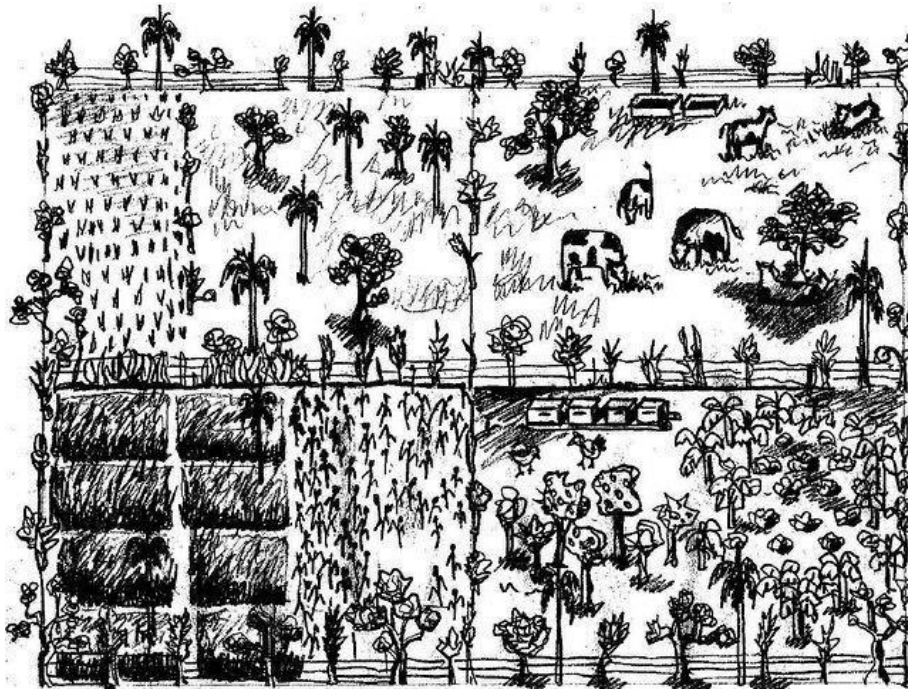




**KELLOGG**

RURAL LEADERSHIP  
PROGRAMME



# Back to the Future

## Harnessing the value of diverse dairy farming enterprises

Kellogg Rural Leadership Programme

Course 41 2020

Juliette Maitland

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## 1 Acknowledgements

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## 2 Executive Summary

For my Kellogg project I wanted to explore how 'ready' we are as a sector to capture the potential value of diverse dairy enterprises across different parts of the value chain, everything from farmer or grower to consumer. In Canterbury specifically, we may find ourselves in a position where environmental regulations encourage us to operate with multiple land uses, as individual parcels of land work to reduce their nitrogen leached, water used, and greenhouse gases emitted. There is also building pressure and urgency around finding pathways to capture opportunities such as: adding more value to non-replacement dairy calves, positioning our New Zealand Food and Fibre products away from commodities and towards products with genuine market differentiation as well as understanding the role plant based proteins will play in New Zealand's food future. I believe that this provides us with an infinite opportunity to re-imagine not only what we farm or grow, but also how we collaborate across supply chains and how we look to position a unique provenance position in the marketplace.

I chose to interview a combination of start-up and mature businesses across farming, processing and food retail disciplines, aiming to bring together the key themes that will influence our ability to achieve exceptional value from our collective efforts and share it in the most meaningful places across supply chains. I have used a simple reflection technique of: viability, feasibility and desirability

to analyse the validity of any recommendations in terms of their ability to provide additional value to a range of stakeholders. My objective is clear – there must be winners and winners, not winners and losers. I have chosen to present my report using a combination of storytelling and academic techniques.

My key findings were:

- We are not being honest with ourselves when it comes to the consumer and how rapidly their buying preferences are developing, and letting this guide us. We are not curious, and often apply our own value set to another individual.
- Losers will be defined by their attitude towards disruption – the pace of change required is faster than ever before and there is an urgency to think differently in order to remain relevant.
- We are lacking in options for farmers to gain accessibility into horizontal diversification and supply chains. We are applying old thinking to new challenges rather than collaborating across land uses and seeking shared benefit.

My recommendations are:

- We need to get excited about the consumer and their changing preferences, not spend energy defending why we perceive those preferences to be invalid.
- We must embrace disruption and not lampoon those who give it a go.
- We can provide more 'turn-key packages' for farm system diversification to enable farmers to pivot.
- Modelling of future farm systems and connected value in the market can't be done as an academic exercise; it must be grounded in commercial reality utilising key stakeholders from the outset.

### 3 Introduction

The New Zealand Food and Fibre sector is at an inflection point. Ahead of us lies a period of transformational change into the unknown. Or is it known? I believe that we know more than perhaps we have stopped to consider, and that we can find a huge amount of inspiration from our past to help shape and give us confidence for the future.

I anticipate it will take a combination of old and new thinking for us to capitalise on the opportunities in front of us and that diverse farming enterprises will play a large role in our future.

Diversifying a business is not a new concept. It is a proven strategy to achieve development, growth and multi-dimensional value, and is firmly embedded in the DNA of farming globally. Take the Norfolk Four course as an example. This was a pioneering method of agriculture involving crop rotation in the 16<sup>th</sup> century which became a key development in the British Agricultural Revolution. Fields were run on a four-year cycle: firstly, with wheat, then turnips, barley, and clover or under grass. At a time before herbicides, pesticides and fertilizers it allowed agricultural production to increase. It allowed for a population growth which provided people to fuel the industrial revolution and it provided wheat for flour, turnips to winter beef cattle, barley to feed the horses and make mead and clover/ryegrass leys for sheep. The fodder crops eaten by the livestock produced large supplies of previously scarce animal manure, which in turn was richer as animals were fed better.

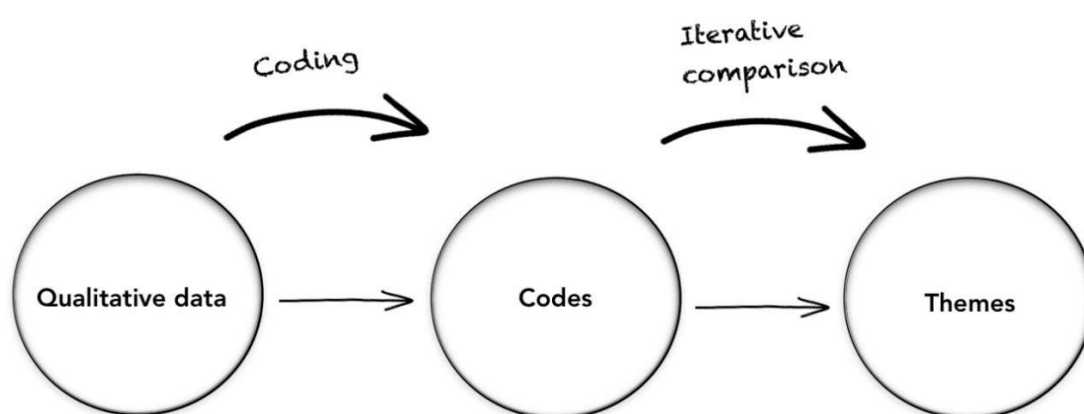
People were well fed and well dressed and in less fear of famine compared to previous generations because the variety of food sources gave resilience against a bad harvest for one crop.

We cannot simply return to what we used to do however. Rather, we can use aspects of its function and form to provide ideas for the future. People were very much at the heart of farming in New Zealand 200-plus years ago and people are very much still the focus today. It will be the people who solve our environmental challenges and it is also the people who buy our products, providing the economic returns to those who give their time and energy to produce them. What do the people need and want? Value is about values, and values live in people.

Throughout my study I wanted to address the question: how can we harness the potential value of diverse farming enterprises and share this value through the supply chain (or value chain) to those people?

## 4 Research methodology

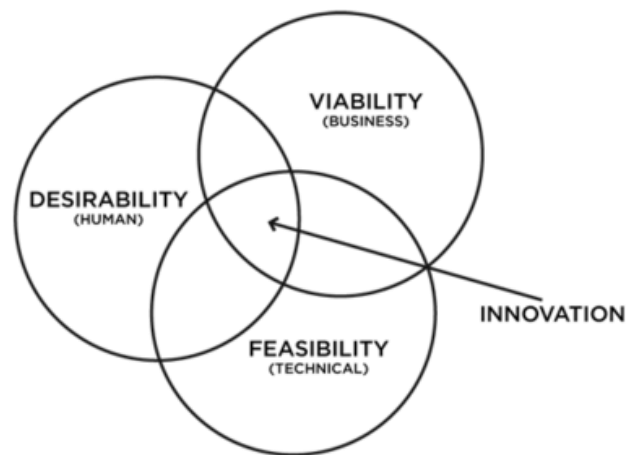
I chose to conduct the main aspects of my research through semi-structured interviews of individuals who have demonstrated recent leadership behaviour in various aspects of New Zealand Food and Fibre value chains. I targeted eight to twelve one-hour interviews and in the finish, I conducted eight; all except two of these were by Zoom. After collection of my interview transcripts I undertook thematic analysis of my insights. I arranged my findings from all eight interviews into five key themes.



*Figure 1 above displays the process of thematic analysis used (Best, 2020).*

As my study was looking across a wide group of stakeholders with a focus on adding value to many of them, I wanted to ensure any recommendations had been through a validation process to confirm

there was mutual benefit and the ability for win-win situations to arise. I chose to use a reflection analysis Venn-diagram model to do this. This model is similar to what is used in product innovation or design thinking applications. The business aspects typically relate to economic factors, the human aspects relate to the customer and the technical aspects to the delivery.



*Figure 2 above displays the innovation model used to make recommendations (Brown, 2020).*

For my report, I chose to structure it utilising two basic components of storytelling. These were: firstly, write the report like you talk, and secondly, make it personal and easy to relate to for the reader by providing examples.

A limitation to this study was the disruption from Covid-19 and not being able to conduct my interviews face to face, or spend time with participants in their own setting, which was my intent.

My reference material was mainly used to generate deeper thought and perspective through critical thinking and to help me provide structure to this report, which by nature was a challenge to scope due to the size of the topic. My references are not cited in a traditional literature review for this reason. Many of my references were also of a commercial confidential nature or personal communication from individuals who wished to remain anonymous, therefore I could not disclose the detail in order to be able to avoid embargo on this report.

## 5 Reviewing trends and indicators of diversification

### 5.1 How did we get here? - New Zealand farming in the early days

New Zealand's Agricultural production since the beginning of European settlement has been different from that of most developed countries because: agricultural production became an export driven market very quickly; agricultural products have almost always been New Zealand's primary source of income, and thick bush country meant that the primary focus was on clearing land for pasture rather than crops.



Since the early 1800s the dairy industry in New Zealand has gone from keeping a few domestic cows on bush blocks, to being a world leader. Shorthorn herds were established by the early 1840s, and for a long time Shorthorns were New Zealand's most popular cattle breed. Farmers mainly kept cows to provide milk, butter and other dairy products, and grazed them on pastures cut out of native bush. Initially herds were small, but were larger near towns where milk, butter and cheese could be sold.

All settlements had dairy cows, and many people in the family and the community had a role to play on the farm. Calves were often left on the cows, and what milk was left over was harvested by hand. This milk was filtered through fine mesh, the cream which then rose to the top was churned into butter, and the skim milk could be enjoyed by the glass or on porridge. Cheese was also made by curdling whole milk with rennet, and the whey produced was fed to the pigs. Butter was the primary product with a marketable value and was often used to barter for other goods. Dairy products were an important part of the pioneer's diets, which were limited by fat and protein, with an often high-grain diet. Butter cheese and yogurt were somewhat preserved so lasted longer than raw milk and cream. Vegetable gardens were the norm, either at family scale or community scale, and there was no choice to eat 'out of season'.

Supply of butter first started to outweigh New Zealand's demand in the late 1800s and this sparked our first endeavours into export. The first dairy factories in New Zealand opened around this time and started to process whole milk. The dairy industry was largely North Island based, while the South Island was establishing its wool exports. The wide open country was well suited to running fine wool sheep and wool soon became the country's most valuable export as global demand for textiles surged. The economy in the South Island continued to boom as both wool and gold exports soared. The challenges of land ownership, steep land and dense bush stagnated the North Island for a period of time.

The use of land in New Zealand was primarily derived by the available processing and export facilities, as everything was moved by horse and cart and it was not feasible for products to travel long distances to either factories or ports. During the industrial era, processing somewhat dictated the farming land use. New Zealand moved away from fine wool sheep as worsted processing required wool with a longer and stronger fibre than merino, and the valuable product tallow yielded higher from larger framed crossbred sheep. Land use in the South Island began to diversify into wheat as rail was able to overcome the large distances to port. The wheat bonanza caused a major transformation of the Canterbury, Otago and Southland plains and it was the start of crop rotation to restore and replenish soil fertility. A New Zealand version of the Norfolk Four Course system arose, where wheat, oats, turnips and pasture were used to provide maximum benefit and value from the land. This type of farming persisted all the way into the 1980s.

Many have suggested that refrigeration revolutionised farming in New Zealand. Sheep now had a use other than tallow and after a period of decline in land used for sheep farming, flock numbers started to build once again. Lamb exports were starting to run out of mature animals to send, and farmers were busy trying to redesign sheep farming systems so they could have lambs ready for slaughter by 7 months to fill the demand. Sheep farming did continue to be a challenge in some parts of the South Island, and access to refrigerated meat exporting channels seemed to be connected to your wealth. Refrigeration for dairy also existed but there was a much slower uptake from dairy farmers who often had very few cows and very little capital. Refrigeration did make income generation possible for dairying however, which was a significant change from farmers using butter to barter down at the local store.



The dairy factories which started to be built to take advantage of refrigerated exports in the late 1800s often had a network of creameries which were places farmers took whole milk. It was skimmed for cream which was sent to the factory and the skim milk was sent back to the farm for the pigs and calves. These centralised locations were places for dairy farmers to come together and chat. The further development structure of dairy cooperatives was a way for small farmers to pool their limited capital and develop dairy processing factories. The first dairy cooperative was in Otago and by 1890 there were 150 butter and cheese factories around the country with about 40% of these being cooperatives. The early factories built by corporate entrepreneurs were an important part of the story too, as they often were a little more advanced than the cooperatives and showcased new technology. Dairy products began making up a significant proportion of export earnings for the country across both the North and South Islands. Furthermore, in 1910 the technological advancements of hand operated milk separation on farm reduced cartage difficulties and cost, as well as opening up dairying to areas which were not in such close proximity to the factory itself. Only the cream needed transporting to the premises and factories began organizing this part of the supply chain. Fleets of battery powered trucks hit the road. There were still vast transportation challenges however, and supply chain logistics remained a key driver of land use.

Initially expansion of dairy took off in the South Island, followed quickly by Taranaki and the Waikato. Refrigerated exports made smaller scale farming in the north viable and encouraged the movement of population from the South Island to the North Island. By opening bush country, people were able to set up farms with less capital than what was required in the south. The expanding dairy industry was particularly attractive as it offered a regular payout for milk, whereas an annual wool cheque and a few payments for selling stock was only a game for the wealthy.

At the close of the farming frontier around 1920 South Island hill and high-country farmers ran both Merino and crossbred sheep for wool, and sold surplus animals to farmers on better land for fattening and export. On the plains and the down lands farmers grew crop rotations and fattened stock for export. Wheat remained the most important cereal crop but by 1915 New Zealand started to have an input requirement for wheat. Oats were the next most important cereal crop; they were the diesel of the era, mainly grown to feed to horses who did the majority of the farm work. Although dairy too had an export focus, dairying land use was still primarily concentrated around settlements and to areas of heavier land where water was not as limiting. For the first time, societal divide started to show between theories of production and conservation. The topic of the environment was on the table and people were starting to wonder about the impact of soil nutrient depletion, and which land should be used for what.

There was further development of the dairy cooperative model, and dairy weathered the World War 1 and World War 2 storms comparatively well. With worldwide population growth, undeveloped consumer preferences, and good pastoral land, New Zealand was well placed to scale up and produce more and more milk. The number of cooperatives started to exceed the number of corporately owned factories in 1900; however varied sources of supply meant product quality varied enormously. The government introduced the Dairy Industry Act under which goods were graded for export and payment for milk was based on factory inspection. The New Zealand Dairy Board was also established in 1923 and was in control of the export of all dairy products from all factories around the country. It operated through a global network of marketing subsidiaries. The number of factories peaked around 1920 at 600, 85% of which were cooperatives. Further technological development into spray dried milk products enabled us to get this product to the world at a relatively low cost and also ceased the streams of both skim milk and whey which were used to feed calves and pigs back on the farm. There was a series of mergers as these cooperatives shifted their

focus to efficiency as transport advancements allowed. Four cooperatives remained by 2000 and the two largest, Kiwi Cooperative Dairies and New Zealand Dairy Group merged to form Fonterra in 2001 and they also absorbed the New Zealand Dairy Board. A new law was required for this merger to go ahead. Although altered in nature now, this Dairy Industry Restructuring Act still exists, allowing for only a small amount of competition to exist in the sector with the ultimate end game of protecting its farmer owners.

Dairy farm systems have been established and designed to maximize the volume of milk which can be taken off farm to a factory each year and farmers are primarily paid on a \$/Kilogram of milk solids basis. Primarily this has meant seasonal calving systems where animal energy demand can match pastoral production and growth, producing a peak of milk in the springtime and much lower volumes in the shoulders of the season. This has always been a challenge for the factories themselves as they have needed to invest in the infrastructure to process fresh raw milk peak volumes, which have then mostly been underutilized in the shoulders of the season. Corporate dairy company competition has started to challenge this model (in a similar fashion to the early 1900s) as they begin to understand and focus on consumers' changing preferences and the opportunity for disruption.

## 5.2 Defining value - From consumer back to farmer and grower

Whether we are talking about concepts such as 'value-add' or 'generating value' one thing is for sure – value means something unique to every person in this world. If we are to harness value for multiple stakeholders in complex food systems, we need to invest time into understanding what each link of the chain aspires to achieve in terms of value. It's possible we will also need to challenge these aspirations from time to time and redesign the value to meet the changing needs of both people and planet.

Value and values are closely linked. Value for any business is about generating monetary reward or recognition for operating according to your core business values. Value is created by doing lots of things really well.

Value can fit into four buckets for almost all businesses and individuals alike. The four buckets are: economic, environmental social and cultural. The key difference for businesses and individuals is that businesses are more certain of the weighting they place on each of the four segments to create their desired balance of value. Individuals often struggle with this and can feel conflicted due to external factors around them. This is where you see individuals coming together as collectives, as it helps provide them with clarity of their values. This is especially noticeable when it comes to consumer food preferences, for example vegan, vegetarian or even flexitarian.

In the Food and Fibre sector in New Zealand, there is currently a large focus on 'creating value' through discovering new markets and products. This is a worthwhile task, however inherently more challenging than capturing value from existing products through addressing supply chain limitations and finding opportunities to work smarter.

If we take a traditional dairy supply chain as an example, we can study characteristics of value for a few key stakeholders.

## **Consumer**

Perception of value for consumers changes as income increases. Food becomes less about satiety and more about nutrition, health and entertainment; however price is still important and relevant. For consumers who are balancing the latter characteristics, value will also be about going beyond the minimum and doing the maximum, especially when it comes to ethical supply chains and farm practices.

## **Retailer**

Retailers will all have a slightly different strategy depending on their target market segment and brand positioning. Despite this, it is a known advantage in the industry to maximize customer loyalty to generate value. Loyalty is about bringing the consumer back to the store time after time. Many decisions which are made have this key driver in mind.

## **Processor**

No matter what the structure of the processor, they all have a mandate to provide returns to shareholders in line with shareholder expectations. This does not mean they need to have a single focus on profits, they just need to be able to articulate their values and purpose clearly and attract capital from aligned investors. The capital infrastructure required is complex and costly so there is always a focus on optimizing the utilization of these assets.

## **Farmer**

For the farmers it's almost all about financial returns to the farm gate, but to retain their licence to farm, value is about generating a positive contribution to all New Zealanders and having a positive impact on society and the next generation of farmers. Farmers in New Zealand are divided on these notions of value. This is not through a lack of wanting to do the right thing, but most are looking for the appropriate support, direction and acknowledgment that they did not create our current challenges on their own.

## **5.3 Diversification as a pathway to discover value**

Utilizing the basic drivers of value for the key stakeholders in the previous section you can start to appreciate how businesses may look to diversify to retain or capture more value for their business. Diversification in business means providing an alternative income stream as a result of changing cost structures. Changing costs without changing income streams is not enterprise diversification.

As a society develops and becomes more complex, specialization occurs, and supply chains lengthen. Long supply chains not only erode value for each link in the chain, but also reduce the amount of control and risk mitigation available for each stakeholder.

Diversification has an inherent challenge which is balancing the additional cost with the additional income and ensuring over time that the income is greater than the costs. It is important to recognize

that some costs will be non-financial but need to be accounted for. A business's ability to scale the diversification strategy to a point where a positive income balance is achieved, either within their own businesses (internal scale) or with other businesses (external or collaborate scale), will be critical to its longevity.

There are two primary ways to diversify any business: horizontal and vertical.

### **Horizontal**

Horizontal diversification is where a business adds new products or services to their remit which often appeal to current customers. These new products or services may be commercially or technologically unrelated to the current ones, but the key driver is an ability to appeal to either a wider group of consumers or an existing group with changing needs and desires. This strategy captures value for the business by sustaining access markets which are relevant to the consumer.

### **Vertical**

Vertical diversification is often also referred to as vertical integration. In this growth strategy, a business expands in either the forward or backward direction through the supply chain. Businesses typically add products or services which are complementary to the existing portfolio but often require further capital investment, especially around infrastructure. This strategy captures value through risk mitigation as well as shortening the length of the supply chain.

## **5.4 The realities and opportunities of producing food in 2020**

### **A global pandemic**

We have long been the developed nation with the greatest reliance on growing and selling biological products to the world to pay for our schools, roads and hospitals – now more than ever the industry recognises it needs to step forward to ensure that our country is able to maintain the living standards we have become accustomed to.

The industry has spent the last decade shaping an ambition to provide outstanding, ethically produced food and fibre products to discerning customers around the world, with respect and reciprocity to our climate, land, water and living systems.

Covid-19 has not changed the industry's resolve to continue to play its part in responding to the challenges of climate change, restoring our waterways or ensuring the sustainable use of our land and oceans. Now is not the time to back away from these commitments but to seek ways to accelerate our transformation so we can capture faster the economic benefits they will create for all New Zealanders.

Lockdowns and fears of food scarcity have raised the awareness of food and its importance in our lives to the highest level since the Second World War. This presents the industry with significant opportunities as the producer of some of the world's best produce.

Rising unemployment and declining incomes globally mean consumers will buy less in the coming months. We expect the purchases they do make to be more considered and conscious. Product attributes become more important than ever. This supports continued progress towards our environmental aspirations. However, many attributes beyond the environment are being amplified by the virus.

A product's ability to deliver a health outcome, and particularly to strengthen a consumer's immunity system, will increasingly influence purchasing decisions. Ensuring that the health benefits of our products are a value driver requires commitment to science programmes that support producers to make verified health claims when telling their stories.

The pandemic's source appears to be an animal market in China. Globally this has fuelled the debate around the role animals play in the food system, but it has also raised the desire of consumers to source safe, reliable, trusted products.

We have always been high integrity producers. Our success in controlling the Coronavirus is being recognised internationally and amplifying the global perspective that New Zealand is a safe country. This provides an opportunity for us to own a narrative surrounding trusted food and to capture the hearts and minds of premium consumers. Lifting our investment in food safety and provenance traceability is required to support this effort.

A notable global trend from lockdown is the explosion in use of digital channels to purchase food. The industry needs to dramatically accelerate how it uses these technologies to connect our products to customers. Covid-19 has given organisations around the world the opportunity to pull forward their future and recreate themselves digitally; in New Zealand this could mean new collaborations around radical business models that could see us delivering fresh product baskets to a customer's door anywhere in the world to capture more of the value we grow.

Realising new business relies on us being able to continue to trade freely. As countries move to protect local industries and local jobs this ability is being challenged. A shift towards protectionism threatens the industry's growth. It requires the government to double down on efforts to protect free trade and market access. We also need to ensure our exporters have the confidence to sell in an environment where business failures will reach unprecedented levels. The pandemic has given us the opportunity to challenge everything we do. The now normal is not the normal we have been used to.

### **The environmental challenge**

There is strong community and customer pressure for the primary sectors to look deeply at the impact they are having on our planet and its ability to sustain future generations in a way that means all can thrive. Sustainability is no longer an optional school of thought, but a regulatory reality in New Zealand as well as our ticket to continued global trade and brand integrity. Regional councils around New Zealand have an immediate focus on restoring water quality through both local level rules and national led policy. Strategies to reduce the timeframes to achieve this broadly include a reduction in use of synthetic nitrogen fertilizers, a move away from intensive (crop) winter grazing and the continued exclusion of stock from waterways. Biodiversity is also a focus for many regional councils ensuring that native species are protected, and wildlife corridors regain establishment after a prolonged period of land clearing for pastoral production.

Although critical to our local communities, water quality features less in the environmental space on a global stage than Climate Change, although the two are in fact connected and addressing both will give us our continued licence to farm. Climate change, or the warming of the planet, is due to the ever-increasing emission of Green House Gasses (GHG). Global climate change agreements have brought a huge amount of light onto the issues ahead and consumers are becoming more aware of how their choices are contributing. The big contributors to the emission of GHG are methane (produced by animals), nitrous oxide and carbon dioxide. Each land use produces a varying profile of these three gases which can be altered through changing on farm practices. There is currently no commercially available technology to reduce methane production, and dairy cows are the highest emitting livestock. Nitrous oxide can broadly be reduced through more efficient farm practices and carbon dioxide is being addressed through a reduction in fossil fuel use and encouragement to plant more trees which can sequester carbon from the atmosphere.

Aside from methane production, New Zealand is an efficient producer of food and emits much less carbon dioxide and nitrous oxide than other countries. However, it has been without focus, and much opportunity exists to do it even better, and to build a brand story aligned with our performance in this area. Where we need to lift our game is on the measurement and capture of data to build this story. It is also accepted that we have reached peak cows in New Zealand and a reduction in cow numbers is likely to be part of our strategy towards sustainable, consumer led production, where value and not volumes is the focus.

### **Consumer insights and influencing**

Perceived value in the old world was: cost + benefit = value. Perceived value in the new world is: cost + benefit + emotion = value. Emotion is not logic, therefore the idea that we can justify farm systems and practices with science and fact is up for considerable debate. The reality is consumers will decide and, now more than ever due to the onset of a social media culture, they will also rally with likeminded individuals, forming a stronger collective voice which can influence others. There have been many developing trends and changes in consumer behavior; however, two I would like to pull out which are highly relevant to this report are:

- Consumer focus on health and wellness
- Growing concerns around animal welfare

The rising concerns for health and wellness, and the spreading of obesity, diabetes, and cardiovascular diseases among consumers have made consumers appreciate and incline towards plant-based products, including dairy alternatives. Plant-based products are perceived to contribute to healthy eating habits, and provide more nutritional value, vitamins, minerals, and healthy fats as compared to animal-derived alternatives. Today's population is adopting a restrictive diet that focuses on the higher consumption of plant-based products, including dairy alternatives. While intolerances (e.g. lactose intolerance) or food allergies drive some of these diets, others such as flexitarian diets and the Paleo diet are consumer-made choices aimed at attaining greater well-being. Growing functional disorders and organic gastrointestinal diseases are resulting in an increasing population which is suffering from improper gut health. The ever-increasing necessity to improve gut health has resulted in the consumption of probiotics which promote gut health, and many plant-based alternatives to dairy are incorporating this into their products and customer value proposition. An over-consumption of dairy has also been connected to inflammatory conditions such as Crohns disease, and animal protein more broadly to cancer.

Consumers are becoming more sensitive and sympathetic towards animals, due to the conditions and environment in which the animals are raised and harvested. Animal welfare is one of the primary reasons for consumers opting for plant-based products, and non-dairy alternatives, and is the primary value held by the vegan community. Although the dairy sector is addressing this at a cow or calf level, including making significant changes to the Dairy Cattle Welfare Code of Practice, the reality is that the game has changed and consumers are on the brink of looking more deeply into systemic farming practices, such as separation of cow and calf and pre-maturity slaughter of calves (casualty calves). Wellbeing is the topic of conversation with animals now, not just welfare, and every life matters.

Currently awareness around the practice and scale of the slaughter of dairy calves is low amongst consumers, and they are more concerned about cow-calf separation, however it is expected that impregnating cows and euthanising their offspring to produce milk would not be acceptable to consumers if they understood this is what happens. Despite the huge increase in dairy cow numbers over the past 20 years there has been a stable trend in the number of dairy origin calves being used for beef production, at around 800,000 – which is around 30% of beef produced in New Zealand. The consistent beef dynamic means that the increase in casualty calves over the last 20 years is directly linked to the growing dairy cow numbers. It is estimated that in 2019, 1.8 million calves were slaughtered commercially, with an apparent large number also having an ‘unknown fate’, likely being euthanised on farm. Given there are no effective or attractive interventions available to reduce the numbers of calves born (e.g. hormone induced calf-free lactations or extended lactations) or to finish more beef in feedlot systems (e.g. large imported feed requirement and environmental footprint), the only option to utilise additional dairy origin calves is to displace existing dairy, beef or sheep production. Finishing all calves on dairy land would require a 20% drop in milking cow numbers.

### **A cross sector case study of relevance**

Objective: To create a future farm concept for Canterbury which:

- Reduced nutrient loss to meet future targets
- Diversified farm income
- Developed a sustainable farming system
- Utilised feed and manures on farm
- Retained economic viability
- Utilised new technologies
- Developed skilled people
- Produced products for future consumers

Method: Take an existing dairy farm in Canterbury and model scenarios which achieved some or all the objectives listed above.



### Farm scenario overview:

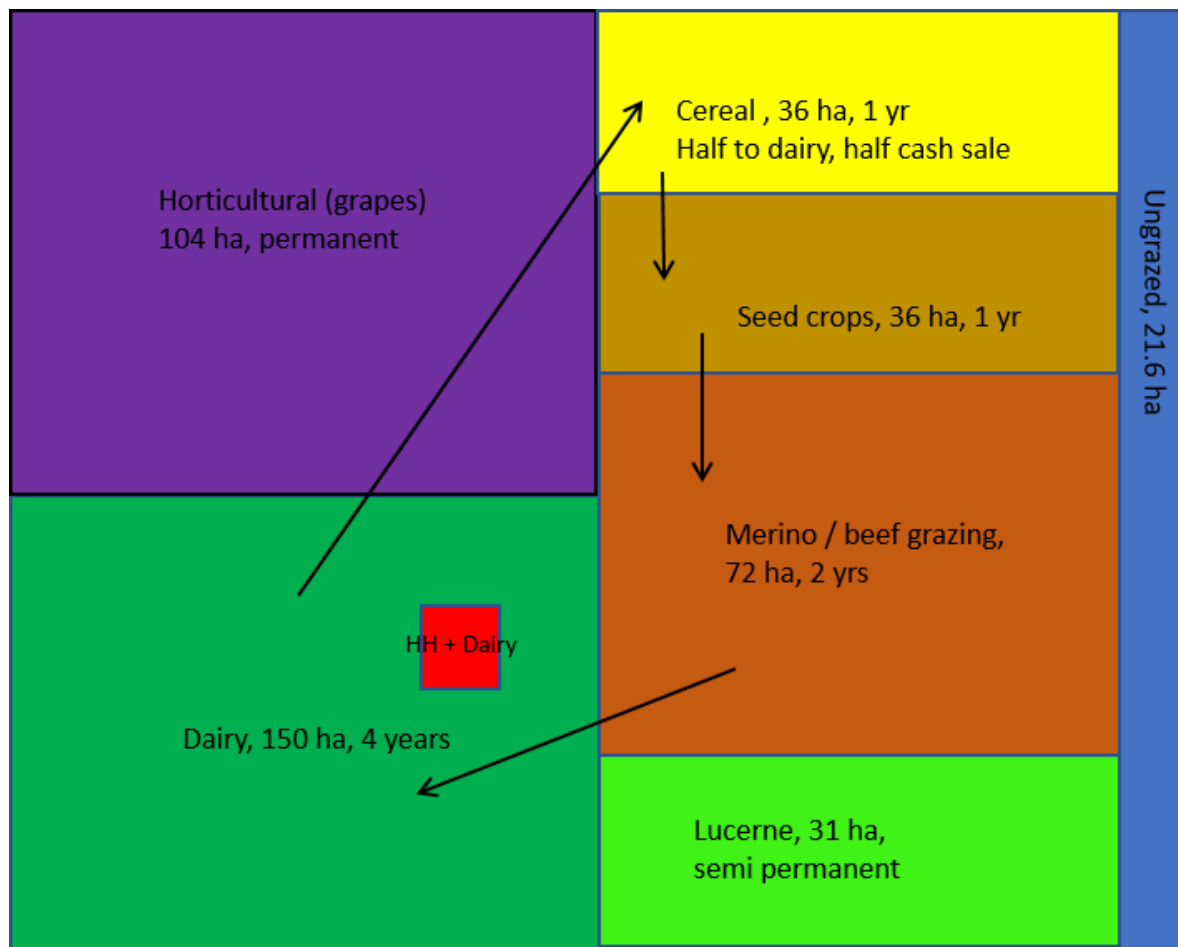


Figure 3 above describes the blocks of land use in the case study scenario

### Farm description:

- Based on an effective farm area of 429.4 ha
- Dairy, crop, sheep, beef, horticulture
- Fully irrigated centre pivot, subsoil or drip
- 36 ha to dairy pasture each year
- 4 times per year calvings and winter milk premiums
- 4-year dairy pasture cycle
- 2 years cropping (1-year wheat, 1-year ryegrass seed)
- 2 years bought-in merino lamb arrive Feb, sold Sept
- Farm-bred dairy-beef grazing, sold Jan/Feb year 2
- Use crops to deplete soil Nitrogen
- Use seed crop to establish sheep pasture
- 215t grain and 80t ryegrass straw to dairy
- All direct drilled – glyphosate only pre-cereal and pre-seed crop
- Use chicken manure as base fertiliser
- Compost Barn of Herd home

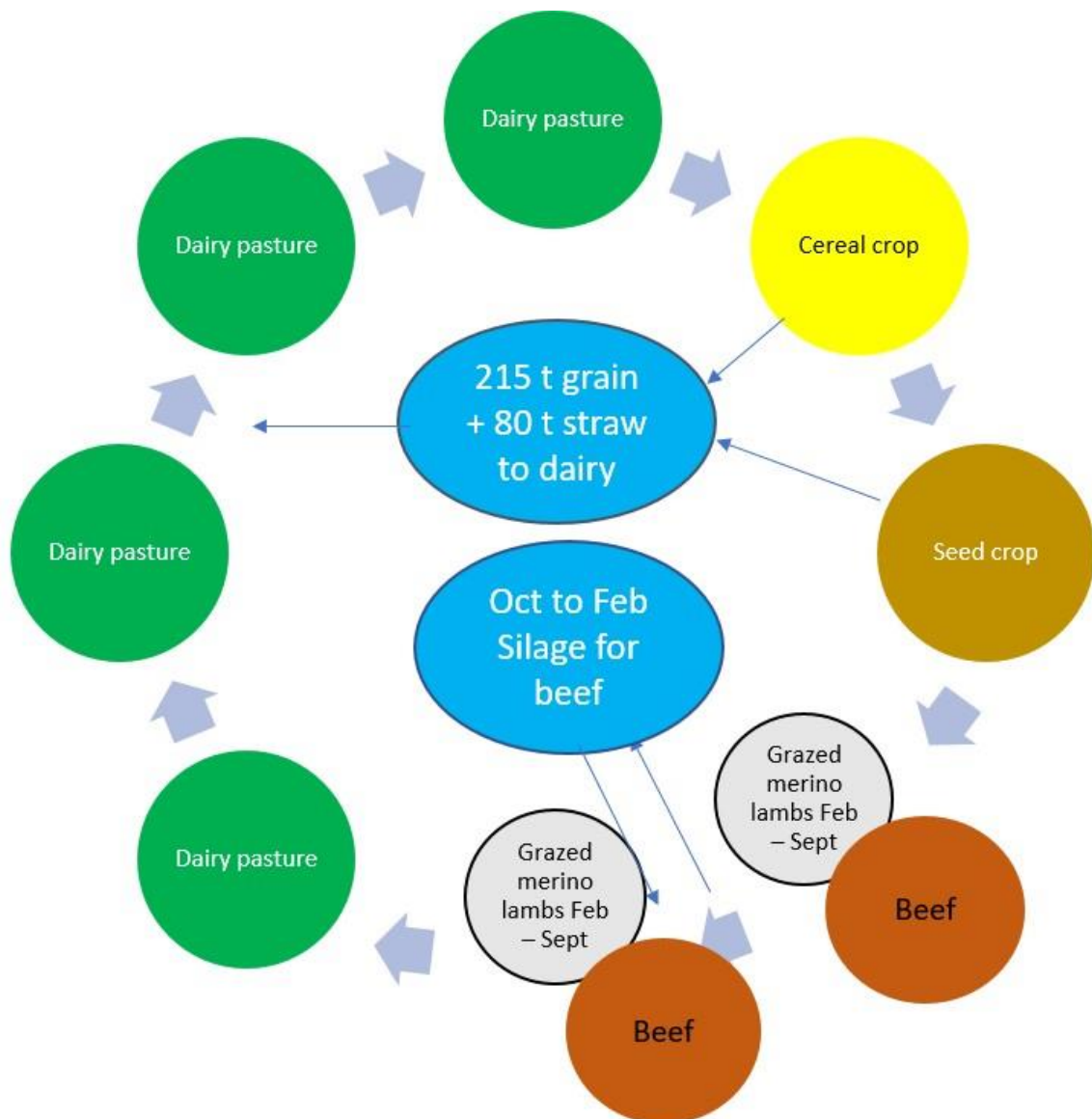


Figure 4 above describes the 8-year rotation required within the pastoral and crop blocks of the farm.

#### Farm operation and infrastructure:

- Dairy shed – existing with in-shed grain feeding
- Irrigation – existing plus drip on grapes
- Drill – contractor
- Harvester – contractor
- Grain store & auger
- Silage – contractor
- Grapes - contractor
- Shearing (portable system) – contractor
- Portable yards
- Fencing for sheep

#### Performance indicators:

- Total gross margin including cost of capital was \$2.57m
- Horticultural element made up over half of the gross margin (circa \$1.5m)
- Same property at 100% dairy had a gross margin of \$1.3m
- N loss reduction of 57% from baseline (100% dairy before any improvements)
- 2500kg/ha CO2 equivalents less than baseline (100% dairy before any improvements)

#### Key messages:

- A diversified farm system is a viable option for reducing environmental footprint whilst building economic returns to the farm gate.
- It could also provide the required reduction in dairy cow numbers which would free up land for rearing more dairy origin calves.
- The diverse farm may be a more attractive place to work compared with 100% dairy as there is a greater variety of tasks on offer.

## 6 Findings and discussion

### 6.1 Getting close to your food

#### **Overview**

We exist for our customers and the consumer is the new regulator. It's the first time in a long time that people have actively been seeking more of a connection to their food and we can do more to connect farmers to the consumers of their product and vice versa.

In NZ we are in a unique position; we are already doing a lot of what customers want on farm. If they knew this, perhaps they would not have the same desires for alternatives. The fact that we do need to take the rough edges off was commented on by many during this study.

Consumers need to know only what spins their wheels with no clutter; for example, talking about not feeding Palm Kernel and sustainable packaging, rather than the farm's 6 week in-calf rates. We have a habit of oversharing which would create confusion for a consumer not familiar with farming practices. Health related benefits of dairy are not well recognized by consumers, or the science is conflicting. We have operated on a bit of 'imagery' and 'good luck' but we do have a genuine story to tell consumers. We have been resting on our laurels – both in the way we do business and the products we have in market. Where there is innovation, we are possibly not talking about it - it's the Kiwi way. The risk with this approach is our consumers aren't seeing the things which would make them interested in our products.

With long supply chains there is also a reluctance to invest in building brand stories as it's seen as too difficult to get alignment amongst all stakeholders. Farmers are ready (and even sometimes leading) in terms of their desire to help us tell the stories and there has been a fundamental change in attitude towards quality and verification of farm practices. There is also generation pressure to do

the right thing as farms are passed through successive ownership. Farms need to be appealing places for talent to live and for the next generation of farmers to settle.

There is a strong appetite to address the role of food in our society. Discerning consumers willing to pay premiums will look at how food contributes to our society and will not take well to us not being focused on feeding and supporting our own nation. This is especially important with our primary sector vision to borrow the words 'Taiao' which is all about putting people at the center. It would be an indirect contradiction to this.

Consumers do respond well to personalisation; it's how we used to connect with food. For example, cutting of the cheese in the deli when you had made your selection, or cooking tips from the butcher when you purchased something which was outside of your repertoire because it was available on the day. Food deliveries were also the norm for those challenged to get to shops and markets. Nowadays we get personalisation through in store recipes, food boxes or bags or supermarket butcheries who store and mature meat on your behalf. It's been adapted so it's relevant for today's world but it's still all just personalisation. The question is, how can we achieve personalisation and relevance for both domestic and global consumers of dairy? Also important in the return to food connection is acknowledging the role nostalgia plays. There has been a return to traditional brands which have reinvented themselves to remain relevant while keeping their iconic heritage roots. For example, Barkers of Geraldine, a well-known artisan preserve brand, now with an affordable range of tomato sauces with taste profiles which appeal to many, not a real disrupter to the Watties tomato sauce products.

### **Domestic connection**

Value for the Food and Fibre sectors is about housing businesses which drive positive outcomes for the community. Real value is about its ability to generate a positive contribution to all New Zealanders and to have a positive impact on diverse groups within New Zealand society. "There should be no hungry New Zealanders – it's criminal," one interview declared. "Premium produce still needs to be affordable especially in New Zealand," was a comment made by another. There was complete consensus that food needs to be nutritionally valuable and affordable and we need to feed our 5 million well.

There is an unhelpful stigma in New Zealand that 'I am just a farmer'. This is a perception challenge which stems from the farmers themselves who have a lack of confidence in their role in society, and their contribution and skill. Interestingly, there is less and less evidence to support the sentiment from communities in New Zealand. We need to reconnect farmers to their communities, give them purpose and show them the value they have in those communities. One farmer I interviewed stressed "Open your gates and farms and show people what you are doing. If you are proud this is easy to do." For them it was the single practice which generated the most value to them.

There is unrealistic pressure to have all produce available all year round. We need to embrace seasonality to connect people with food and how it is grown – just like we used to. Retailers are contributing to unhelpful consumer buying behaviour and in many ways disconnecting consumers from food by providing seasonal produce 365 days a year. Is it really consumers who want this or is it retailers looking for loyalty and sustained sales? Are we better to commit to re-education of eating in season, and could this drive equal or better value for retailers? The key issue is there is inherently less value to share across the supply chain on out of season produce as the financial and environmental costs to produce it is much greater. Do we need more of a regulated industry to

embrace and enjoy seasonality? There is opportunity to create hype around seasonal produce, for example, Bluff oysters. Can we think about the 'limited edition' mentality and how it drives sales?

### **Global positioning**

We are now understanding better who eats our products and we have spent time building respectful relationships in various markets; however, we are still not close enough to our global consumers. New Zealanders placed in markets to build consumer insights struggle to immerse themselves in other cultures and see different perspectives. It's a very difficult skill to master and you either have it or you don't. Also, globally the dairy sector has a need to address the buildup of a lack of focus on the nutritional benefits of dairy beyond infant formula. Infant formula has consumed our focus when it comes to value-add dairy products.

New Zealand has terrible and declining health statistics – diabetes, heart disease, obesity are not on our side in terms of telling a good story to the world. It essentially says, 'we don't follow our own advice'. Environmental impact is both a local and global factor in positioning our Food and Fibre brand. Even though our carbon footprint relative to other countries is low, our domestic water quality and quantity issues tarnish our global environmental brand prospects. There are now viable milk alternatives which are attractive for environmentally conscious consumers. The work of groups like He Waka Eke Noa are enabling us to collectively commit to change, and hopefully leading to reduced effects of climate change through good science and well supported implementation.

It was acknowledged on several occasions that sharing the good stuff we do on and off farm comes with risk if someone in the supply chain lets us down. We also need to be actively engaging with domestic activist groups who in the current world of social media provide a huge risk for us globally.

Connecting farmers and growers to their global customers would help create a reality for what they do every day. It's a tough job physically and mentally, so knowing where your products end up is vitally important to keep the enthusiasm up. Producers do however need to work hard to put themselves in the shoes of the consumers of their product and not put the onus of this onto stakeholders closer to consumers in the supply chain. One strategy used by a farmer I interviewed was to picture consumers enjoying the experience of consuming your produce and to get specific on the details of the setting. For example, a venison backstrap being served up at a high-end German restaurant. Connecting consumers with how the product is created at point of sale is important. In food service it is arguably easier to achieve this, but we need to think carefully about how we do this at a retail level. Ultimately, food is about being in the entertainment business and it's about creating excitement around this connection to the product. How do we get consumers interacting with our story more when they are contemplating purchasing NZ products offshore? There needs to be focus and investment on data capture within New Zealand and re-creating this to tell a story, combining the best of fact and integrity with a compelling consumer value proposition.

## **6.2 Leveraging skills and assets**

### **Cross sector and cross supply chain collaboration**

There will be a drive for land use change to meet consumer needs and a clear shift from sector-based production systems to diversified product systems. This is primarily due to diversification

being a way to deliver to customers changing expectations and preferences. It has however been acknowledged that diversified value chains and land uses are most likely not a brand position for New Zealand as customers don't understand them. They are simply a vehicle to deliver a better mix of products to consumers with changing preferences.

There have also been considerable changes to global trade dynamics and a predicted shift away from globalisation. New Zealand is an overproducer of milk. If international markets are to work, we need to re-size our industry which means less land in dairy. Mixed land uses will rise again and new products to farm or grow need to have accessible packages designed for simple entry for a farmer or grower. We need to look closely at licensing type structures to both protect IP and build supply as demand comes on. However, ideas must come from the market, not the other way around. Just because land can produce a certain crop does not mean we should grow it. An example of this in practice is the contrast of the olive and avocado sectors. Avocados were demand driven while olives were supply or land use driven. Olives did not get off the ground in New Zealand and we are currently witnessing the flourishing of the avocado industry.

The dairy sector is nervous and somewhat defensive of their 'earned right' in the market and proven history to prop up the New Zealand economy. They have no need to be nervous as dairy is not going anywhere, and a market for high quality dairy will always remain. However, they do need to adapt and change and take the opportunities in front of them. Reliance on single industries is a huge risk for New Zealand – look at tourism for example. When it goes bad it goes very bad and is extremely difficult to bounce back from. Perhaps to enable this, there needs to be more effective demonstration that diversification is not a threat and can add complementary value to what they already do. An example of this is the generation of improved environmental outcomes or utilization of assets in traditionally slow parts of the season.

There is no denying that New Zealand is also geographically challenged. We are far away from our markets physically and we are long and skinny with only a few key ports. We have some large mountain ranges and often farmers who are closer to processing subsidise those who are further away. This is a huge mindset change for many Food and Fibre sectors in New Zealand, many of which are built on farmer and grower co-operatives.

Climate change also poses challenge from multiple directions. Short term adverse effects have local impact. For example, water quality and quantity and Green House Gases (GHG) have a global effect in terms of each country's ability to grow certain things which will impact consumers.

Commercial competition is as important as collaboration. It keeps everyone honest and ensures farmers are getting the best returns, as long as they have genuine choice in who they partner with. For new value chains to be realised it's a real chicken and egg situation in New Zealand. Someone is always needing to invest in a reasonably high-risk fashion at the start. It's very hard to convince some links of the value chain to do this and many cashed up farmers and growers end up taking this on with no security. How can we work better across the value chain to invest in new supply chains? How can we reduce some of those start up financial and skill barriers? Banks in New Zealand are arguably too focused on housing and not enough on providing business support, which is unsurprising as the margins and returns for home lending are less risky.

Farm enterprise diversification will ultimately lead to reducing milk pools which is not an issue if you rethink how you can use your infrastructure, but it is important to recognize some companies are more exposed than others; for example, Fonterra, a co-operative that was built to look after New Zealand Dairy farmers – not dairy consumers. Moving up the value chain for a dairy processor means

there is inherently less exposure to the bovine milk prices globally. This exposure is currently a huge risk to New Zealand and was acknowledged by most interviewees.

Processors in general (dairy or other) are focusing on preserving value and volume for themselves, and the expense of the potential value we could generate for the sector as a whole. For example, if we altered the language slightly and became the world's most trusted producer of beverages, instead of dairy, we would have stronger positioning and more options in the market. How do we get there as a group rather than each sector by itself? How do we move towards the products that consumers want? We need to look at the value chain and find win-wins. Finding the competition-collaboration balance will be important. Currently, there are 5 companies launching Oat Milk products. We could be doing this with a little less competition and more collaboration. We should be exploring with more intent the opportunities around toll processing to share assets and mitigate the amount of under-use. If you look back at history, formation of dairy co-operatives was the 'volume' example of that era, and we are now looking for a 'value' example with similar characteristics. There are too many different directions to move in and we all need to get in the same Waka.

Farmers will require economically viable pathways to transition to land uses which have stronger consumer preferences. Shared profits with farmers will need to be a part of this story. We will need courage in commercial companies to challenge the norm and at a commercial level we need to enable failure – and this often means allowing true innovation to occur outside of the 'big brand' or parent company. It is important to note that to really push the boundaries sometimes you encroach on reputational risk areas if it fails, but there is also a huge amount of inspiration in failure. Setting up subsidiary businesses or creating strategic alliances with startups is a great way to do innovation off to the side and reduce the associated reputational risk.

Scale is critical for making the most of diversification. Scale may be achieved internally or within a single business, or externally, by a few businesses working together. Retail is an extremely important component to think about in the value chain. They are the ones who take our products to market. It is important to acknowledge that many other parts of the value chain have a sense of distrust of retailers, as they are seen as taking the largest slice of the pie and even described as 'dangerous gate keepers' by one interviewee. Retailers would suggest the media has created much of this distrust by profiling bias angles of supermarket greed and profitability, making the supermarkets look like the villain, which has created skewed perceptions of them both in business and in society. If we have these perceptions it makes it difficult to trust each other and work together.

### **Diversified farm businesses**

The dairy sector's exploration into diversity is currently in its infancy. It's changing a bit, but there is still a heavy livestock focus. Broadly you could say dairy in New Zealand is undiversified and intensified which is likely due to our stage of maturity in the developing world cycle. The United Kingdom, European Union and Scandinavia are arguably the most developed in the world and also the most diversified. India is back where New Zealand was in the seventies. The United States of America, Canada, South America, Australia and New Zealand are somewhere in the middle. One of the key drivers for a nation's development is the changing balance of economic, environment, social and cultural values within society.

There are industry and market pressures to return to historic farming practices. For example, wintering on grass and not crop, and growing out dairy calves as beef animals. When you hit boundaries, you change – this has been constant in history and is no different now. We need to be



open minded and recognise our desensitisation to some of our farming practices. It's important to surround yourself with people outside of 'our world' to help get perspective on some of these. Community, customers and the next generation of farmers want to see this shift in diversification primarily as it aligns with a maturing value set.

Our New Zealand future is the farmyard storybook at scale and our ability to execute it will be primarily off our ability to share value back to the farmers and growers. Farmers owning some part of the value chain outside the farm gate can be a good way to generate returns for the farm inside the farm gate. Two classic examples of this we currently see are cooperative and share ownership of listed companies. Earnings for a farmer are still too connected to volume metrics; for example farm gate milk price, and we ideally want them to strive for value metrics. We need to support farmers to be as profitable as they can be as their success ultimately underpins our ability to get them to think differently and be change innovators. "When you're up against the wall financially it is hard to move anywhere," was a comment made by half of the interviewees in this study. Interestingly, by global comparison, our rural sectors have a vastly amplified adaptive capacity which is a huge strength we need to leverage at this inflection point. Ultimately, it's the banks that create the largest barrier for diversification behind the farm gate and in many ways, the dairy sector has become addicted to cash flow, and this includes the banks. It's not only the tightening up of capital lending from banks which poses a challenge, it's also the fact that very few other land uses currently provide the cashflow security of dairy. If 'turn-key' packages were to be created to assist with diversification this would need to include bank endorsement and support.

At a farm level, deciding what to farm or grow is currently a very hard decision. How do you decide what to farm or grow when you are already under the pump? Where do you go for the technological know-how? It's potentially much easier and less stressful to stay where you are. As a value chain we have simply not progressed options far enough for farmers to just 'pick off the shelf'.

A huge majority of dairy farmers also don't want to diversify, for several reasons: new skills required, labour access and scale are a few common ones. If you want to do something different in the dairy sector you are currently really breaking the mould; sheep, beef, cropping and horticulture are much more used to the concept. In diversified businesses, one of the challenges is the sheer number of decisions that need to be made. This is the feature which characterizes the complexity of them. But gut feel shouldn't be underestimated as a tool to operate a successful diversified business, as long as there is a clear purpose or vision. Dairy systems are in a way more recipe-like – they are simple focused systems. This is likely due to the high labour requirement and therefore the need to reduce complexity where possible. This is in comparison to sheep and beef, mixed cropping and horticulture which have required diversity of income to survive. For the dairy sector to do enterprise diversification well we need a huge amount of additional skill, knowledge and co-ordination, but, on the flip side, diversification could make the sector a more appealing place for talent to live.

Succession is a huge challenge for many farmers in New Zealand and the process can bring to light many tests for the families involved. For some it makes diversification easier and for some much harder. One farmer remarked during the interview that diversification was a required step for their succession plan to work. The farmers and growers who do diversification well have a clear strategy: for example, no more than a third of their income from a single land use. They also describe themselves as 'businesspeople' rather than farmers per se, but equally recognise that diversification is home for the brave. They suggested you must be financially strong enough for it to hurt you if it fails, not break you entirely. You need to be financially savvy and be looking for pricing signals early, as well as monitoring budgets closely, and actively exploring ways to de-risk and protect income via options such as milk price futures and forward contracts. Some farmers are actively seeking

horizontal diversification and others vertical, with quite different drivers; however, there is a key theme of ensuring their business is not a 'price taker' for everything.

You also need to be clear why you want to diversify and have a focus on what the land could do and not what it does. It pays to think about biological systems and synergies – not recipes. We too often focus on high performing assets, be it farmland or infrastructure and look for further opportunities to improve here. We need to look at the worst 15% of land and assets and diversify there to improve their performance. Farmers are often wired to think like this because of the next person in the value chain incentivizing them or because they are avoiding the judgement from others when light is shone on areas of poorer performance.

Farmers who have vertically diversified or integrated to become retailers of their own products acknowledge this is often not about financial returns. It is mostly about control of the supply chain or a passion or hobby to keep them engaged in what they do. It is not the solution for every New Zealand farmer, it's inefficient and we don't have the population in NZ to make it work well at scale. In vertical on farm integration you also need to have a clear competitor strategy which is not innate for many farmers. Farmers need to have an answer for 'why should I buy your products?' and for the answer to mean something to the consumer. Interestingly, farmers see dairy as a reasonably robust supply chain and therefore have less ambition to vertically integrate than red meat, for example, where they see more flaws in the supply chain. The complex nature of dairy processing and food safety is also seen by farmers as large barriers to enter vertical integration.

Large dairy processors have created a lack of need to innovate through diversification at the farm level as milk processing and market access is complex and they have 'looked after' the farmers. This approach is like the analogy of 'wrapping someone up in cotton wool'. It is, therefore, more common to see diversification at processor level than farm level. Scale is critical for making the most of diversification. Scale may be achieved internally on a single parcel of land, or externally by many parcels of land working together. The latter is more commonly seen with dairy platforms working with grazing or cropping support land. The support land is, however, all about growing feed to feed the cows which generate the income. In these systems the drivers for changes in pasture and crops is primarily driven by pasture renewal aspirations for milk herd performance. When brainstorming a diversification strategy, it's important to think small scale to start but pre plan how you could build scale. If you don't think about this early the economic benefit won't be there to offset the complexity of differentiated capital and labour requirements. Corporates often find entry into diversification more achievable due to their ability to both access capital and provide scale. Some believe corporate to be the future of New Zealand farming for this reason and others believe we need to keep the family face of dairy farming in New Zealand. If we lose it to faceless corporatisation it will make our journey to differentiated products in the market that much harder. Perhaps we can achieve both?

Regardless of the future farming persona, we need to applaud farmers who are trying different systems and methods – not lampoon them. We are risking creating a rural-rural divide with the current judgement and skepticism towards people who are giving diversification a go.

## 6.3 Disruption is required

### Financial readiness

Despite the belief that thinking differently or being disruptive comes to those under pressure for survival, it's generally not the case in practice. Those best placed to move on opportunities are those with strong financial acumen and reasonable business performance. To keep adjusting, changing and investing we need farmers' businesses to be as profitable as possible. Long term value often comes with startup costs: Zespri is an example of this in practice. Growers who can afford the licensing for Gold and therefore a share of the profits were in a strong financial position to begin with. Currently, as banks have limited interest in ventures of a disruptive or 'risky' nature, a reserve of cash needs to be available within the business that has an idea to execute. Access to capital is fundamentally limiting our ability to be disruptive within many Food and Fibre sectors. Current debt levels in farming are huge. We have relied on land values to appreciate over time and now after a period of stagnation, long term projections suggest they may even collapse, so it's not surprising the banks are wary. Farmers are facing extreme levels of volatility which have been driven by New Zealand's outdated strategy of supplying commodities to the world. Although it's a good incentive to think differently we can't ignore the urgency of change and the unavoidable financial pressure farmers will feel.

### Supply and demand dynamics

The geopolitical environment is changing and New Zealand's historically secure access into overseas markets is now described by trade negotiators as very difficult. We have had 20-plus years of the 'golden days', but the writing has been on the wall for at least the last 5 and now the difficult times are upon us. We need industry transformation in order to be able to retain trade market access.

With this in mind we shouldn't be taking any milk off farm which we can't turn into something more than commodities, although it's important to recognise we currently still do this. We function this way primarily as we have been driven by agricultural policies to intensify and produce more. Despite New Zealand's temperate climate (in comparison to our competitor nations) and our ability to grow things outside all year round, the shape of our milk curve creates a large limitation to our ability to move up the value-add pathway. This said it is not an excuse and processors should now be striving to create distance between the percentage of the pool of raw product they take and the percentage share of the market profits they generate. How they share this profit back to the farm is important. Reducing milk pools are almost a sure thing, therefore value-add strategy is urgent and must be connected with customer demand. We have learnt many lessons where developing products with weak market signals does not create value. Take the spreadable butter story as an example. It sounded like a great idea, but the reality was that 'dairy blends' with added health benefits were what consumers were after, not triple churned butter. The 'dairy blend' category took off and the spreadable butter concept died along with the infrastructure which was invested in it. Although understanding market signals is important in order to generate products consumers want it is equally as important to look way into the future and think about macro trends which could be sending early signals and to get out there with your product ideation. Try stuff out, fail quickly, and then try again soon.

Value is created by doing lots of things well. Correct pricing is one of them and it's important to acknowledge this is harder to do with value-add products. However, this is being better understood

and invested in by companies and the key discovery is the pricing strategy must be sustainable without being connected to conventional supply and demand dynamics when the pressure comes on. This is important as some believe that fundamentally how we pay for some key commodities, such as milk, is flawed; we don't value it on its true daily value – it's all modelled off monthly GDT cycles and there is a difference.

There is a building need to address the role of food in our New Zealand society and to acknowledge we have not got the balance right. For a food producing export nation we have an unhealthy gap between the well-nourished and the undernourished. We have a society which now places more emphasis and spend on material goods than it does on nutritious food, and this is a global trend. Covid-19 did provide a point of reflection for many and a re-balance across some households was observed, while in others, as incomes dropped the issue was exacerbated. A national food strategy can't be a charity but it's very possible it will come with a discount to profitability compared with export. We need to think about this as an investment and not a cost for the global positioning reasons outlined earlier in this report.

### **Supply chains and stakeholders**

At the core, we need to take some very complex situations and make them simple. A great historic example of this type of industry rallying was the formation of small dairy co-operatives across New Zealand and the subsequent formation of the Dairy Board. Exporting dairy products was in itself highly specialized but required the collaboration of thousands of supply chain stakeholders. The message here is, we can do it – we have done it before. We do need to acknowledge that we have a conservative Agri-Support sector which is programmed to be risk averse. Included in this group are consultants, advisors and bankers. There is a fair amount of peer pressure that exists to perform and not fail, even with something brand new. It's our support sector which has made unhelpful statements of position on matters such as 'old vs new', 'traditional vs different', 'conventional vs regenerative', drawing division in our rural communities. This creates barriers for innovation, and we need to get the focus on participation in innovation and new thinking by generating curiosity and capacity of our farmers to learn and adapt. New Zealand is also a conformist society and there is a stigma and habit around alienating people who break tradition. This is potentially connected to a tall poppy culture and people not wanting to put their head above the parapet out of fear of rejection within their communities. We will need courage to move in the direction we need to and stamp out the culture of fear and failure.

There is legislation and regulation everywhere and it's growing by the day as consumers want more certainty of product quality and processors want more assurance of risk management throughout the supply chains. Through New Zealand's journey towards monoculture production and the industrialisation of processing we have lost great artisan processing and craftsmanship which are potentially part of our ticket to the game in this value-add world. We must recognise we all own this situation and claim some responsibility and work together to disrupt the ordinary thinking we have become used to. We have not done Agri-Tech well in New Zealand. The reason for this is we have found solutions to problems we don't have or don't understand. The principles of great technical innovation are no different from any other design challenge. You must know your customer. We have also not had a focus on food technology or development and have let other nations surpass us. New Zealand has seen its place as Agriculture not as Food and Fibre, leaving us exposed with key parts of the value-add story missing from our repertoire. An example is the convenience frozen vegetable market which has grown by 35% and is primarily being filled by imports from Europe. In

order to access this product retailers are required to order huge quantities, creating storage costs which must be shared with the consumer to make it viable for retailers to bring them in. It's a lose-lose situation.

There is infinite opportunity to disrupt traditional supply chains. We need to ask the right questions to determine problems so we can develop solutions to fix them. Not develop solutions then find problems to fix. Take wool for example; everyone is focused on creating value through finding new markets for it but there is so much opportunity to look at the supply chain and apply technology to also extract value. Shearing, classing and logistics have not changed in 100-plus years, a wool bale is the size it is because it carried perfectly on a camel. These same opportunities exist in horticulture, dairy and red meat sectors. What if we removed the packhouse, meat processor or fixed milking shed? Transport and logistics accounts for a huge part of our eroded value in New Zealand. Some milk processors collect milk where it is unaffordable to do so, or forestry companies grow trees where it is too costly to get them to the mill. We need to stop doing this if we are going to capture more value. Even prior to Covid-19, having enough labour was a challenge and now it's even harder to navigate. Having the skills to diversify or disrupt is equally as important as having the ideas.

Every supply chain will have its own idiosyncrasies. However, several of them grapple with a few similar constraints, a key one being lots of players and large margins eroding value. Some believe we can consolidate, shorten and simplify supply chains to retain more value. The cost of doing business is also on the rise; electricity, wages, and fuel account for a large chunk of supply chain costs. All of these are on the rise while everyday consumers continue to remind us that food is too expensive. An inherent challenge with supply chains for Fast Moving Consumer Goods (FMCG) is that they rely on forecasting accuracy as they exist on small margins. These challenges are not as prevalent in the digital sector for example. Covid-19 has taught us that disruption to shipping creates complete chaos for the supply chain. It's hard to see how we could disrupt this key function to help de-risk some FMCG enterprises, but there is no excuse not to try. Retailers have also noted that working with suppliers who are market disrupters is challenging and risky with the rise of social media and evidence of big brands dragging disrupters through the mud. An example of this is the haircare brand disrupter Monday, which has seen salon quality shampoo on the shelf at the supermarket for a quarter of the price. Multinational haircare brands have campaigned against them claiming the products will cause your hair to fall out.

## 6.4 The role of Provenance

There seem to be three levels to provenance: Local (150km radius); think Otago Pinot Noir, it's about selling local or selling a local story. Next is Domestic, NZ to NZ; this is all about New Zealanders choosing New Zealand products on our supermarket shelves. Lastly it's Global, NZ to the world; the primary sector's full alignment to one unique story, with sub brands within this. For example, Te Mana Lamb, and First Light's Grass Fed Wagyu. Provenance is the full back story of a product. Where it comes from, how it was made, people, place, everything. Even attributing these same principles across any ingredients which go into the product outside of the primary ones. For example, New Zealand's Appleby ice cream even profiles the origin of their vanilla – from Madagascar – to create connection for the consumer. It's not always about all the components originating from New Zealand land. Similarly, there is a huge amount of power in co-branding; a good example of this is

Whitakers Chocolate and Lewis Road Creamery. Consumers like companies who work together. It shows commitment to collaboration which is an emerging and strengthening value in developing societies and generations X, Y and Z.

We have a huge opportunity and ability to tell our uniquely New Zealand provenance story due to our geographical size and the percentage of the markets we commandeer on a global scale. It will be our price differentiator and our stability in a value-add market. To many, provenance is all about origin and traceability. It's the story of where food comes from, but the story must be backed up with sound fact and practice. Discerning markets will drive a bus through a story with no integrity. We have operated on a bit of imagery and good luck so far which is a weak strategy and cracks are starting to appear.

Conversely to the above statements, consumers don't always understand label claims particularly well so simply relying on them to generate provenance will not work. Any label claims which have driven customer interest and connection have been globally recognised, and retailers will have a very cautious approach to sustainability claims until there is collective agreement on the standards.

Whatever the story, it needs to make buyers feel special when they are consuming the products and honesty is key. We also need to get customers interacting with our story more when they purchase New Zealand made products overseas and get them testing things out.

Some products lend themselves to tracing very well, typically products which stay entire, and others, for example milk, are more difficult as they are fluid and mixed with other products at scale. Some milk companies have disrupted this norm by streaming milk with different characteristics separately. These characteristics of streaming are generally about composition as a result of farm practices. Some believe it seems more achievable to create a strong provenance brand for a lower volume product, where creative interaction with brand story can be applied at the point of sale. It's more of a novelty factor for a niche product than a position or strategy for an entire country's produce.

The retail price is important, and you need to carefully choose the retail stores where your product is available, so it is relevant for the market. An example of this is Fendalton and Northwood New World stores in Christchurch which offer more premium brands than any other store. When considering pricing you need to think about its sustainability at that price. Customers who enjoy the product need to be able to stay loyal to it and the price will play a key role in that. An example of this not working was Coastal Spring Lamb, where demand was great at the start and consumers were prepared to pay the premium, however this was short lived. An example of pricing working well is Aunt Jeans Milk, the brand has longevity because it is not overpriced. It's also worthy to note that many believed for New Zealand provenance to work globally it needs to be accessible domestically for New Zealander to enjoy. Every New Zealander is a salesperson for NZ produce. For example, many premium cuts of meat and highly sought-after seasonal produce has a price point too high for many New Zealander's to enjoy.

### **What is the NZ provenance story?**

It has already been acknowledged that diversified value chains and land uses are most likely not a brand position as customers don't understand them. They are simply a vehicle to deliver a better mix of products to consumers with changing preferences. Provenance for New Zealand is more about proving ethical production of a product. Conversely, in some cultures this does not play a part

at all. An example would be the French delicacy Foie Gras – however, it is noted this is under more scrutiny than ever before.

Some have the view that our New Zealand provenance story needs to be at a national scale, New Zealand to the world, as we are too small to make regional stories add enough value. However, it is acknowledged that this can become problematic at scale without complete clarity of direction and we risk the story losing its authenticity. There have been examples where farmers, growers and some processors are giving provenance aspects a go themselves which should be applauded, but we also need to recognise we will have a better shot at it if we go at it collectively. The Primary sector council's Fit For a Better World vision is an excellent starting point to unite New Zealand Food and Fibre sectors, pulling in the best of what we do alongside growing consumer trends such as regenerative agriculture which New Zealand is well placed to take advantage of. People are focusing on where we need to get to, making it clear what is expected and doing the right thing, not the minimum.

Whatever the direction of New Zealand's provenance story, ultimately it's about creating product differentiation and keeping that relevant for the market. We have recently lost this for New Zealand lamb sold into Waitrose UK via ANZCO foods. We must stay focused on it and look for early signals to adapt or others will take our place. Doing trade with New Zealand must be a win-win for both nations. Our innovation and product differentiation will keep our place in the market as nations look to reduce food imports and concentrate on localization of food production. A differentiated product in the market gives us stronger resilience against the risks which commodity products face. Differentiation means creating a truly unique product, with its own thumb print, often associated with taste or experience for the consumer. In New Zealand it is difficult to create different and distinct flavour profiles with milk and meat, so we are likely going to need to focus on connection to the people and practices which produce it to create differentiation. Although, we shouldn't give up on trying to create flavour differences.

Grass Fed milk and meat is a large opportunity for New Zealand. Typically, global customers associate these products with grain feeding and even indoor high intensity which is not the case for us here. The Irish have started the journey to capitalise on climate already with their Origin Green vision and subsequent storytelling techniques. We are getting closer to cracking the methane issues from livestock farming through science and technology, however absolutely reduced cow numbers will be a part of achieving this and the solutions which enable this will not be exclusive to New Zealand. Achieving methane reductions from pasture based systems will be required to allow Grass Fed farming to have a compelling consumer value proposition.

Seasonality is also a huge part of provenance – this is the essence of farmers markets. Instead of seasonality being the enemy we should be embracing it and figuring out how we can use it to connect people to our New Zealand products. Wine does this well and so do some other products such as Otago stone fruit and Bluff oysters. There is a hype created around their limited appearance on shelves. We can use regional provenance and seasonality to help educate domestic consumers on how to eat sustainably within New Zealand.

Demonstration of successful provenance on a global scale often relates to regional products. This is the traditional form of the concept, stemming from the word 'province' meaning a principal administrative division of a country or empire. Examples of the products are Parma ham, Champagne and Pecorino cheese. All these products come from places with exceptional food cultural history and they were mainly the founders of the original artisan processing techniques. These products are governed by internationally recognized geographical indicators (GI) to insure



trust and integrity. With reasonably industrialised food processing in New Zealand, on a national scale we are best not to focus on the traditional aspects of provenance and rather focus on safe food, produced with love and connection to the land. Our national response to Covid-19 has further enabled us to build a provenance story with a strong focus on food safety. We can turn a pandemic into an advantage if we use our energy in the right places. Strong leadership will support us to achieve this.

## 6.5 Utilising consumer insights

We are beginning to mature in terms of our acceptance of who pays for our sector's existence. We are learning what it means to be customer-centric. We exist for New Zealand, but we must pledge allegiance to the customer and not the grower or farmer. If we do this we can look after everyone in the value chain, especially the farmers and growers. New Zealand can feed 40 million people, but we need to decide which 40 million we want to target.

Many New Zealand food businesses and processors are not set up well to gain global consumer insights. There are examples of food brands domestically who are now doing this well but very few internationally. Purchasing market reports as the only strategy is not the answer. You can find data to support almost any perspective or bias you have. Many people believe gaining effective market insights to be too difficult, and that consumers are unpredictable and change their minds too much, or don't know what they want, so they just don't make valid attempts to try. This attitude needs to change if we are going to transform our industry. We must keep adapting to consumers rapidly changing preferences. You must get into the market physically, which prior to Covid-19 was already a challenge, and has now been made even harder. The people that we put into markets need to be representative of the entire value chain all the way back to farmers and growers. People don't need to go permanently but they need to go often to understand signals and trends. This diversity of people is critical, otherwise we risk people putting too much of a spin on things at an industry level and we don't let farmers or growers experience it for themselves. The perception versus reality gap is a trap and the insights are often getting distorted by the time they get back to us. It is, in fact, a sensible strategy to put people into markets who have limited knowledge of the product or affiliation with the industry as they will have a more rounded view with less unconscious bias, as well as a licence to ask illogical questions which is where the best insights can be found.

Farmers often rely on their value chain partners to effectively carry out consumers' insights and relay this back to them on the farm to give them direction. However, a valuable exercise, which was acknowledged by several farmers interviewed, was to intentionally picture people consuming their products to help them make decisions. An interesting observation was that this was more challenging for them to do for milk than it was for meat or horticultural products, highlighting the detachment between dairy farmers and the product they create. Getting into markets is about understanding what consumer values are and what drives value for them. More and more we are learning that value for our consumers is about doing the maximum and not the minimum. It's about quality not compliance. Farming practices are important as they are emotive and easily connected to people's personal values and their preparedness to purchase a product. As previously acknowledged, we have become desensitised from the subtleties of these farm practices and have not kept up with the pace of change regarding consumer values and therefore their buying preferences.

For farmers it is also necessary to not only be aware of markets and trends as best you can but, arguably more important, to understand any changing legislation and regulation from many perspectives. To understand perspectives, you need to spend time with people outside your profession and natural circles. It's also important to keep up with news from mixed sources. Mainstream farming media will not give enough insight and, as much as many want to ignore social media and believe it is moving society in the wrong direction, its ability to create sales through 'influencers' is real. It's vital to understand how it works and invest in it as a tool for both insights and marketing. A recent partnership deal between New Zealand start up Dose and Co and Khloe Kardashian, set to be worth an estimated \$1.3 million to the business per social media endorsement post, has seen this product rise to the top of its category globally.

In general, New Zealand B to B processors need to be better at reading the market at a category level and making offers to their brand customers which they cannot turn down rather than waiting for them to probe backwards down the value chain. New preferences are emerging all the time, for example, Covid-19 has meant many consumers are looking for ways to experience the 'out of home' 'in home'. It's equally as important to recognise that not all trends materialize, and for many you need a way to prototype or test the market before you invest too heavily in specific products. Covid-19 also created a short-term swell of consumers 'trading up' when being home 24/7 was a novelty. There is now significant evidence suggesting many consumers are trading down with longer term predictions of economic uncertainty and even global recessions.

Price point is a critical element to include in market insights and a subsequent pricing strategy needs to be developed and reviewed regularly. When the Christchurch city tram was free it was under-utilized. A review of its brand position and pricing now means it's one of the most sought after paid attractions in Christchurch. Price is still the key purchasing factor for 60% of consumers globally. As income increases, perception of value changes and consumers start to evaluate food safety, farming attributes, nutrient and health benefits. These consumers are known as ecological buyers.

## 7 Conclusions

Many conclusions can be drawn from the comprehensive set of interview data collected, however three have left an imprint in my thoughts.

### **Consumers are not at the centre across the whole value chain**

Although many pay the statement 'consumers at the centre' lip service it is evident this mantra gets more accurate the closer to the consumer you are in the value chain.

We are not being honest with ourselves when it comes to the consumer and how rapidly their buying preferences are developing, and allowing this to guide us. We are not curious enough, and often apply our own value set to another individual.

### **Attitude to disruption will determine survival**

Losers and winners, no matter which part of the value chain they operate will be defined by their attitude towards disruption – the pace of change required is faster than ever before and there is an urgency to think differently in order to remain relevant.

### **We don't have realistic options for farmers to get access to diversification**

We are lacking in options for farmers to gain accessibility into horizontal diversification and supply chains are applying old thinking to new challenges rather than collaborating across land uses and seeking shared benefit.

## 8 Recommendations

In order to harness the value of diverse dairy farming enterprises we first must:

### **1. Get excited about the consumer**

Farming in New Zealand exists for all New Zealanders, but we must pledge allegiance to the consumer. We need to get excited about them and their changing preferences, not spend energy defending why we perceive those preferences to be invalid.

Strategies to explore could include:

- Discover ways to create personalization for consumers when they are purchasing our products, giving them a memorable interaction with our story.
- Re-look at the role of seasonality in the New Zealand food system. Every New Zealander is a salesperson for our products globally and on the whole too many are disconnected with their food and the many benefits of eating in season.

### **2. Embrace disruption across the supply chain**

Being different needs to be seen as being innovative and should be rewarded as that. We must embrace disruption and not lampoon those who give it a go. We can take some lessons out of our own history book here.

Strategies to explore could include:

- Challenge more businesses in our value chains to become purpose led. Having a stronger focus on their cause will encourage them to channel energy towards staying true to this and away from the trap of doing what you have always done. Pioneers in New Zealand farming had clear direction and dedication towards establishment of communities.
- Actively look for opportunities to disrupt within the supply chain to capture value and get rid of any dead wood, rather than primarily having a focus on finding markets to generate new value.

### 3. Provide ‘turn-key packages’ for farm system diversification

Let’s re-imagine what we see behind the farm gate, and not be limited by the sector we operate in. We can provide more ‘turn-key package’ or ‘off the shelf’ options for farm system diversification to enable farmers to pivot as required. Canterbury is the ideal place to do this due to its climate and irrigation potential, topography and existing processing infrastructure.

Packages which allow dairy farmers to diversify a portion of their land could include:

- A plant-based milk alternative, which is well placed for category growth and fits well into a pasture/crop rotation, for example oats
- An emerging high value, multi-purpose protein crop which could disrupt the food ingredient market globally
- A new rose veal product that would allow value generation from non-replacement dairy calves above commodity beef prices and would require less total feed than conventional beef

Each of these packages would have the following features in common:

- Limited entry to enable control of supply as demand is built
- Standards, requirements and audits to give integrity
- A proven recipe-like structure with contractor/labour provision where required
- A compelling New Zealand brand story drawing on the characteristics of Te Taiao
- Transparency and connectedness of value across the supply chain
- Shared value and risk as well as reward aligned to effort
- Bank endorsement and contracts which enable competitive cash flow security to the farmer

Although out of scope for this study, detailed farm systems modelling and business case development needs to be done for each of these ‘turn-key packages’. However, there will be no value in doing any of this work in isolation or as part of a research exercise for an individual business. This needs to be done as a commercial exercise with collaboration from farmers and growers, an innovator or start up business connected with a brand and cross sector processors and retailers. If you want to harness value for multiple stakeholders get them all in the room early.

## 9 Final comment

We cannot put the New Zealand primary sector in a museum, it is the answer to our challenge not the challenge itself. We have seen examples of all of the above in our past at one time or another, and 2020 is simply another opportunity to add to our rich history of world leading Food and Fibre production.

“History is not a burden on the memory but an illumination of the soul” – Lord Acton

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