspective recognises the connection to and responsibility for the land, which Māori hold as tangata whenua (lit. people of the land).

Several Māori values and principles are evident in Māori farming practices. Some of the core intrinsic values include: whakapapa (ancestral connection, lineage, genealogies); kaitiakitanga (intergenerational environmental guardianship and protection); whanaungatanga (family kinship, connection, and relationships); mauri (life principle, life force, wellbeing of the world around us); and taonga tuku iho (heritage and traditions). Through these key concepts, farming practitioners can employ e.g., Te Ao Turoa (the intergenerational concept of sustainability); manaakitanga (welcoming, respecting and caring for people interacting with the farms and farmers); tauutuutu (reciprocity, giving back what you take); whakawhanaungatanga (extending relationships and networking); and kotahitanga (achieving unity of purpose) in their approach to the land.

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For Māori farming entities, cultural norms or tikanga influence all areas of on-farm decision-making, including soil fertility management. The effective management of land is a responsibility for all landowners (e.g., whānau/hapū/iwi) which reinforces the connection they have with the whenua. The way they derive wealth from farms through productivity and profitability is therefore largely driven by cultural values and their responsibilities to the land and each other. While a body of research exists at a macro level linking Matāuranga Māori and soil heath (Harmsworth 1997; Robb 2014; Stronge et al. 2020; Stronge et al. 2023), within the farm system context, very little research has been done at the interface of Māori culture, soil fertility management, and farm management decision-making within the context of farm systems, albeit some historic account of Māori farming activities had been reported by Best (1930) in the early 1930s. The present research aims to explore the interactions between these three areas: 1) Māori culture, 2) soil fertility management, and 3) land management decision-making within the context of farm systems, to gain a greater understanding on how Māori cultural values impact on land management decisions and farming operations. Specific research questions are:

1. How do Māori cultural values influence/guide farm manager's decision-making on Māori farms, particularly in relation to soil fertility management?
2. How are these decisions incorporated within the farm systems on Māori farms, which operate under a different set of institutional arrangements to other commercially operated farms in New Zealand?

This investigation is exploratory in nature, where researchers are bystanders "looking in". Such a perspective implies a non-Maori world view as the starting point, where soil fertility refers to soil's labile nutrient status and the supply of nutrients for plant and animal production on farms, and where land management decisions are made based on the performance of a farm, irrespective of the ownership of the land is Māori or non-Māori.

Methods

The exploratory nature of the present study warrants an inductive-led, theory-building methodological approach. As Eisenhardt (1989) points out, "*given the strengths of this theory-building approach and its independence from prior literature or past empirical observation, it is particularly well-suited to new research areas or research areas for which existing theory seems inadequate*", because "*they excel in situations for which there is limited theory and on problems without clear answers*" (Eisenhardt et al. 2016).

Guided by this inductive-led, theory-building methodological approach, this study adopts the principles of selective sampling and theoretical sampling (Draucker et al. 2007) for informant selection. A set of interview questions were developed from the two main research questions. Following the Human Ethics approval of the host institution (Lincoln University HEC2022-17), qualitative in-depth interviews regarding land management decision-making, particularly in relation to fertiliser and soil fertility management, were conducted with 11 key informants (including farm managers, farm consultants and senior managers) of Māori-owned agribusiness in Waimakariri, Queenstown Lakes, Rotorua Lakes and Tairāwhiti Gisborne (Figure 1) during the months of July to September 2022. Of the 11 informants, seven have whakapapa connections, and the other four are Pākehā who have worked on Māori land for between five and 30 years. The interview questions were open-ended in nature, with some key Māori words used as prompts (such as whakapapa and kaitiakitanga). Questions were designed to encourage informants to tell their own stories through recounting their experiences and thoughts.

Interviews were recorded with permission of the informants, then transcribed into text. Supporting documentation provided by informants to supply additional information were also collected during the interviews. Both the transcripts and supporting documentations subsequently underwent thematic analysis, and the key themes identified are explained in the following text.

Results – The Guiding Principles of Tangata Whenua and Mauri

While the research questions set out to answer were focused on soil fertility management, the discovery from the fieldwork had revealed that the research finding goes into a much greater social and environmental context beyond the soils, fertilisers or indeed farm systems themselves. Rather, the concept of soils, fertilisers and farm management decisions sit within the context of te ao Māori (Māori world view), as well as the historical and current socio-economic environments surrounding tangata (people) and whenua (land).

A clear and strong message came through the conversations with the informants about the togetherness of tangata (people) and whenua (land), which is manifested through the concepts of tangata whenua (people of the land) and mauri (life principle, the essential quality and vitality of a being or entity). Despite the variety of informant backgrounds, the guiding principles of tangata whenua and mauri dominated the conversations, either explicitly or

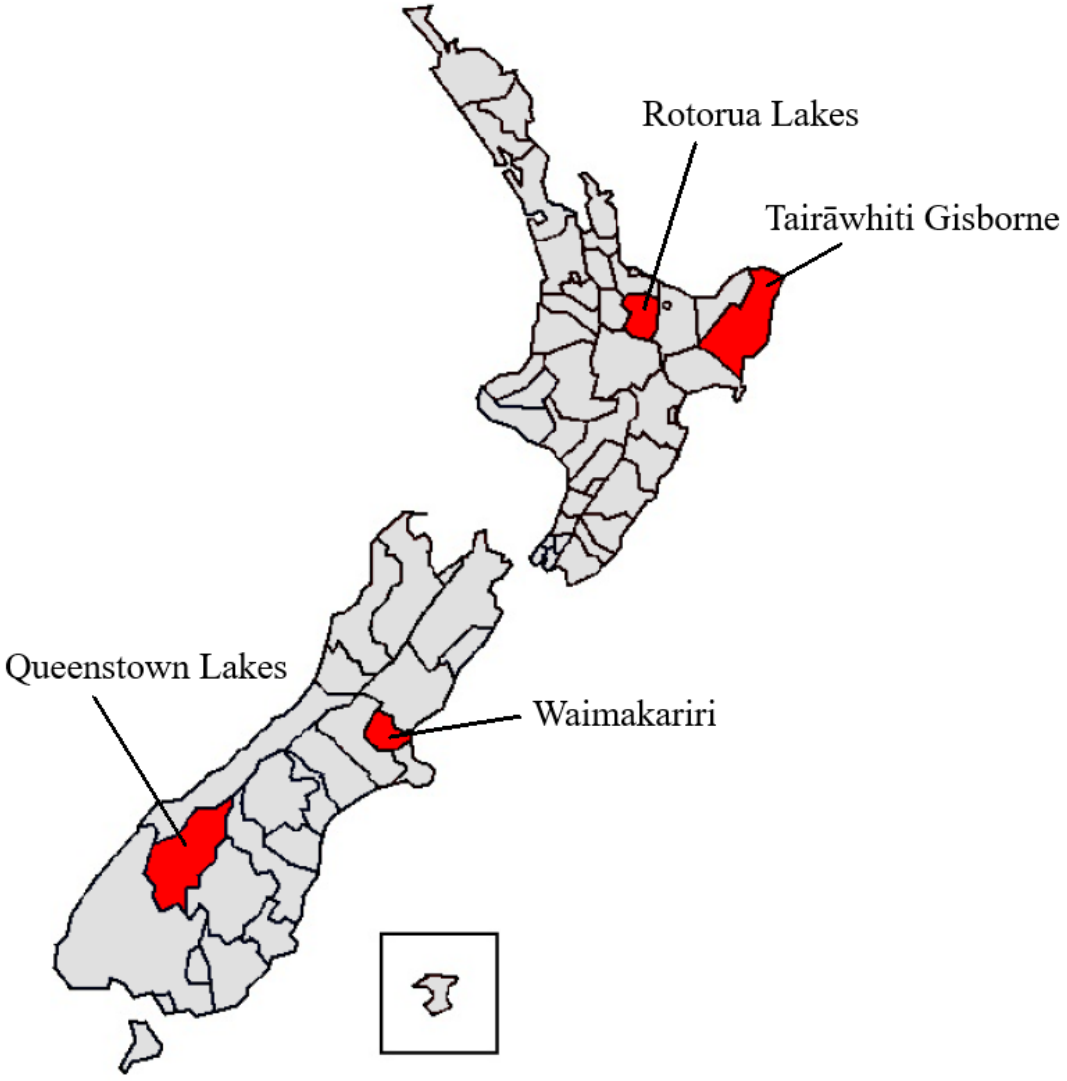

Figure 1 Districts/Region Visited (highlighted in red) (adapted from Creative Commons)

implicitly. For example, one of the Māori agribusiness entities involved has developed a "Mauri Compass", which entails detailed guiding principles and assessment criteria on the health of their people, land and water. While other businesses involved may not have such explicit tools guided by mauri principles, their thinking align to these principles, and are reflected in several aspects, as further explained below.

The deep connection to the environment and kaitiakitanga (guardianship)

"*The connection to the land is unbelievable ... some really, really deep connection*", as one Pākehā farm operations manager identified when speaking of the shareholders of the Māori corporations that he was working for, and added that some beneficiaries/ shareholders always enjoy the news about their own land while living overseas.

This deep connection extends beyond just the land, but also to the waterways and the sea, and indeed the entire natural environment that Māori people live within, in that human activities on the land have an impact on the environment. "*I think there are lots of things we do that's having an impact on the environment much greater than we realise*", one Māori farm manager explained. This understanding of the impact of human activities on the environment reflects the intertwining nature of the deep connection to the environment

and the sentiment of kaitiakitanga, or guardianship. "*Kaitiakitanga is huge*", one former Māori dairy entity operations manager commented. Another farm manager explained about the interpretation of 'land' to Māori people as he observes as "*They don't think of it as theirs. They think of it as 'We just look after this for the next generation'*". Another Māori farm manger further explained that "*Land is what we call Taonga Tuku Iho. …It's a gift that is transferred through the generations. So it doesn't belong to us. It belongs to those generations… It's always just guardians… and land… is a gift that is transferred through the generations.*" It is this deep-rooted connection between Māori people and the natural world and the strong sense of guardianship that provide the guiding principles on all land management decisions.

Farms are the food baskets and source of prosperity

As one Māori farm manager reflecting his childhood growing up on a farm in the Tairāwhiti Gisborne region, he recalled, "*it was the food basket providing for the land, and our role was to make sure that the food basket continued to provide for the wider family*". In that sense, farming is way of generating wealth to provide for the whānau, or as he further explained, "*it's just something we are doing for now to get us to the next stop in the destination… It's a means to an end.*"

This 'food basket' concept extends beyond the nourishment provided to the extended whānau, to include the capability to support other services within the community. As one senior financial manager of a Māori agribusiness corporation explained, "*All our decisions must grow the asset base, must provide the distribution across into the other parts of the entity that are tasked with social, cultural responsibilities, and educational responsibilities. But we must do it in a way that it's sustainable.*" Another farm manger echoed this, "*there's always that recognition that if we're not making money, there's a big social agenda that doesn't get fed as well… so education grants, support for health initiatives, all those things. They're not government funded. They get driven out of our surpluses. So, we have to make the surplus … So it's a quite a motivating reason to try and get things right.*"

Soil fertility maintenance a high priority

For all of the informants, sustaining the prosperity of the land to provide for both current and future generations warrant a particular focus on maintaining its productivity. This translates to non-negotiable soil fertility maintenance, with improvements where and whenever possible, and with due care for the long-term health of their land and water. One farm consultant, when speaking of the use of acidulated phosphate fertiliser, commented, "*We know that we can pretty much stop putting that stuff on for quite some time, and provided that we [are] meeting the short-term macronutrient needs, we are all good, until we're not."* One Pākehā farm operations manager commented that he would struggle to convince a non-Māori land owner to spend $800,000 to $1,000,000 dollars on capital fertiliser compared to the farming corporation he is currently working for. This is not just because of the financial backing of the corporation, but because there is a strong belief that "*we need to build our soils for the future*" even though they may not see the benefits of such fertiliser applications immediately.

However, much of this fertiliser application comes under the cashflow availability, as one Māori farm manger commented, *"…it's always that ongoing balance between protecting the cash flows [and fertiliser applications]*". Later, he commented on the use of precision fertiliser application was, "*not only it is good practice, but it makes economic sense. We don't have unlimited budgets, so why would we be frivolous with it when we apply for nutrients?*" Another Pākehā farm manager spoke about the struggle to maintain soil fertility with a previous farm operations supervisor who did not pay much emphasis on soil fertility maintenance, and the farm went backwards. But since the change of a supervisor, the manager was able to put the farm back on a 3-year rotation programme for fertiliser and lime, which has seen "*amazing results*" since, and put the farm back on track for long-term productivity gains, benefiting generations to come.

Current environmental regulations a challenge for Māori farms

When being questioned about their concerns for the future, almost all of the informants spoke about their worries, and at times, disappointment and resentment, of the number and complexity of environmental regulations that have come into force in recent years as well as those that are yet to come. "*Regulations are responses to dumb decisions that have already been made*" was an opening statement one Māori farm manger made when being asked about the current regulatory environment for farming and agribusiness. Indeed, it appears that a dissentient view exists among many. Māori land managers regarding current land and water policies, which are perceived as ignoring traditional knowledge embodied by Māori cultural values, leading to poor policy efficacy. One farm manager further explained, "*The environmental stuff… Some of the way it's being developed and designed is just stupid. As farmers and as Māori we tend to look at everything as being integrated… I don't understand how you can talk about things like freshwater without thinking about land use. And I don't understand, when you talk about freshwater, why you are not talking*

about the sea, because what we do on land impacts what happens out there". Another board member of a Māori farming corporation criticised, "*There's a lot of stuff happening in the environmental space and the government are not playing… They're not playing along with us. They don't want to. They just want to set the rules in their offices*". One Pākehā farm manager for an extensive operation commented on the 'blanket' nature of the current regulations, "*Well, when you get to a place like this… our carbon emissions would be so minimal because we are producing so much. But we don't seem to get any ticks for that.... We're not big concentrations of stock but we have been looped in with everyone else.*"

Despite the concerns over the implications of environmental regulations, Māori land managers do see the need to address the environmental issues that come with farming. One Māori farm manager spoke about his memory of farming during his childhood, "*We didn't have the high fertiliser and chemical inputs that you see today. So, everything was done in a much more balanced way.*" Ultimately, Māori land managers see that farming more sustainably with less impacts on the environment will ensure that generations to come after them can flourish within that environment.

Unlocking Māori provenance through shared values

Māori land managers saw alternative ways to generate wealth from the whenua (land) they have a connection to. Several informants spoke about their aspirations to tap into Māori provenance (such as whakapapa) through their cultural values, particularly via the relationships and connections that they can create with their suppliers and customers based on shared values, to generate greater return from the land. One former Māori agribusiness board member spoke about working with "*like-minded, like-hearted and like-spirited organisations*" that were their suppliers, service providers and customers. He then went on explained, "*Just making sure that there's really great synergy and alignment between our organisation and anyone else, any other organisation, large or small, that we make contact with… I think it's a very Māori philosophy, I think it's a very Māori way of thinking about the way we relate and are related to*". One Māori senior financial manager further explained how this connection can be nurtured, particularly in relation to building connections within Māoridom, " *You're always looking to… in terms of making that connection… you are always acknowledging the mana of the entity…if it's another iwi entity, and their whakapapa, their history, their stories, their leaders… so you're always looking for those common threads… and to acknowledge and celebrate… because the threads that connect you will be there, and ... sometimes it's a conversation that you just need to have… with people who have that knowledge*". Another former board member of a Māori entity further explained from the marketing perspective, using their established relationships with Chinese customers as examples, "*find the people who will appreciate those values… a partner or a customer that understands the value of that and can therefore pay and incentivise money to do that. But what happens is we produce a product and then we find the market. I think what really needs to happen is you need to find the market and then develop the product based on an alignment of principles and values*".

Discussion

– A Fine Balance to Strike to Achieve High Value

The main objective of this study was to explore and identify the connections and interactions between 1) Māori culture, 2) soil fertility management, and 3) land management decision-making within the context of farm systems. Findings from four study areas indicate these connections are real and deep and conclusions have been drawn. From this, a set of guiding principles and consequential practices, deeply rooted in a Māori world view, are elaborated. Such a world view sees people and the environment as one, and that the thriving and/or suffering of one cannot be separated from another (Phillips et al. 2016; Harcourt et al. 2022). This is similar to the world view held by Chinese people, as discussed by Lucock (2015) in her investigation of New Zealand agribusinesses' experiences in China and drawing on views shared by Nisbett (2003). Such similarity also explains the affinity between Chinese and Māori cultures, as well as the development of synergies between agribusinesses from both countries, as alluded to by some of the informants about their established relationships with Chinese customers.

This world view, while being similar to that of the Chinese, holds a different perspective on land ownership to that of the Pākehā, especially of those with a Christian-Judeo tradition, who inherited the view of dominion and ownership of the land. Māori understand land (and the environment as a whole) through whakapapa (ancestral lineage) which goes back to ancestral stories of papatūānuku (earth mother), ranginui (the sky father), and several atua (gods or energies) presiding over every part of the environment. This world view reinforces the notion of unity that people are connected to the land or whenua (placenta) as tangata whenua (people of the land). Land is therefore a source of nourishment (through papatūānuku, earth mother) and entitlement to provide for future generations, which confers important values and responsibilities to people who are entrusted to sustain the land (or farm) in good condition for future generations.

The concept of kaitiakitanga (guardianship) is similar to the concept of stewardship that is often used within the farming communities of New Zealand in relation to sustainability. However, different legislative and institutional characteristics of Māori land ownership and its inherent constraints for development, such as lack of capital and capital gain (e.g., through buying and selling land and assets), means that Māori land managers need to constantly maintain and grow the wealth generated from this land. This is often achieved by sustaining and enhancing resources, and this was reflected as a priority area that Māori land managers gave to soil fertility management as well as their long-term thinking beyond 50 to 100 years whenever decisions are made. For many Māori land managers, soil fertility is a key piece of a much bigger puzzle that encompasses their social responsibilities to the landowners, such as whānau, of today and future generations (Kingi 2013; Rout et al. 2020; Harcourt et al. 2022). Without the prospect of capital gain, these Māori land managers strive to maintain a fine balance between cashflow, soil fertility and farm productivity, as well as all the other social agendas that they feel deeply responsible for.

This Māori world view and understanding of tangata whenua give Māori land managers a critical perspective of the current environmental regulations. Their criticism focuses on the inability of the current environmental regulations to foster a holistic view of the world and Māori environmental approaches. Nevertheless, Māori land managers see a way forward for the long-term provision and advancement of land and people, tangata whenua – their active seeking of those who share the same values, including those within Aotearoa New Zealand and overseas, is the approach that has been suggested by these Māori land managers to unlock the potential that exist within their whenua – to fetch a premium value of their products from those who are "*like-minded, like-hearted and like-spirited*". If higher unit prices can be achieved, then these operations can potentially lower their output volumes, or in other words, having less intensified operations and hence less negative impacts on the environment. It is the *values* embedded within Māori agribusiness and farming operations that these corporations are seeking the common grounds for with their business partners and customers, in order to achieve the optimal pricing for their products. These cultural values are regarded as the core of 'Māori provenance'.

Conclusions

This exploratory study has revealed that Māori are holistic thinkers, particularly when regarding their relationship to the land, the environment, and farming. Their view of the world is one of a people-environment unity, signified by core Māori values and concepts where connection to the land is paramount (e.g., whakapapa, tangata whenua). It is shown that Māori values and principles guide and direct many of the decisions they make. The land is entrusted to them to provide, to be looked after, and to pass on to the generations to come. When it comes to farming, these concepts and values incentivise Māori land managers to provide livelihoods for their whānau, hapū, and iwi, with a long-term view (50 to 100 years plus) encompassing provision for future generations. Māori land managers strive to maintain and improve the productivity of their land, which soil fertility plays a key part. This care for the land extends to the connecting waterbodies, and they take a long-term view on evaluating the impact of farming on land, water, and climate change.

According to the Māori landowners and managers in this research, the current swathe of environmental regulations does not fully recognise a Māori world view, and this lack of recognition puts environmental regulation at risk of being ineffective. A greater understanding of Māori cultural values might help policy makers form more effective land, water management, and climate change policies for Māori land. Future policy initiatives may then focus on unlocking Māori provenance potential embedded in their farming practices through facilitation of identifying "*like-minded, like-hearted and like-spirited*" business partners and customers for these Māori entities.

This research sought to contribute to the knowledge gap on the influences of cultural values on soil fertility management decision-making within Māori owned farming entities. What it uncovered encompasses a far greater social and cultural context, which in itself reflects the way that Māori people's view of the world. Through this discovery, this study has shed light on the practical applications and manifestations of Māori cultural values within the farm system, and indeed the greater agribusiness context.

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