



**KELLOGG**  
RURAL LEADERSHIP  
PROGRAMME



# Escaping Low Value Supply Chains

## Adding Value to the Business of Cropping

Richard Sim | Kellogg Rural Leadership Programme  
Course 46 2022

I wish to thank the Kellogg Programme Investing Partners  
for their continued support.



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# Executive Summary

New Zealand farmers are being asked to change how they operate their farming businesses. The sectors that are more likely to thrive in this new world are those which not only adapt to change but, become the drivers of change.

The Fit for a Better World roadmap offers a vision where production-oriented goals of the past will be realigned with core values shared by farmers, society and our overseas consumers. This vision can be a catalyst for the creation of end-to-end value chains to take food and fibre products to markets in New Zealand and around the world. While the 'volume to value' mantra is not new, it is not clear how, or who will build these value chains for the arable industry.

Value chains differ from supply chains in that the product or service generates value as it flows between the participants to the final buyer. This report aims to offer insights into how the utilisation of value chains by arable growers will enable them to create and capture more value from their products. The research methodology comprised a literature review, semi-formal interviews and case studies across the entire supply chain to gain insights into their experiences.

## Key Findings

**Growers are trapped in low value supply chains.** As a grower, if you cannot identify the other participants in the supply chain through to the end consumer, then it is likely you do not hold significant power. As a result, you will be a price taker.

### **Value is created by consumers.**

Therefore, the shift for growers from competing on price to optimising customer experience requires the alignment of the values of participants in the supply chain to those of the consumer.

**Value can be created via innovation or branding.** Irrespective of the pathway taken, growers will need to contribute time and capital to the co-creation of value chains for future food products.

## Recommendations

This report proposes that for the arable sector to thrive, a mindset change from the good of the individual to the collective is required. This new mindset will foster the co-creation of value chains for new food products that create and capture greater value for all growers. Specific recommendations include:

**Define arable sector values.** The shift from operational excellence and competing on price requires a new business strategy. The transition to customer intimacy requires the alignment of values of the participants of the supply chain to those of the consumer. The Fit for a Better World vision and the principles of Te Taiao could offer a worldview and a starting point for an industry discussion.

**Foster a culture of innovation and value-add at the sector level.** Develop a pathway to value-add through encouraging a 'prototype – iterate – test' culture in a start-up environment for future food products. This could be funded by the current levy body.

**Take collective ownership of value chains.** To disrupt existing supply chains a new grower-led investment model is proposed. This will overcome some of the current barriers to investing in value-add beyond the farm gate.

## Authors note

I grew up on an arable farm near Ashburton, Mid-Canterbury. Over the last 30 years I have seen my parents continuously develop the farm to become efficient and profitable producers of grain and seed.

The fragility of global supply chains has been magnified by the COVID-19 pandemic and has highlighted the vulnerability of New Zealand's commodity producers. Consumers are rethinking how they source their food and local is becoming the new global – as arable growers it is our time to shine.

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# Table of Contents

<b>Executive Summary .....</b>	<b>1</b>
<b>Acknowledgements .....</b>	<b>2</b>
<b>Table of Contents.....</b>	<b>3</b>
<b>1 Introduction.....</b>	<b>4</b>
<b>2 Research Aim and Questions.....</b>	<b>5</b>
<b>3 Methodology .....</b>	<b>6</b>
<b>4 Literature Review.....</b>	<b>7</b>
4.1 New Zealand Arable Sector .....	7
4.2 Adding Value to the Business of Cropping.....	8
4.3 Supply Chains .....	9
4.4 Value Chains .....	10
4.5 Creating Value: The Value Discipline Triangle .....	12
<b>5 Findings and Discussion .....</b>	<b>14</b>
5.1 Escaping Low Value Supply Chains.....	14
5.2 The Savvy Entrepreneur .....	18
5.3 Operational Excellence, Meet Customer Intimacy .....	19
5.4 Put the Customer First .....	20
5.5 The Accelerator .....	21
5.6 Scaling Great Ideas .....	22
<b>6 Conclusions.....</b>	<b>24</b>
<b>7 Recommendations .....</b>	<b>25</b>
<b>8 References .....</b>	<b>26</b>
<b>9 Appendix .....</b>	<b>28</b>
9.1 Appendix One: Roadmap to Creating a New Product.....	28
9.2 Appendix Two: Interviewee List.....	29

# 1 Introduction

The New Zealand agriculture sector is undergoing a significant shift in response to both internal and external pressures. What we are facing is a transition from the “growth agenda” of the 2010s (Woodford, 2015) to a Fit for a Better World agenda where the vision is for the production-oriented goals of the past, will be realigned with core values. These values; integrity, guardianship ingenuity and respect will be shared by farmers, society and our customers (MPI, 2020).

New Zealand is renowned for its efficient farming systems and arable growers have become some of the most productive in the world. Through the combination of highly skilled growers, investment in research, development and extension (RD&E), and along with quality soils and a favourable climate we hold world yield records for both wheat and barley (FAR, 2020). However, domestic production of most arable crops is small by global standards and the area used for growing crops is less than 4% of New Zealand’s total land area (MfE & Stats NZ, 2021). Thus, for future growth and prosperity, we must turn to value rather than volume.

## Te Taiao

### – Our way forward

“Taiao speaks to the natural environment that contains and surrounds us. It encompasses all of the environment and its offspring. Because we are born of the earth and it is born of us, we have an eternal connection to Taiao – the earth, sky, air, water and life that is all interdependent. Taiao is about finding our way forward by foraging an interconnected relationship with that environment based on respect”.

– *Taiao Ora Tangata Ora: Howard et al, 2020*

The Fit for a Better World vision could enable businesses to gain leading positions in high-value markets, create more value and return a more equitable share to farmers and growers. The principles of Te Taiao will help create a framework to align the core values of the arable sector with our customers (see box above).

One of the four interconnected Te Taiao strategic pathways is to develop end-to-end value chains to take food and fibre products to markets in New Zealand and around the world (Howard et al., 2020).



While the ‘volume to value’ mantra is not new, and the need to value-add is often acknowledged, it is not clear how, or who will build these value chains for the arable industry. Often, we do not realise, at a fundamental level, the differences between supply and value chains and therefore, how value is created and shared.

This report investigates key characteristics of value chains through reviewing the literature, case studies and interviews. Findings from this report will give growers ideas and concepts on how alternative supply chains can be used to add value to the business of cropping.





## 2 Research Aim and Questions

Based on the discussion outlined above and in the following literature review, three research questions were developed to form the foundation of this research. The research aim was derived from these questions, providing further direction for the research and a framework for the findings and discussions.

### Research Aim

This report aims to offer insights into how arable growers could improve profitability through the utilisation of value chains to capture a greater share of the value of their products.

### Research Questions

- I. What are the defining characteristics that separate supply and value chains?
- II. How is value created for arable products within the current supply chains?
- III. What are the key features of value chains that offer a mechanism to return a greater share of the value to growers?

Thus, to answer the research questions we need to understand the current context of supply chains within the arable industry and identify models to be able to analyse the interview responses and case studies to draw out insights, discussion points and recommendations.



### 3 Methodology

This report is based on understanding value chains as an alternative pathway to market for arable products using the literature and, included government reports, scientific publications and supply chain papers. Semi-structured interviews (26) were conducted with people mainly involved in the NZ arable sector to gain deeper insights and experiences into the research topic. Interviews were also done with people outside of arable and NZ to gain distinct perspectives on the matter (Appendix Two: Interviewee List). Interviewees were operating across the supply chain from growers and processors, to wholesalers and retailers and also RD&E providers. While diverse voices were sought the limitations of this study from the qualitative nature of data allows for conclusions but does not represent all participants in the arable sector.

To provide a framework to understand the insights gained and to analyse major themes from the interviews, qualitative findings were compared to the literature and viewed through the lens of two proven models (Table 1). The models are referred to throughout the report. Snapshots or mini-case studies of businesses are presented along the way to highlight key points and provide real-world context.

**Table 1: Two models are used in this report to analyse for insights and themes.**

Model	Description
<b>Progression of Economic Value</b>	This was developed by Pine and Gilmore (1998). The model has been used to show how a lot of product value is captured by the in-market participants in the red meat industry (Foley, 2022). The model is discussed in greater detail in Section 4.3.
<b>Value Discipline Triangle</b>	This was developed by Treacy & Wiersema (1993) and then further refined by Prof Hamish Gow. The model has been applied to New Zealand red meat and wool supply chains to show how value can be created. (Parsons, 2009). The model is discussed in greater detail in Section 4.5.



## 4 Literature Review

### 4.1 New Zealand Arable Sector

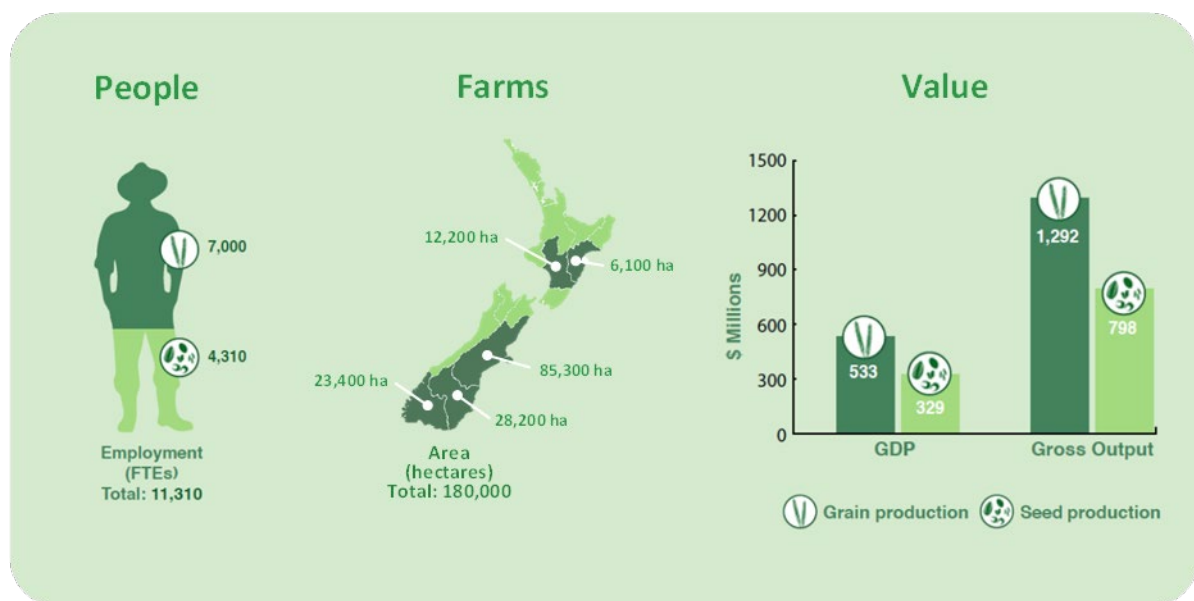
New Zealand's \$2.1 billion arable industry brings together over 11 thousand people, on 180,000 hectares across the country (Figure 1). Arable production is centred in Canterbury with Otago, Southland, Manawatu and Hawkes Bay making significant contributions.

The industry contributes about \$260 million of export earnings each year with notable accolades, such as producing about half of the world's radish, carrot and white clover seed (FAR, 2020). Furthermore, arable farms support New Zealand's \$20 billion livestock industry through the production of pastoral seeds, grain and silage for livestock feed.

These farm systems are complex; often with up to 20 crops grown annually and usually include livestock which are integrated to utilise crop residues, or

where the rotation includes a pastoral phase (FAR, 2020).

As a result, these unique farm systems require local RD&E. In response to a retreat of government applied arable research in the 1980s & 1990s (Foley, 2022) growers set up the Foundation for Arable Research (FAR). FAR was formed in 1995 and operates under the Commodity Levy Legislation (Reedy, 2018). An Arable Commodity Levy is collected at the first point of sale for grain and seed. In 2021-22, \$5.7 million was committed by growers to FAR's research programmes with the vision of "adding value to the business of cropping" (FAR, 2021).



**Figure 1: Overview of the New Zealand Arable Industry: People, Farms and Value. Adapted from FAR (2020) and Robertson & Hurren (2019).**

## 4.2 Adding Value to the Business of Cropping

The arable industry is facing significant pressure to maintain profitability, which can in part be attributed to the disconnect between cash returns for growing crops and land values. For example, the gross margin (gross income minus the variable costs incurred in growing the crop) for most arable crops is between \$2,000 to 4,000/ha (Merrilees, 2021). Or, about half of that for a high performing Canterbury dairy farm (LUDF, 2022). As a result, return on investment is consistently less than 3% and significant land-use change away from arable has occurred in the last 20 years (Dynes et al., 2010).

To counter declining profitability many growers have focused their resources internally; optimising their businesses to produce crops as efficiently as possible (Dynes et al., 2010). This drive for efficiency is reflected in FAR's research expenditure with about half of their investment focus on maximising the productivity of cropping systems largely through targeted crop agronomy (FAR, 2021).

In the late 1980s and early 90s, Crop and Food Research (now Plant and Food Research) spent close to a decade investigating new crop opportunities for arable growers which largely did not eventuate (Stewart, 2021). Where these ideas were developed further, for example, in the case of oat milk beverages, they have often been brought to market by entrepreneurs (see *boringmilk.com*). This has continued to consign growers to the role of commodity producers and price takers.

“New Zealand can grow pretty well any temperate crop; the big issue is identifying and developing a market”

– Alison Stewart, FAR CEO (Stewart, 2021).

A new initiative, which has been developed within the Fit for a Better World roadmap, is the Growers Leading Change Programme (see box below). To avoid a repeat of history once again, there needs to be a greater understanding of where the value sits for these future food products and how growers can capture a greater share of this value through the use of alternative supply chains.

### Growers Leading Change



- A new industry extension programme aimed to lift the capacity of all growers.
- \$2.5 million project over three years managed by FAR.
- \$1.2 million government contribution as part of the Fit for a Better World vision (MPI, 2021).
- Arable Growth Groups are created consisting of about 10 farming businesses and a facilitator.
- Value-add Arable Growth Group consists of seven growers sharing expertise and exploring new value-add opportunities, which are then shared with the wider industry.
- The group intends to produce a roadmap to assist other growers looking to add value to products.

### 4.3 Supply Chains

#### Definitions

**Supply Chain:** the network of all the participants, resources and processes involved in the creation, distribution and sale of a product or service to the final buyer.

**Value Chain:** describes the flow of products or services through a supply chain where it generates value by a set of production activities by one or more participants.

A supply chain involves all activities required to deliver goods or services to a consumer (box above). They are often depicted as linear flow diagrams or streams and show how the product or service flows through participants to the end consumer. In practice, however, they are more complex especially when they transact across borders and often consist of a complex web of relationships that span the entire supply chain (McIntyre, 2019).

A simplified supply chain involves four components; source – make – move – sell, which Pine and Gilmore (1998) captured in their Progression of Economic Value model (Figure 2). They state that as a society and its economy evolve,

customers' needs and wants change. As their needs and wants change, what a business has to do to be competitive changes. Thus, businesses need to continually customise to meet the specific needs of customers, and therefore their offerings' value increases.

Applying this to arable products, growers often are located at the lowest value position – Extract Commodities. This is where unbranded commodities are traded, often in high volumes and at low margins to be used as raw ingredients in secondary manufacturing, for example milling wheat for flour. In this relationship, the manufacturer holds the power and therefore buys on price.

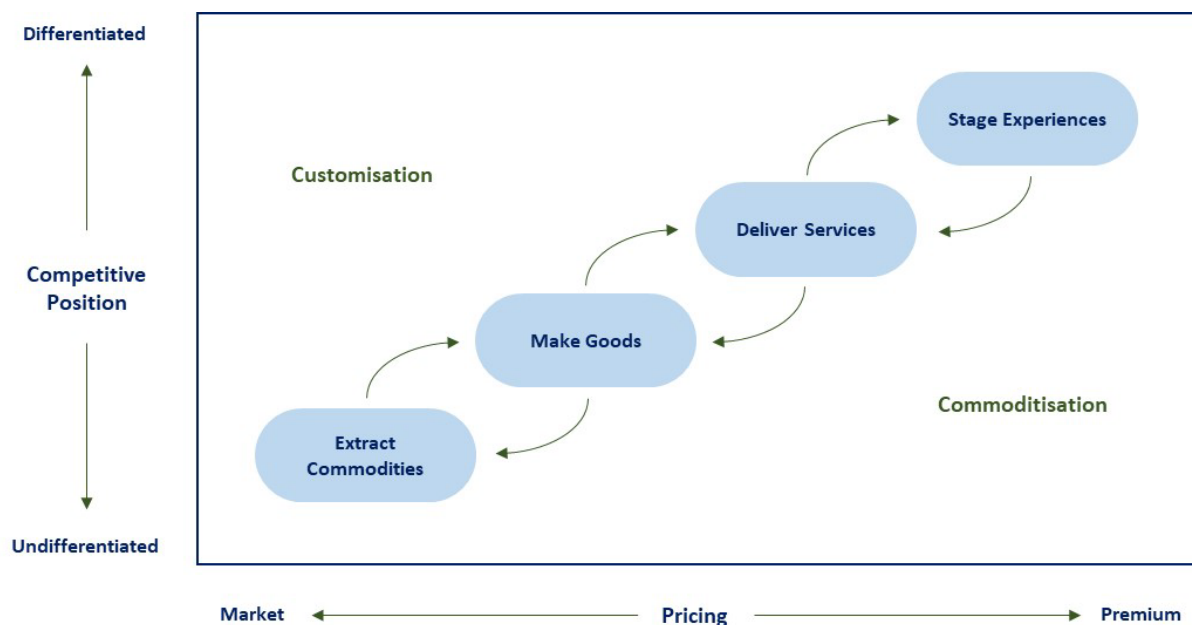


Figure 2: Progression of Economic Value. Adapted from Pine & Gilmore (1998).



Furthermore, they often control the flow of information allowing little opportunity for the individual grower to understand what the consumer needs and therefore differentiate their product and value-add. Thus, as the arable industry undergoes its volume to value journey, we need to understand how growers can escape the low-value commodity position and capture the value which is generated further up the chain.

A vertically integrated business model has been a traditional pathway to increasing product returns. Vertical integration is the process of consolidating multiple steps within a supply chain to expand the level of control of the individual business (KPMG, 2021).

For NZ growers, this would involve assuming additional roles downstream of the supply chain, closer to the customer such as manufacturer, distributor or retailer. New Zealand farmers in both the dairy and red meat sectors collectively own vertically integrated businesses such as Fonterra and Alliance, respectively. These businesses provide a position of strength over pure commodity producers (Parsons, 2009). However, the downside to vertical integration into manufacturing is the high capital cost. As an example of that, Alliance shareholders have \$270 million invested in plant and equipment to process their livestock (Alliance, 2021). Furthermore, vertically integrated business owners need to have expertise across multiple core activities such as food technology and product development, when manufacturing, and intimate customer knowledge and channels to market as a retailer.

Vertical integration is an option to diversify farm businesses and increase returns, but the high capital cost is likely a barrier due to the current low farm profitability as described earlier (Section

4.2). Instead, participating in value chains may offer an alternative for growers seeking more value.

#### 4.4 Value Chains

The value chain was developed by Porter (1985) as a business management concept to describe an alternative to conventional supply chains. The concept describes the flow of products through a supply chain where it generates value by a set of production activities from conception to final sale to consumers in-market. Value chains are highly dependent on relationships, information flow and require participants to align their skills, resources and behaviour to deliver a higher value product (McIntyre et al., 2019).

When a food producer is part of a value chain, they generally have their farm systems tailored to a set group of consumer demands (Dent et al., 2017). For example, First Light sells grass-fed wagyu beef direct to customers and requires animals to be sourced from a specific producer group (*see firstlight.farm*). To produce wagyu beef to the required specifications, farmers need to adhere to specific animal husbandry standards and in return share the premium achieved. This differs significantly from the supply chain model, where livestock are commoditised and value is often determined in the sale yards through the auction system (Parsons, 2009).

A great exemplar of brand building in NZ is the 'Zespri System'. It has succeeded in breaking the mould of producer-led co-operatives, which often focus on capturing economies of scale during manufacturing, to being consumer-led (see box below).

### The Zespri System

Since exports of kiwifruit first began to England in 1952, the industry has rapidly expanded. Over time, and through various steps, the industry launched Zespri in 1997 as an unique marketing brand. Today, Zespri exports to more than 70 countries with annual sales of \$3.6 billion, making kiwifruit NZ's largest horticultural export (Zespri, 2021).

The single desk marketing rights have been the critical enabler as it prevents the fragmentation of supply that plagues other industries (e.g. red meat sector). This gives Zespri significant scale and the ability to invest in building the brand, long-term infrastructure and propriety R&D (Fearne, 2020). End-to-end influence throughout the value chain means Zespri have a clear understanding of customer values in a range of markets. As a result, production is driven by consumer demand and growers are incentivised to meet these quality criteria, rather than being solely focussed on fruit yield. Furthermore, IP is a barrier to market entry for competitors and is tightly held in a joint venture with Plant and Food Research in the largest kiwifruit breeding programme in the world.

Supply chains that deliver value back to growers will not be driven by products and processes, but rather by customers' needs and in the absence of vertical integration, this will need to be delivered through a network of trusted partners, or

value chains. Other characteristics that define value chains include long term planning, open communication and sharing of information and commitment, rather than opportunism (Table 2).

**Table 2: Characteristics that define supply and value chains from the farmers perspective. From Dent, et al. (2017).**

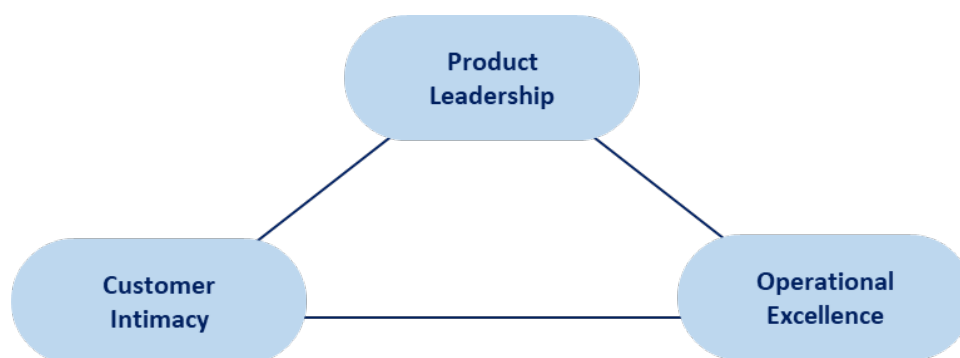
Supply Chain Thinking	Value Chain Thinking
Compete on price	Compete on value
Independence and self-interest	Interdependence and mutual interest
Flexible, transactional relationships	Stable, collaborative relationships
Short-term trading	Long-term planning
Suppliers are chosen on quality and cost	Suppliers selected for quality, skills and service
Suppliers are price takers	Prices negotiated
Opportunism	Commitment
Limited information sharing	Open communication

## 4.5 Creating Value: The Value Discipline Triangle

Businesses will employ a range of strategies to create value and win market share. These strategies can be broadly described by three value disciplines as proposed by Treacy & Wiersema (1993). The authors suggest a business must select and excel at one of these value disciplines; *i*) operational excellence, *ii*) product leadership or *iii*) customer intimacy as shown in Figure 3.

The authors further expanded on this concept and suggested the value

discipline of a business will shape its culture and decisions made by management on a day-to-day basis. Broadly speaking, most growers would align with operational excellence years (Dynes et al., 2010; Parsons., 2009; Stewart, 2021). They are strongly focussed on running highly efficient farm systems and will measure success based on key performance indicators such as crop yield per hectare, as production is generally the main driver of profitability.



**Figure 3: The Value Discipline Triangle Model. From Treacy & Wiersema (1993).**

The issue arises when competing on price is no longer possible as costs of production outpace product prices and environmental regulations, such as nitrogen usage, limit crop yield and add costs through compliance. This is the likely future scenario for the arable sector in New Zealand. Chilean kiwifruit, for example, can be grown for about half the cost of NZ fruit. Therefore, competing on price is not an option and focusing solely on operational excellence is not a viable long-term strategy for NZ (Fearne, 2020).

Businesses that are product leaders are typically innovators with considerable R&D investment. In the arable industry,

the propriety seed companies would fall into this category, like PGG Wrightson Seeds and Barenbrug. The challenge for new market entrants is the high R&D investment required. For example, the plant breeding pipeline for new ryegrass cultivars is often 10 to 15 years (Caradus et al., 2013).

Businesses whose focus is customer intimacy will have deep customer knowledge and fully understand how their products and service can provide enriched customer experiences. Their primary focus is on creating unique products to solve customer problems – often before the customer acknowledges they have a



problem. Businesses in this space need to be agile as consumer preferences can change rapidly, particularly regarding fast-moving consumer goods (KPMG, 2021).

Businesses can change their course of direction, but it is not easy. Often management and culture can be the limiting factor. For example, autonomy to make customer-specific decisions conflicts with the use of a standard operating procedure which is essential to delivering

consistent, reliable and low-cost products (Treacy & Wiersema, 1993).

A great example of a group of arable growers transitioning from operational excellence to customer intimacy is Kangaroo Island Pure Grain. Growers identified their location as their unique selling point which they used to co-create value chains with existing manufacturers of premium products (see box below).

### **Kangaroo Island Pure Grain (KIPG)**

KIPG was established in 2009 to provide premium returns to Kangaroo Island grain growers. Kangaroo Island is situated off the coast of South Australia and the traditional model of selling grain into the commodity market was not working due to the higher costs of production on the island compared to the mainland. Utilising the isolated geography of the island to differentiate themselves, growers pooled their grain and marketed it as a premium product.

Grain is segregated allowing full traceability, completing the story of safe, and genetically modified free grain. KIPG invested in grain storage, cleaning and distribution infrastructure. They then formed close relationships with businesses in the food and beverage industry to integrate KIPG products and stories into their supply chains. For example, KIPG canola is sold to a Japanese company to produce non-GM canola oil which is highly valued by their customers. As a result, growers are increasing the value of their crops by building value chains with in-market partners.

*Sourced from Kangaroo Island Pure Grain: [kipuregrain.com](http://kipuregrain.com) and discussions with Grant Pontifex, KIPG Director & grower owner.*

## 5 Findings and Discussion

“Is farming going to be enough?”

– NZ arable grower

This was a common question proposed back from growers during discussions. To expand, growers were asking: will returns from operating an arable farm be enough to satisfy business and personal cash needs into the future? According to Pine and Gilmore (1998) and the Progression of Economic Value (Section 4.3), probably not. This is because to escape the position of a commodity producer (Figure 2), businesses need to evolve their offering or service if they want to maintain their share of the market value on offer. For growers, the long term position of the commodity producer is further untenable as the slide in profitability will further be exacerbated through inflationary pressures on input costs, volatile commodity prices and environmental regulations that restrict production by establishing crop input limits and therefore impose ceilings for potential crop yield.

Notwithstanding the current arable landscape and lack of profitability as the most pressing issue facing growers in recent times, the scope of this report is to unpack the often trodden ‘value, not volume’ mantra. Walking the supermarket aisles, it can be seen there is value for arable products as ingredients in a range of consumer goods. Thus, this report aims to offer insights into how some of that value can be brought back to the grower.

### 5.1 Escaping Low Value Supply Chains

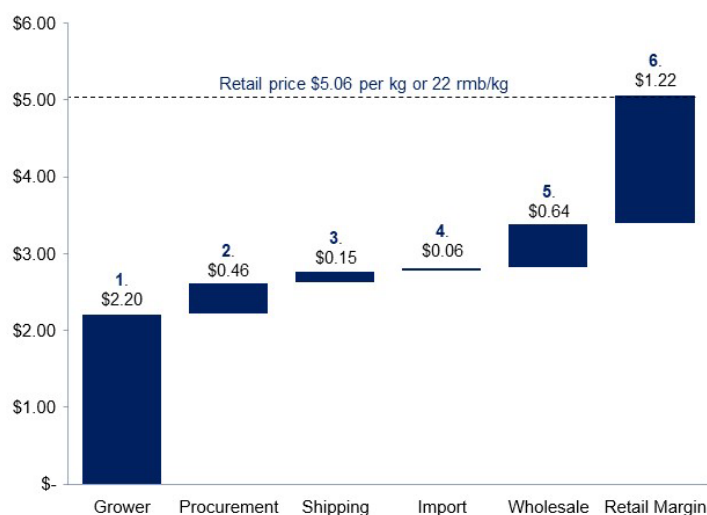
Arable growers are generally the producers of raw materials used in the manufacturing process for consumer goods. For example, barley is turned into

malt for brewing beer. The profitability of the participants downstream of the grower within these supply chains is highly dependent on maximising the difference between the price they pay for their inputs and the price they receive for their products. Or, in other words, they are largely focused on maximising margin and, as described by Pine and Gilmore (1998), are incentivised to commoditise their inputs as much as possible.

This procurement model drives counter-productive practices that often erodes value by being reliant on spot market pricing, stockpiling product and restricting the flow of information among participants (McIntyre et al., 2019). As a result, price signals are distorted and a relationship of mistrust breeds amongst farmers and participants (Parsons, 2009).

Nui perennial ryegrass seed destined for customers in China is a great example of a commodity supply chain. A simplified breakdown of the chain is detailed in Figure 4 and shows seed passes from growers through local procurement brokers before being exported to China. Once in China, it is distributed by wholesalers to local retailers, before being sold to the end consumer.

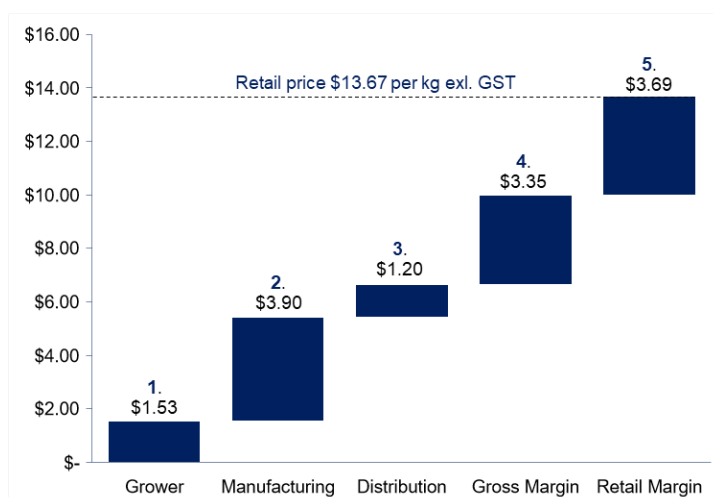
An interesting comparison with the commodity ryegrass is the evaluation of the supply chain of a consumer good which is manufactured from ingredients sourced from arable farms. For example, consumer-ready quinoa (Figure 5). This is where raw ingredients are turned into a consumer-ready product during the manufacturing process. The products are branded and distributed to consumers through various channels.



Analysis based on 1 kg of Nui ryegrass at a retail price of \$NZ 5.06, in China.

- 1. Grower** price is based on a 3-year Canterbury average contract.
- 2. Procurement** cost is estimated as 18% of FOB price. From this, container loading, domestic transport, financial and overhead costs are incurred.
- 3. Shipping** cost is based on a 3-year average of NZ\$3000 for a 20-ton container ex Lyttleton to Tianjin, China.
- 4. Import** cost is estimated at an average of 2% of the cost of goods.
- 5. Wholesale** margin is estimated at 20%.
- 6. Retail Margin** is the difference between wholesale and retail prices from suppliers in Guizhou & Sichuan Province of ¥22/kg (NZ\$1 = ¥0.23)

**Figure 4: Indicative gross margin analysis of Nui ryegrass exported to China**



Analysis based on 1 kg of branded quinoa at a retail price of \$16.07

- 1. Grower** price is based on 3-year Canterbury average, excl. GST.
- 2. Manufacturing** cost is estimated as the difference between grower price and bulk, unbranded product ex-farm ( $n=2$ ). Note: this would include some margin.
- 3. Distribution** cost is based on transport ex-farm ( $n=4$ ).
- 4. Gross Margin** retained by the brand is estimated as the wholesale price, minus costs and excludes marketing, R&D, overhead and financial costs.
- 5. Retail Margin** is the difference between wholesale ( $n=4$ ) and retail price ( $n=11$ ).  $n$  denotes number of products surveyed

**Figure 5: Indicative gross margin analysis of consumer-ready quinoa**

There are a few key elements that need discussing when comparing these two supply chains. Firstly, without any involvement of the grower beyond the farm gate, the raw ingredients of both of these products will be commoditised, and the returns will reflect the opportunity cost of growing an alternative crop and the premium achieved is what the buyers need to pay to secure supply. This is a hard truth, but although the quinoa in the above example is valued highly by the consumer, the grower will not capture a significant proportion of this value.

“It’s difficult to add value to a highly priced commodity [...] look for products with a good margin to add value to”

– *Farmer’s insight when considering which products are most suitable for adding value.*





New Zealand pasture species | Guizhou, China

Secondly, value is created quite differently within these two supply chains and therefore, would require different strategies where growers were looking to attain a greater proportion of the value. For the commodity product (Figure 4), from discussions previously with Chinese merchants, the supply chain does not add any inherent value to the final product for the consumer. The main considerations for the buyer are price, timeliness of supply and seed quality. The traditional model for greater returns would be through vertical integration. For example, if growers cooperatively pool their seed for export, they could potentially capture a further 15 to 20% more margin from the brokers or ‘middlemen’. Thus, shortening the supply chain.

Whereas, in the quinoa example, if growers pooled their capital and invested in manufacturing and building a brand, they could potentially increase the farm gate value of their produce five-fold.

The vertically integrated business model would not be consumer-led and would be supply-driven or focused on pushing a product through a supply chain as described by Elliot (2019). Therefore, it

would not inherently create consumer value or be described as a value chain and only existing margin could be captured. Grower margin would be dependent on efficiently procuring the seed and then competing on price with the seed production powerhouses in Europe and North America. Furthermore, often gains through economies of scale are passed onto downstream participants as simply cheaper products in the bid to win market share. This was a key insight from wholesalers. Or, the premium achieved is consumed in the war for procurement as shown by Parsons (2009), when describing some of the challenges the red meat industry faces. This internal competition further consigns growers and farmers as commodity producers.

An interesting insight into grower co-operatives, such as grain and seed pools, which generally operate as trading companies is the difficulties in securing finance without a strong asset base. This restricts borrowing capacity, which can limit plans for investment in R&D, infrastructure or marketing. As a result, it can severely limit future growth.

“It’s incredibly challenging. The premium we achieve is chewed up running the company and attracting suppliers [...] there is very little left to invest into the business itself”

– *Grower insight when describing the challenge of running a co-operative.*

One similarity between these two supply chains (Figure 4 and Figure 5) is the margin captured by the retailer of about 30%. This is consistent with many products (Commerce Commission, 2022) and highlights that the value sits in-market and close to the consumer.

The ‘dark arts’ of the retail sector are out of scope for this report. However, some interesting insights were gained from wholesalers on the need to have multiple channels to market. These channels should integrate, ‘bricks and mortar’ retailers, eCommerce platforms and business to consumer channels, such as subscription models. The channel used is dependent on the product, market and the consumer. It should also be able to change or scale in response to changing consumer preferences.

It is important to note that there is a trade-off among channels and generally the margin taken by the retailer can easily be consumed by inefficient domestic distribution networks.

In the ryegrass case, it is interesting that the grower is already capturing about half of the consumer value. For the quinoa example, this is less than 10%. This suggests that the opportunity to add the most value to produce is to build supply chains involving the latter. To do so requires investment in manufacturing outside the farm gate and there are very few examples of growers doing this as individuals or co-operatively within the arable sector. Understanding the pathway

to greater off-farm investment is an important research question but, is not explicitly addressed in this report. There is a real dichotomy because there is no reward without the risk but, generally, farmers are very risk averse. However, to reduce the risk to current arable businesses, growers need to decouple at least some of their future returns from commodity supply chains. This is because these are volatile by nature and offer considerably less opportunity to return greater value in the long term, as shown by the grass seed and quinoa examples.

To understand any supply chain, the initial step is to break it down to the individual participants to determine who captures the value and why. If you cannot identify the other participants, you are part of a supply chain and you likely do not hold the power. This analysis is insightful and often shows a compelling case that the pathway to greater value capture is likely to build new supply chains for alternative crops or new products. This is due to having well established and large participants anchored in existing supply chains. The advantage here is that it creates space for innovation elsewhere, which can be filled by the entrepreneur.



Nui Ryegrass | China

## 5.2 The Savvy Entrepreneur

“You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete”

– Buckminster Fuller, Philosopher.

A common insight from the grower led value-add success stories is the driving force of the entrepreneur behind the idea. Specifically, their ability to refocus their priorities from running the farm to building a brand beyond the farm gate. The skillset required to create and bring a product to market was not always complementary to the skills of a top-performing farm manager. This suggests the value-add pathway is not for everyone, even though most indicated they would like to be part of the journey. This supports the idea from Parsons (2009) that disruption needs to occur at the value chain level by individuals, or small groups, rather than by the entire industry at the sector level. Thus, sector-based projects such as Growers Leading Change (Section 4.2) need to have their scope and purpose well defined from the outset to deliver value-add to the wider industry.

Another fundamental skill of the entrepreneur was their ability to engage with consumers and identify emerging trends, consumer changes or early detection and solution of problems. A good example of an entrepreneur who was able to identify an emerging market was Jade Gray when he founded off-Piste Provisions (see box below). This example shows growers do not always need to be the idea creator, but they do need to be fast followers and contribute to the co-design of the value chain if they want to capture value.

### Off-Piste Provisions

Off-Piste Provisions is attempting to bring New Zealand arable farmers on a journey to meet the challenges of climate change (Gray, 2021). Founder, Jade Gray, with 25 years' experience living and working in China, realised that the world was changing. These events, or catalysts for change, were appearing on a more frequent basis. One catalyst was the way consumers, particularly millennials, were rethinking their diets concerning climate change. Thus, the market for consumer-led solutions in the form of an alternative protein source was appearing.



Off-Pistes' solution is plant-based biltong and their journey to market involved developing the manufacturing process to replicate the texture of meat fibres through the extrusion process. They utilised the FOODPILOT programme from the Food Innovation Network, for six months before moving to the FOODBOWL to scale up the commercialisation of the product.

The opportunity for growers is to partner with Off-Piste and become integrated into the value chain. Currently, pea protein is sourced from Canada because NZ peas do not meet the specifications for the extrusion process. The initial need is for locally sourced, fit for purpose pea cultivars and then, as processing is scaled up, capital investment in manufacturing. Both can be grower-led.

*Sourced from Off-Piste Provisions: [offpiste.co.nz](http://offpiste.co.nz) and discussions with Jade Gray, Founder.*



### 5.3 Operational Excellence, Meet Customer Intimacy

Commodity producers will often push high volume, low margin products through supply chains as efficiently as possible (Elliot, 2019). This drive for operational excellence often creates a culture of cost management and productivity gains and is possibly a reflection of a high proportion of grower levy funds being spent on research optimising crop productivity inside the farm gate. However, while cost management is critical for operating a profitable arable business, chasing eternal efficiency gains is untenable as a business strategy for growth in the longer term. This is because the competitive advantage of being the lowest cost producer and competing on price in the marketplace is neither achievable nor sustainable for NZ arable systems.

Instead, growers need to refocus their business strategy and take leadership positions elsewhere within the Value Discipline Triangle (Figure 3). Treacy & Wiersema's (1993) model shows value can be created through alternative pathways such as product leadership or customer intimacy. Customer intimacy is attained through the cultivation of enduring relationships with customers and striving to satisfy their unique needs. It is often achieved through branding.

A good example of an arable business that was able to shift the focus from commodity production to branded consumer goods is Minchins Milling (see box below). Minchins Milling shows that through perseverance, it is possible to turn an idea into a product.

#### Minchins Milling

– Stoneground flour direct from farm to customer

Changing the course of direction for any business is not easy, let alone an intergenerational family farm. However, Marty Skurr, the fourth generation to operate Riverview Farm, is doing just that when he founded Minchins Milling.

Marty was looking at ways to add value through alternative crops and was actively seeking a direct connection with the consumer. Integrating alternative crops into the existing farm system, and their subsequent low yields, meant the end products were always going to be cost-prohibitive to buy. Instead, after a chance meeting with Dan Cruden, of The Real Bread Project, and the discovery of the need for 'seed to store' flour with an NZ grower provenance story it was decided the path forward was to mill the farms' wheat for flour.

A stone mill was imported from Austria and while the process of milling was being refined, it allowed time to engage with customers and build the brand in-market. Minchins Milling is an example of an arable farm that has successfully made the initial pivot to value add by identifying a customer with a specific need and then moving to co-design a solution with that customer.

*Sourced from Minchins Milling: [minchinsmilling.co.nz](http://minchinsmilling.co.nz), [latitudemagazine.co.nz](http://latitudemagazine.co.nz) and discussions with Marty Skurr, Founder.*



## 5.4 Put the Customer First

“The niche products of today are the commodities of tomorrow”

– James Parsons, Nuffield Scholar (Parsons, 2009)

Value is created by consumers. Therefore, the shift for growers from competing on price to optimising customer experience requires the alignment of the values of participants in the supply chain to those of the consumer (McIntyre et al., 2019). The immediate challenge for growers is to gain visibility of these participants beyond the farm gate. This is because growers identified the lack of customer knowledge as one of the main barriers to starting the value-add journey.

As a starting point to create value chains, participants need to agree on their values or mission. The Fit for a Better World vision and the principles of Te Taiao (Section 1) could offer a worldview for the alignment of these core values. For the arable industry, this may mean defining key customer values, which are specific to primary products derived from the arable sector. Growers could use these values, at the same time tell their own farmer stories, to create brands while showing product provenance, which was identified as being highly valued by in-market participants.

Lifting the lid on consumer attribute rankings for primary products was out of scope for this report. It is generally specific to the customer and market in question and is detailed extensively elsewhere, e.g. Driver et al. (2022). Discussions with local manufacturers showed that consumers valued provenance, but this did not mean full product traceability. Product traceability becomes increasingly difficult when multiple different ingredient sources are required for the manufacturing process. However, a clean label, where all ingredients are easily recognisable with the majority locally sourced, is valued. For growers, the opportunity is to work with existing manufacturers and brands to co-design products to offer local ingredients as an alternative to imported sources. For example, growers are entering the value chain of low gluten bread by investing in the breeding programme to produce wheat cultivars with low gluten grain (Stewart, 2021).

Alternatively, values can be aligned with an environmental story. However, it appears to be difficult to monetise sustainability in isolation from other product attributes. This may be because on-farm sustainability is often measured against Farm Environmental Plans, which are linked to regulation and achieving minimum standards (McFarlane, 2019). Furthermore, these standards often fall short of international customers' expectations, for example, agrichemical residue limits for products entering the EU (Marr, 2020).

“People don’t buy sustainability; they buy great products”

– *Entrepreneur*

Consumers will often pay a premium for quality. However, if the supply chain participants cannot agree on the quality standards, then the value will neither be generated by the supply chain nor passed down to the growers. For example, NZ grown milling wheat is as good, or better, than overseas grown wheat in terms of baking quality (Stewart, 2021). Furthermore, consumers have indicated a willingness to pay a premium for flour with a NZ provenance story. However, this value cannot be realised when local millers do not recognise this quality and do not pass on this information upstream to customers.

## 5.5 The Accelerator

In the world of consumer products, there are the first movers and the rest. The first movers identify the catalyst for change, or the unfolding consumer problem and then move quickly to fill this gap. This timescale often conflicts with the annual cropping cycles of most arable farms and thus, requires a change in mindset to the 'prototype – iterate – test' environment of start-up businesses.

A recurring insight from discussions with growers was that support to turn their idea into a product and bring it to market would have accelerated the value-add process. Key areas of support identified were technical input to optimise the manufacturing process and sourcing ingredients, food safety requirements, packaging, marketing and navigating the various channels to markets – basically everything.

The New Zealand Food Innovation Network is a business that specialises in providing this support to aspiring brands (see box below). One of the key requirements when working with a business accelerator like FOODSOUTH is that they are most effective when supporting an entrepreneur who has a product concept, albeit one that requires refining and scaling.

It became apparent that there is a need for grower support to get their idea into a concept and to a point where it is suitable for an accelerator like FOODSOUTH. This support network could be described as a 'pre-accelerator'. FAR may be able to play a facilitative role by creating a value-add roadmap and directly connecting growers to technical experts such as food technologists from our universities, CRI's and private research providers.

### FOODSOUTH

#### – New Zealand Food Innovation Network

FOODSOUTH is the South Island hub of the New Zealand Food Innovation Network and is based at Lincoln University. Their focus is on working with businesses to develop new and innovative food and beverage products.

Many FOODSOUTH clients are what could be described as savvy entrepreneurs. They have identified a consumer problem and are moving fast to provide a solution or define their unique selling point. They have intimate consumer knowledge, including what they are prepared to pay, and have undertaken extensive market research, such as a full breakdown of the gross margin analysis as described in Figure 5.

FOODSOUTH's equipment covers standard food manufacturing processes including extrusion used for processing snacks, pasta and breakfast cereal, which would be relevant for arable products. Further services include optimising ingredients to maintaining cost control, packaging and food safety accreditation.

*Sourced from FOODSOUTH: [foodinnovationnetwork.co.nz](http://foodinnovationnetwork.co.nz) and discussions with John Morgan, Chief Executive.*



One of the barriers identified to creating value-add is the grower's reluctance in investing beyond the farm gate. Investment and, therefore, ownership are the critical steps to value-add. Yet, when there is confidence, there is evidence growers are willing to invest. For example, the grower-owned flour mill in South Canterbury (*see farmersmill.co.nz*).

**"Confidence precedes investment"**

– NZ farmer leader

Confidence can be developed through the sector delivering successful pilot projects with proven results, such as the Wairarapa durum wheat project (see box to the right). Pilot projects could be run in an 'incubator' environment. The incubator could also invest in small scale manufacturing equipment such as a speciality grain mill or oil seed press.

### Durum Wheat



- FAR lead initiative to evaluate the opportunity for a grower-owned value chain to supply the high-end durum wheat flour for pasta.
- The project aims to produce a blueprint for value-add that growers could apply to other speciality grains in different regions.
- Consumer research and product testing with customers, such as bakers, have been fundamental in producing a premium product.
- Once the product has been developed, growers take control of the branding and provenance story.
- Supply must be tightly controlled to match consumer demand to hold value.

*Sourced from FAR: far.org.nz and discussions with Ivan Lawrie, FAR.*

## 5.6 Scaling Great Ideas

Access to capital for growth to scale concepts into viable businesses was identified as a significant constraint by entrepreneurs. Continuing the idea of a grower-led accelerator, there is an opportunity for a grower-led investment model to disrupt existing supply chains.

The model would create a platform for growers to pool capital into an investment fund to fund new business growth. Growers would then take an equity stake and guaranteed supply contracts to supply ingredients derived from arable products where applicable.

**"It might not be the whole industry [...] it might be best to start with the coalition of the willing"**

– NZ farmer leader response to how a grower investment fund may be initiated

**"Until FAR has a clear mandate to formally connect into new development opportunities, it [value add] will continue to have a multitude of false starts"**

– Alison Stewart, FAR CEO (Stewart, 2021a).

The fund would lower individual grower risk by socialising the failures, which are inevitable with new business start-ups. Importantly, it would be a vehicle for ownership within the supply chain beyond the farm gate, which is critical to capture a greater proportion of product value.

Two examples of grower-led investment funds are; GrainInnovate (Australian) and Unigrains (French). They demonstrate the model of pooling capital to invest in value chains outside the farm gate can be successful, while allowing growers to focus on running their farms (box below).



## GrainInnovate

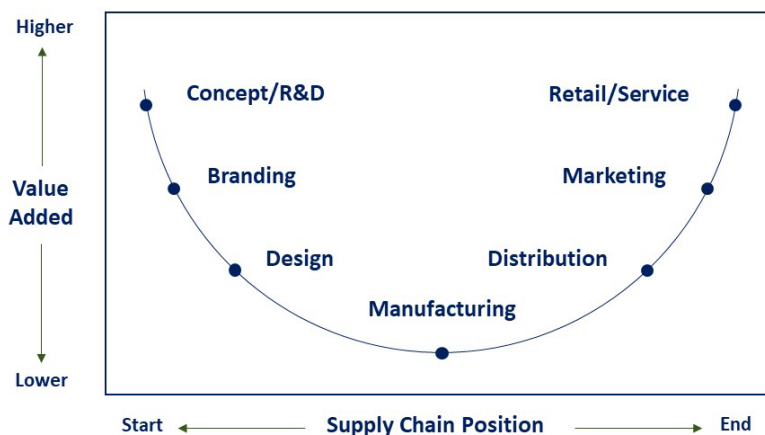
The Australian Grains Research & Development Corporation (GRDC) has implemented a three-tiered program starting with developing grower innovation capacity, through to accelerator programmes and then an investment fund, GrainInnovate (*see grdc.com.au*). GrainInnovate is a NZ\$55 million fund, under professional management, to invest in starts-ups. Dividends are returned to stakeholders or reinvested into the R&D platform for future growth.

## UNIGRAINS

Unigrains was founded in 1963 by French cereal growers to procure finance to export grain. However, it has evolved to become a growth-capital investor focused on agri-food value chains (*see unigrains.fr*). Since its inception, the fund has invested in 1000 companies and has almost NZ\$2 billion under asset management, with NZ\$1.4 billion of equity capital. The fund has invested in seed companies such as RAGT (the NZ connection is its subsidiary Seed Force) but, tends to focus on innovative food and technology companies. Unigrain favours partnerships and investing as minority shareholders and it has a long-term vision when investing, or what is considered 'patient capital'. Growers no longer pay an industry levy. Rather, the fund returns a dividend, while also retaining NZ\$150 – 250 million per year for reinvestment and future growth.

To determine where to invest within a supply chain for the greatest return Stan Shih, the founder of Acer, proposed the Smiling Curve Theory (Shih, 1992). It shows how value-added varies across supply chains (Figure 6). It suggests the highest margin is attained when investing on either ends of supply chains, in the R&D and retail phases. The lowest returns are in manufacturing.

This aligns with the gross margin analysis done earlier (Section 5.1) and indicates where investment should be targeted. It should probably not be in low-tech manufacturing such as seed dressing plants or co-operative grain storage. Instead, it should be in entrepreneurs with ideas and brands like Off-Piste Provisions (Section 5.1). The risk is greater, but so is the reward.



**Figure 6: The Smiling Curve of Supply Chains.**  
From Shih (1992).



## 6 Conclusions

For New Zealand arable growers, the pathway to value creation and thus improved profitability is via innovation or branding. Irrespective of the path taken, growers need to take ownership of value chains beyond the farm gate to disrupt the current imbalance of power among the traditional channels to market for existing commodity products.

The success of our sector's transformation will depend on the co-creation of these value chains. This is where products enter a supply chain and generate value by a set of production activities, from conception to final sale to consumers. For these value chains to return a greater share of profits to growers, they will be highly dependent on relationships and information flow and require participants to align their values, skills and behaviour to deliver a higher value product. Therefore, a change in mindset is required by the industry to shift business priorities from inside the farm gate, to become focused on delivering superior value to our customers.

History suggests there is very little appetite among growers to invest capital off-farm for value-add. This is likely driven by the risk adverse nature of arable farmers, but also the complexity of their farming systems, which carry significant business risk. To disrupt existing supply chains a new grower-led investment model is proposed. This platform would create a start-up culture to support entrepreneurs to develop and scale great ideas.

To overcome some of the barriers to grower investment, capital could be pooled into an investment fund to provide funding for new business growth. Through co-operatively pooling capital, risks of business failure, which is a characteristic of new ventures, would be socialised. Investment would need to be strategic and targeted to specific areas of supply chains such as R&D, brand creation or retail to maximise return on capital.

Sector profitability is currently the most pressing issue facing arable growers. However, for future prosperity, a transition from volume to value is paramount and this will involve the creation of value chains for new food products that create and capture greater returns for growers.



## 7 Recommendations

“To go fast, go alone; to go far, go together”

– Entrepreneur

When considering the recommendations from the findings of this report, a dilemma became apparent. To transform from volume to value at a sector level, through the co-creation of value chains, a mindset change from the good of the individual to the collective is required. For the grower looking to add value through the creation of a new product, a roadmap is presented in Appendix One. For the sector, the recommendations are:

- 1. Define arable sector values.** The shift from operational excellence and competing on price requires a new business strategy. The transition to customer intimacy requires the alignment of the values of all participants to those of the consumer. The Fit for a Better World vision and the principles of Te Taiao offer a worldview and a starting point for industry discussion. This could be initiated with a group of willing growers such as the Growers Leading Change members.
- 2. Foster a culture of innovation and value-add.** Develop a pathway to value-add through encouraging a ‘prototype – iterate – test’ culture in a start-up environment within the arable sector for future food products. Utilise business accelerators to scale ideas. This could be funded through industry levies currently collected by FAR.
- 3. Take collective ownership of value chains.** To disrupt existing supply chains a new grower-led investment model is proposed to overcome some of the current barriers to investing in value-add beyond the farm gate. For the industry levy body to take ownership of the fund it would require a mandate from growers to change the current funding priorities. Furthermore, the Commodities Levy Act may also need to be modified to allow FAR to take an ownership stake in businesses. This concept should be investigated further, along with a deeper dive into the investment fund case studies presented.



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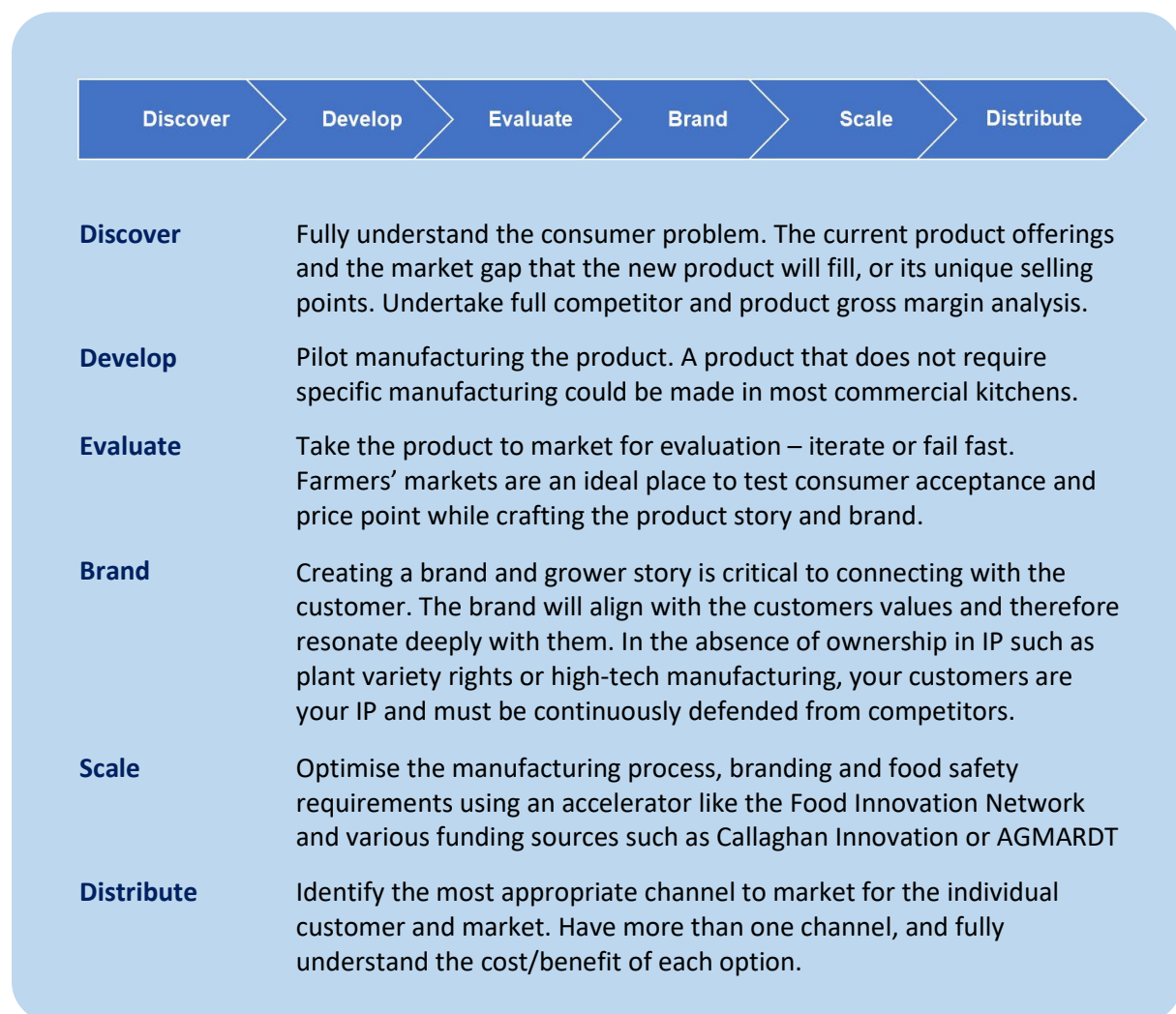


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## 9 Appendix

### 9.1 Appendix One: Roadmap to Creating a New Product

A roadmap of key steps was summarised from the review of relevant literature and insights gained through interviews with participants, who have been involved in the creation of a new food product (Figure 7).



**Figure 7: Roadmap to the creation of a consumer-led product**

## 9.2 Appendix Two: Interviewee List

I would like to thank the following people for contributing to my Kellogg Report through sharing their experiences and insights.

Professor Hamish Gow

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Tony Fenton

John Foley

Richard Green

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Alison Stewart

Marty Skurr

Lisa Portas

Michael Tayler





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