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FARMING SCHOLARSHIPS



How do we equip farmers to embrace imposed change?

By Edward Pinckney
2020 Nuffield Scholar

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Executive Summary:

How do we equip farmers to embrace imposed change?

Farmers have been and will be faced with an increased amount of imposed change. This could be regulatory, market, climatic and more. What has become evident is how farmers are dealing with it, with varying degrees of success due to poor stakeholder uptake. Change is a certain component of the future of New Zealand agriculture, the opportunity is to make it a positive experience that applauds and embraces innovation and encourages personal stewardship while minimising regulation.

Illustrated in the literature review are: personal characteristics of problem solving and changing thought patterns, analysed with theory from Kubler-Ross and Everett-Rogers; the key processes we as humans and farmers go through in the change process; and innovators and laggards' descriptions encompassed in a personal and industry comparable study.

Key messages from the report include:

- Farmers need to continually self-educate and understand their circle of influence and control as well as improve self-awareness around how they react to imposed change through natural thought processes
- All organisations, government and individuals need a better understanding of social science initiatives to see and identify what the motives, pressure points and issues are. There is a greater need for regulatory organisations to partner with social science consultancy advice to plan and implement processes to ensure positive stakeholder buy-in resulting in outcomes beneficial to all.

Recommendations include

- Government has an important role in facilitating change through means other than just regulatory. More effort is needed to encourage change through, tax breaks for research and development (R&D), investing and partnering in innovation and technologies that will help drive change such as improving environmental outcomes. Farmers have a responsibility to embrace imposed change by continually investing in their own skill set and knowledge base. This should be treated like investing in any other business input with finances and time allocated accordingly.

Farmers need to continually self-educate and understand their circle of influence and control as well as improve self-awareness around how they react to imposed change through natural thought processes.



Acknowledgements:

In reflecting on the past two-and-a-half years since being first initiated as a Nuffield Scholar, I look back at what has occurred in my personal and business life, the world environment and the Nuffield experience. I remember vividly a one liner during our initiation; 'expect the unexpected'.

The international travel experience soon become a national experience albeit with many international chats via Zoom.

Many people have willingly contributed their time without obligation, making the "Nuffield Scholar" prestige all the more apparent when apart from your name that is all the person knows about you! This includes many overseas Zoom interviews, the New Zealand tour with visits to over 71 organisations involving many more personnel, several other visits throughout NZ visiting agricultural, military, government, industrial, and many more organisations and people willing to open their world and share their experiences and insights to a high level.

The journey has required commitment and support from my business staff and professionals who stepped in and took up the slack in my absence and coped with me dealing with commitment overload at times. Also, thanks to my family and especially my fiancé Harriet, for her love and support throughout.

A special mention has to go out to all my 2020 Nuffield Scholar cohort, Ben McLauchlan, Tracy Brown, Sharron Harnett and Phill Weir, from you I have learnt the most. The journey evolved into very much a team exercise and your insights, challenges and support inspired me throughout. A massive thank you, I know that you all will always be only a phone call away and look forward to hearing of your successes.

Lastly, I owe a huge amount of gratitude to everyone in the Nuffield organisation for backing me and for the support that has been given.



1.0 Foreword

The 2020 Nuffield was sure to be like no other. As we prepared for twelve months of study and international experience the world grappled with the response to the Covid pandemic.

Our interpretation of what our Nuffield scholarship would look like constantly evolved, ensuring we were light on our feet to re-plan what we could in an ever-changing world.

While the opportunity to travel internationally diminished, this created the opportunity to travel our own country to gather a greater understanding of the challenges and opportunities that lay beneath us in an ever-evolving world pre, during and post Covid. This imposed change, created out of necessity, fast-forwarded many businesses' strategies and timelines. In order to survive, businesses evolved online platforms, becoming leaner and match fit, while those, that didn't struggle to survive or, looking forward, will not be well-positioned.

I started my study year with the intention of looking at education systems in the agriculture industry. While this will always be a very important need for the industry, I digressed and looked instead at how farmers are reacting to imposed change and, from an educational sense, how do we educate and support them so they can embrace change through a better understanding of themselves to benefit not only their businesses but the wider industry?

Case studies from the international research undertaken are included in this report, to support my discussions.



1.1 Introduction

Agriculture is experiencing an unprecedented amount of change. Much of this change has been generated from outside the farm gate and yet has considerable implications for what happens behind the farm gate. For example, higher auditing standards for quality assurance and accreditation standards through to government legislation introduced for water and land plans and emissions trading schemes etc. setting unrealistic and unachievable targets.

The results being anti-change and defensive behaviour with little buy-in which not only affects the process but the outcome for all involved.



Kubler-Ross (2009) refers to this kind of change as “imposed change” which she defines as the Kubler-Ross change curve, known as the grief model (discussed later in this report), that refers to the cycle or stages of grief that people go through when dealing with imposed change.

Social change in a time where the consumer has greater connectivity through social media means minority influencers have a louder voice and issues such as alternative proteins, regenerative movements, and carbon footprints are being more and more scrutinised. Much of the consumers’ knowledge comes from media platforms with their own agendas, social drivers from their peers and often politicised arguments.

The Covid pandemic showed us how different organisations quickly evolved and innovated in this time of crisis, highlighting organisations with strong management structures and cultures and also one of the core pillars to change: necessity.

Market driven change may mean diversification of traditional farm enterprises and products. What provided in the past may not in the future.

This may also require large infrastructural development, not just on farm but in the pack-house and further processing infrastructure.

An example over recent years is the mass dairy conversions for better financial outcomes from poorer performing traditional sheep and beef systems. This brought other unforeseen issues like environmental issues and labour constraints.



1.2 Reflections on change

It has been said, there is 100 times more change happening than 100 years ago. The connectivity of the consumer has only increased awareness and the demand of knowledge of how their food has been produced, they are more sustainably aware and demand that what they are eating is safe for them and the environment. Much of their knowledge comes from media platforms with their own agendas, social drivers from their peers and often politicised arguments. The result is that the consumer demands higher accountability, processes and most importantly humane and environmentally sustainable produce.

The farmer feels over-whelmed with the demands added to an already stressful way of life. Legislation added by government becomes overwhelming with environmental stewardship reform, significant natural areas, land and water and nutrient management, health and safety and employment legislation and added responsibilities, added to higher quality assurance requirements from the processors.

This results in unrest and negative sentiment, anti behaviour and the establishment of fringe groups ultimately to protest against change.

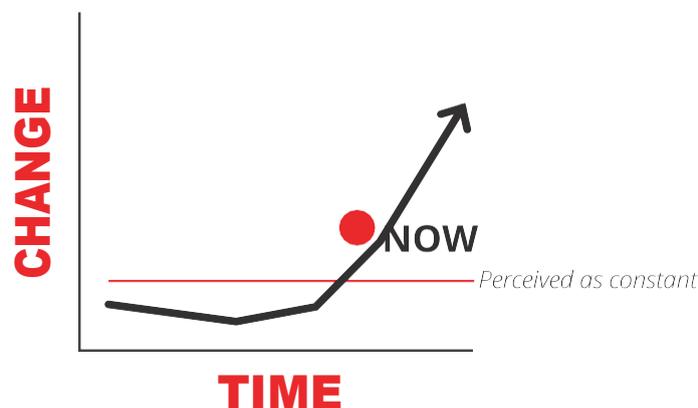
For the most part change is required. How change is implemented can often contribute to the success.

Farmers need to understand that change will be brought about by customers and regulators, and not always beneficial to their farming systems. The future is positioning our produce in high end, affluent markets that demand, ethically and environmentally friendly products going away from volume favoured markets to values driven markets. This takes a mindset shift from farmers away from seeing these changes as a threat to our livelihoods to seeing where the value and the opportunities lie. The only other option is to become irrelevant and uncompetitive in today's markets.

All the while, opinions of how and what happens on farms may distort the narrative from other social agendas and idealisms.

As humans, we condition ourselves to change as being linear, whereas looking forward it is more likely exponential. It is how we, as people and organisations in agriculture perceive and partake in this change that enables us to be successful and flourish in staying relevant into the future.

The change journey



1.3 Tour of New Zealand

For three weeks I had the privilege of doing a road trip of New Zealand starting in the far north and making our way to Invercargill, visiting 71 organisations and individuals. Our visits covered a broad range of organisations and showed a wide spectrum and majority of people who were willing to change and innovate to make progress and stay relevant. Then there were those who weren't, those who were struggling with imposed change, reflecting weak governance and leadership that drove a poor culture through the business. This led me to thinking about the different types of change that were affecting the New Zealand agricultural sector and in particular imposed change upon the sector.

Organisations that were driving change were inherently very innovative and in-front of the pack. A lot of change had been brought about through necessity. For example, Covid had turned producers' supply chains upside down. One such example was food producers for the cruise ship trade where the market dried up overnight, which required pivoting to other products, markets and selling platforms such as selling online or use of local markets.

Major land use change was evident throughout the whole country. What was in most cases extensive pastoral-based industry has changed to intensive high value horticultural industries and more intensive dairy conversions. Even mass conversion of large amounts of urban development is putting pressure on high value market garden soil which then forces the market garden business further into regions further away from market but cheaper land.

The tour highlighted the varied produce streams not just within our country but within some provinces. I remember the quote that 'Gisborne region isn't known (famous) for anything but can grow everything'. And when finishing up in Southland it made me realise that maybe Southlanders are conservative and in their comfort zone because as a general rule the major income being reasonably monocultural in traditional pastoral-based industries like dairy, sheep and beef.

Southland provides a reliable temperate climate which hasn't forced farmers to look outside the square to try to establish other industries. Are there rich opportunities out there but with the *'if it ain't broke why fix it'* mentality they haven't been tapped? Until these industries come under higher scrutiny from an environmental aspect or markets diverge from traditional demands e.g. alternative proteins, then there is unlikely to be any amount of change.



“It is important to stand back and understand where we have come from, where we are now and where we need to go, then we need to figure out how it is we get there.”



1.4 International Travel, Global Focus Program

International Travel I - Global Focus Program (GFP)

It was three years in the waiting but borders finally opened and we had the opportunity to embark on our much-anticipated Global Focus Program. This entailed a group of 11 Nuffield Scholars from Australia, New Zealand, UK, Ireland, Japan and The Netherlands spending five weeks traveling through Chile, Argentina, USA (Washington DC and North Carolina), Spain and Italy. The varied contrasts between each country made it interesting to compare, as well with the countries we are from.

There was huge value in traveling with 10 other like-minded agriculturalists from around the globe, spending many an hour on long road trips discussing the state of play from the businesses, farmers, organisations and countries we were visiting.

What became evident was that between ourselves and the countries being visited we are all facing the same challenges like climate change, labour constraints, environmental sustainability, regulations and many more.

What was interesting was how each person, with the diversity of thought between the group, perceived the challenges and how each country manages them. This in itself took some understanding on a personal level, trying to shelve any preconceived perceptions and listen to the varied views and ideas.

The benefits of making international connections and networks will be lifelong. Through the Nuffield GFP Group, its wider alumni and networks and the connections made through our travels I know that we won't be alone in the challenges we face in the future as the connections will provide a resource to connect and problem-solve collectively.

Each country visit started with visits to government offices, embassies and officials which set the scene and gave us a platform to grow our further understanding of each country. The following week in each country saw us visit varied agricultural producers, manufacturers and organisations. These really highlighted each country's strengths in production, whether it be commodity trading through to intensive, traditional, circular and value add production. Also what their challenges are in their physical, social and political environments. We also came to better understand the countries' historical political environment through to deeply engrained cultural values and traditions. These all contributed to both countries' and individuals' ability to innovate and change when looking forward.



1.5 History Behind Change

In the history of New Zealand agriculture, change has been constant through post-European existence. Starting with the early settlers and pioneers, the land was cleared, then industries started, mechanisation in the early 1900s, development of better pasture species, the introduction of phosphate and other nutrients (air spread being a major breakthrough), irrigation development, increased production and reliability. Subsidies were followed by the economic reforms of the 1980s, the Resource Management Act in the early nineties, the dairy boom and increased development with high capital gains in the early 2000s.

The availability of water often through irrigation infrastructure has enabled an unlimited number of opportunities for land use change. With land use change it also brings some unintended consequences from urban and agricultural runoff and environmental effects, high labour requirements from intensification and many more.

Some would say that there has been too much change in an unregulated environment which has resulted in adverse effects, which we pay for today and need to adjust our management practices for the environment.

Whether or not people are believers in climate change as a human-assisted phenomenon or a natural event, there is no denying there are many areas of farmland that are less reliable in their historical systems and the need for them to change practices is never greater.

The older generation of farmers were tormented by the brutal Roger-Nomic period in the eighties, the loss of subsidies overnight, high inflation and interest rates. Those that succeeded adapted to change and re-evaluated their systems to make it work. However, the residual effects of this traumatic period have created a level of conservatism to risk and change.

It is prudent to look back on history to highlight innovation and development to understand how we behave and what this can do to assist in what we see as the challenges of imposed change into the future.

Our culture still holds true to its strong pioneering roots of our forbearers with an innate ability to face change. However, the change is escalating and there is now a wide-ranging mix of responses from innovators to laggards, as will soon be illustrated.

Our competitive strengths and advantages have always been producing high quality, cheaply produced products that create a low environmental footprint. A seasonal variation to the Northern Hemisphere mass helps supply the markets in their off season. If we take our eye off the ball our competitive advantages could be under threat.





From two years of agriculture experience, studying and working in the UK in the early 2000s I witnessed first-hand how the industry has suffered from a lack of innovation and an appetite to change. The Common Agriculture policy (CAP) was brought in during the mid-twentieth century mainly to manage an oversupply of products and has worked against farmers innovating and being cost-effective in a modern world. In short, it encourages and rewards minimising per hectare production whether it be from livestock or arable, with the use of set-asides or stocking caps and environmental stewardship schemes that are subsidised through the EU's purse. The result is a subsidy-dependent industry and a culture that is resistant to change as there is no incentive to do so, to be competitive with a modern agricultural industry.

There is plenty to learn from other nations around the world of what not to do. We need to keep hold of our legacy of a nation subsidy free, and a relatively under-legislated industry in comparison to others and encourage growth through research and development and social science to enable people to be valued stewards of the land to achieve sustainable outcomes for all.





Case 1: Changing with Climate change

Dealing with climate change. It was never a question whether climate change exists; more so a discussion about what the effects are and what is the best way forward.

As an example, in Santiago their historical rainfall average was 375mm. Over the past 15 years there has been a 22mm per year decline in rainfall or 170mm less than previous rainfall to a new average of 200 mm per year.

There were two main approaches to how people perceive the effects of climate change. discussed while at visits. These are:

- 1) How do we best manage and innovate with what tools we have e.g. technologies, genetics, genetic modification and water usage, to enable resilience. GE was often talked about to help manage these challenges as their benefits can encompass all of the above attributes and could be a valuable tool in the fight for climate change
- 2) What opportunities will climate change create? Traditional plant varieties and industries may now be capable of growing/existing in climates that were previously seen to be too cold and wet. We visited areas in Chile where wine companies are planting grape varieties that were struggling in traditional growing areas but are being successful in new areas.

Avocado breeding centres north of Santiago. Due to climate change, avocado orchards are being developed in less traditional areas north of Santiago.



2.0 Study Objectives:

In a broad sense I have stayed with the educational theme:

The topic of my study is: How do we equip farmers to embrace imposed change?

I am not putting myself in a position of judging what should or should not be happening with imposed change, that is for the masses to argue.

My goal is to highlight the processes people and farming organisations go through to implement change.

One of the defining moments for me on my Nuffield journey was at a local farmer catchment group meeting being facilitated by a regional community group to help with the legislation change that the community were/ are faced with. The mood in the room was angry and bitter. The facilitators were being treated as if they were the legislators and the meeting was quite dysfunctional.

This made me think- What is the issue here? Other catchment groups are more advanced in this space. There must be a knowledge gap. How can this decisive deviation be helped and supported to encourage better outcomes for all?

As a result of this report, I want to identify what tools farmers have to identify how they react to change themselves and how can they objectively look at change examples to navigate their thought patterns.

I want to look at what organisations and government agencies can do to help with imposed change on farmers to get greater buy-in so the right outcome can be achieved, hopefully with the least amount of legislation



2.1 Methodology

Over the last almost three years of an extended Covid-disrupted Nuffield programme, I have had the privilege to talk to and research many facets of the agricultural industry.

This report has been compiled through many discussions with people as individuals and representing their organisations, their challenges, how they navigate them and what the enablers are to make them successful.

In the literature review I have researched material that looks at both individual and organisational attributes that enable change and to achieve the right outcomes. I have tried to dive into psychology of individuals and how they react to change.

I have looked at and analysed case studies of successful environmental initiatives and how they use social science to navigate stakeholder buy-in and the right outcomes for all.

I surveyed ten individuals from throughout the agricultural industry. I asked the six questions of their interpretation and thoughts on imposed change.

There were two main interviews, one to focus on the attributes needed to face change and secondly an organisation that is used to facilitate change within a community.



A familiar exercise, brainstorming while on Nuffield travel



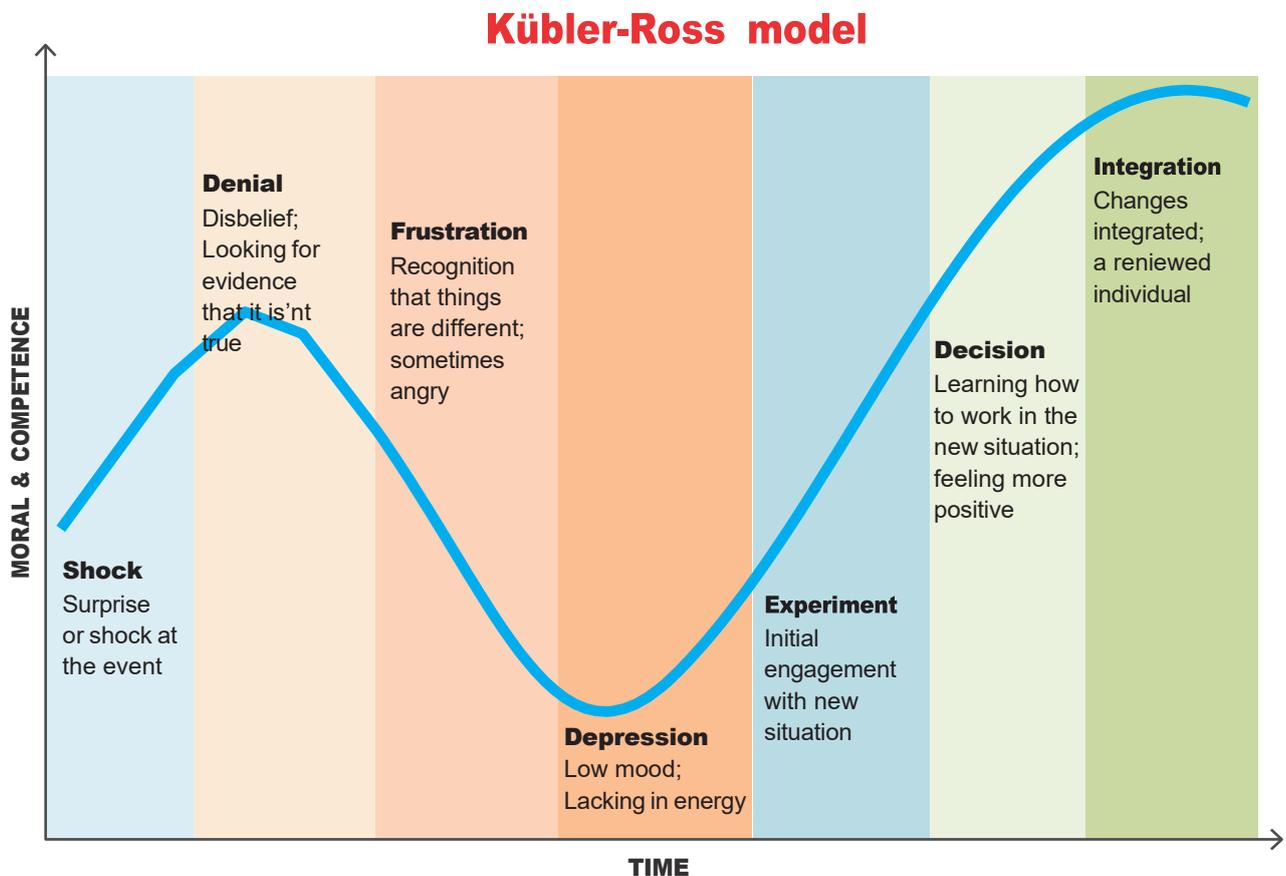
3.0 Literature review

3.1 So, what is imposed change?

We are faced with change on a daily basis. From minor challenges through to life-changing events. Some people are said to be in their comfort zone and resist change while others thrive on it. It is recognised that people go through the same thought patterns when faced with change. It is how they deal with these changes that sets them apart. Often referred as the five stages of grief, the Kubler-Ross change curve illustrates the process people go through.

To demonstrate an example of the five stages of grief or change I share a relatable problem.

You are driving to a meeting and have no time to spare, you notice your vehicle starts to shudder and wobble. The first thing that comes to mind is you have a flat tyre. No it can't be, you can't afford to get a flat tyre! DENIAL! You keep driving but it gets worse so you pull over and you realise your thoughts were true, you boot the tyre - FRUSTRATION! You waste the next 5 minutes achieving nothing and cursing- DEPRESSION! You think you can drive to the destination EXPERIMENTATION! That doesn't work. You then decide you have to change the tyre - DECISION. Meanwhile you ring the person you were to have a meeting with and reschedule it for an hour later.



How long it took to cover these stages and to what extent they were a problem are all manageable.

The Kubler-Ross model is directly relatable and flows on to the innovation and diffusion's model demonstrating the characteristics of the innovators through to the laggards when coping with change.

Once the farmer responds to the stage of acceptance, they can then focus of what influence they have and what is in their control. This has a direct reflection of the outcome and buy-in of the change. All these stages I will illustrate through the literature review.

I want to show a representation of the agriculture industry's demographics illustrating the distribution of innovators through to laggards. By demonstrating this it will also show agriculture's ability to adapt to change as an industry. It is important to have an understanding of industry variability with uptake of new ideas to develop and evolve. When change is imposed on a sector it will give a better idea of how long, how successful and the challenges there will be in this process.

Illustrated below using a theory developed from Everett Rogers diffusion of innovation model. Showing the top 20 percent of farmers are progressive innovators who embrace change and adapt their farming system to the challenges. This demographic is constantly challenging themselves to improve, they aren't afraid to make mistakes and question the status quo. Examples of these kinds of farmers are those who develop to best land use, are top performers within their sector and are pre-empting what the next challenges are going to be. The middle 60% are described as the majority that are a mixture of the early and late adopters.

Individuals may adopt early on some decisions and technologies and be slow on others. They often follow what the innovators are doing and wait for enough critical mass before they decide to change. This suggests that we can expect a certain proportion of farmers to embrace imposed change. The laggards are slow to change or never will do and will find reasons not to change, they are risk adverse. So what are the implications of this? How might we work with them? or should we even bother?

3.2 Farm Business Performance Bell Curve

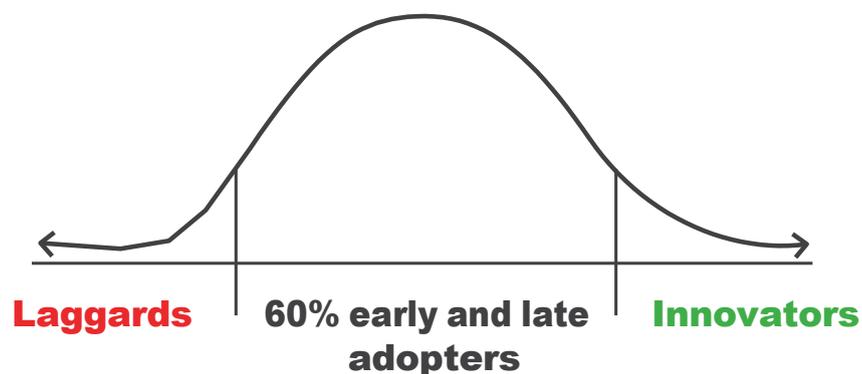


Figure 3 Farm Business Performance bell curve - as modified from Diffusion of Innovation model developed by Everett Rogers (1958).



3.1

The question is: Can regulators manipulate the shape of the bell curve through consultation and implementation which results in better stakeholder uptake and buy-in?

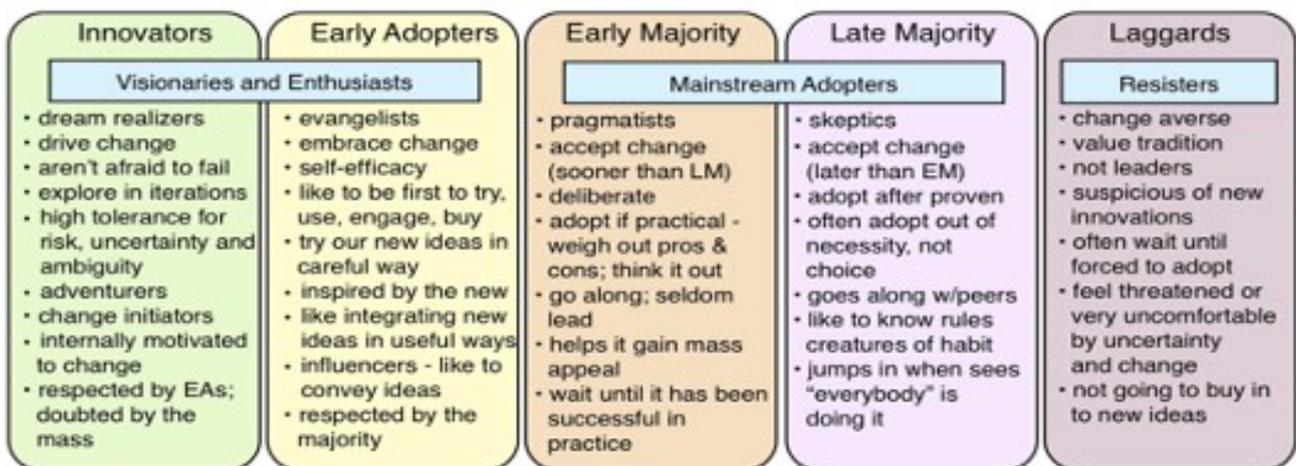
Well thought out regulatory process can improve buy-in and outcomes beneficial for all. If the regulator understands its audience's demographics and look at ways to support their change journey this will encourage positive farming practices and personalise the behaviour. This is supported further on in the report by using social science to facilitate this progression.

3.2

To look further into the thought process behind the farm business performance bell curve I look at the individual characteristics of innovators through to laggards. How do individuals react and comply with change?

As Rogers suggest in Table 2 Diffusion of Innovation. This illustrates traits exhibited by the spectrum innovators to laggards. The innovators are described as visionaries and enthusiasts, the middle space are the mainstream adopters, the laggards are seen to be the resisters.

Characteristics: Innovators to Laggards



Characteristics Image by The Center for Creative Emergence 2011
Main Sources: Diffusion of Innovation by Everett Rogers
Crossing the Chasm by Geoffrey Moore

Figure 2 Diffusion of the innovation theory By Everett Rogers

The above figure shows and describes the attributes and personality characteristics between innovators to laggards.

This suggests that some people need more time to get used to new ideas. They want to see how others deal with the change. This is especially the case with farmers. Some, the innovators, are probably more comfortable with change and can see the opportunities as well as the risks.





The innovators often have a 10% crazy mentality which means 10% of their ideas are out of the box, different or deemed risky. Inherently they may be risk adverse and that may create its own problems.

The laggards may have a strong opinion to not comply or change with industry best practice, this has often been described as the issue of one's/ people's knowledge gap, given they hold strong views of a situation with little base knowledge of this topic. This can also be seen as a psychological defence mechanism. It is often said that; the more you learn, the more you realise what you don't know! I feel that the younger generation will be in a better position to adapt to change. The older demographic have also dealt with change but on a slower trajectory. A lot of this change is physical e.g., land development and improvement, technology, and especially mechanisation. Most of these changes were slow in the fact that you could trial something and see if it worked or the improvements came over several years of work. When compared with the younger generation who have grown up with a greater amount of imposed change and it has become the norm for them. Technology has advanced at a greater rate, living in a greater regulatory environment, social demands are higher from living in a highly connective world. This generation I think will be more adaptable to a changing environment.

Individuals' appetite for risk is likely to decrease with age and experience. When someone is young there may be a measure of naivety and desire for growth and success to get established. As one gains experience and wisdom and have created wealth the appetite for risk diminishes and you will look at things from a more risk adverse perspective.



3.3 Farmers Circle of Influence and Control

There are so many demands a farmer has to deal with in today's business environment. Challenges are knowing where to spend time and energy to ensure that they are achieving success within their business and also how they can contribute to any wider industry commitments as well as personal goals.

A farmer needs to look at their commitments to prioritise where they can spend their time to be most effective and to have the most amount of influence and control of their business.

The following diagram too can be used to illustrate how a farmer can increase their ability to influence. It can also be used to highlight that by spending time in the concert circle they can't wrong areas (concern) can be ineffective to any outcome. for example unnecessary stress

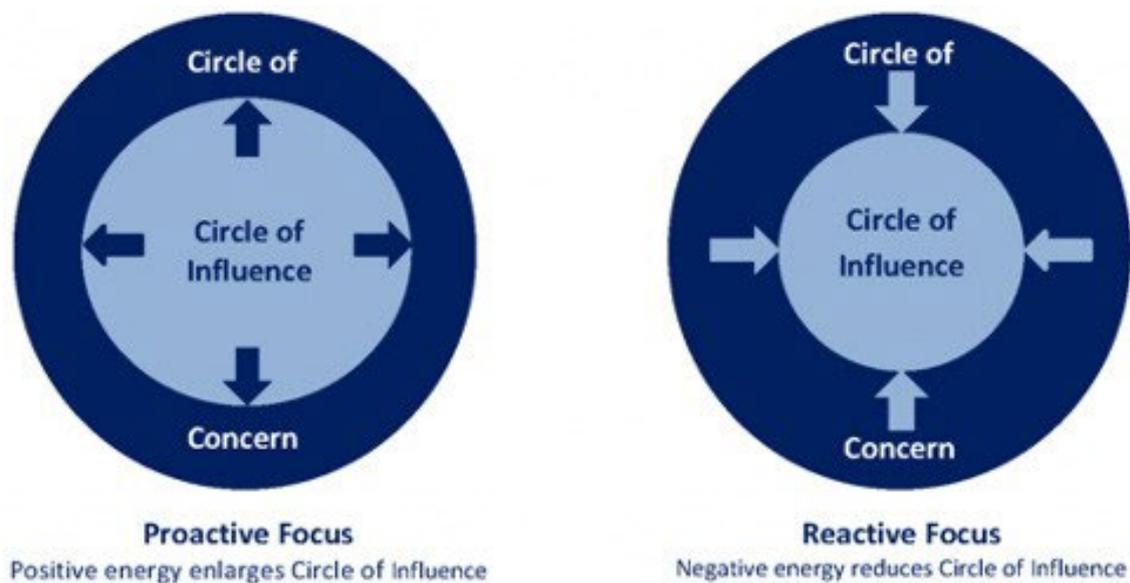


Figure 5 Stephen Covey's circle of concern and circle of influence:

Covey's model is based on two circles. The 7 Habits of Highly Effective People (1989)

Covey further discussed the diagram. The first is: "Our circle of concern". This includes a whole range of things such as global warming, the state of the economy, the clothes your children want to wear, attitudes in society, the things your colleagues do, the way people drive their cars etc . The actual list will depend on the individual, but the important thing to understand is that there may be little you can do about many of these things, since they are outside your influence. Devoting energy on them may be a waste of time, the equivalent of shouting at the television, and time and energy once spent cannot be reused."

Covey also notes "Our circle of influence will be much smaller. It includes the things we can do something about. The extent of this will obviously be related to your power", for example the Prime Minister of New Zealand or the CEO of Fonterra will have more influence than you and I.



Covey emphasises “The key is to focus your energy on those things that you can influence as this will enable you to make effective changes.” If you do this you will find your circle of influence starts to increase – others will see you as an effective person and this will increase your power. Conversely, if all your energy goes into those things you cannot change, your circle of influence will shrink. Not only will you drain your energy, other people may start to see you as unduly negative and critical.” Covey 1989 7habits of Highly Effective People

In short, reactive people find their circle of influence shrinks, while proactive people find that it increases.

3.3

The circle of concern is a tool that farmers can use to use to identify what it is that they can't easily influence, have influence on and then once that is understood what influence they do have. The next graph illustrates what control a farmer has within their influence.

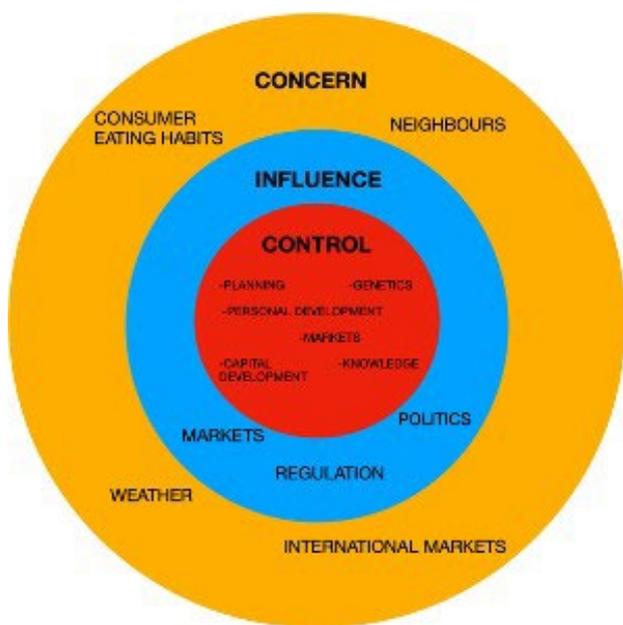


Figure 6 Circle of Control- popularised by Covey date derived it from covey

Farmers Circle of Influence and Control

Above is an example of a Farmer Circle of Control. While it is positive to have a healthy understanding of the things that are of concern it is important the farmer doesn't spend too much time in this space. There can be a double up, for example markets. It is important to understand what the markets are doing so that they plan to market their farm produce to their best ability/ advantage. It is important to know what is happening overseas but spending time worrying about it won't have any influence on an outcome. The more time spent budgeting and planning will grow skill sets and experience; the circle of control will then increase.

It can be evident in farmers that spend too much time in the concern circle and not in the control. They may be involved in greater-good positions off farm and their own finances may be suffering.

As farmers get a better understanding of what Control and Influence they have within their farm business they then need to look at what changes they need to make to ensure that they are on a success path. Is what is in their control being successful? The following illustration I shows how planning change and strategy will determine success.



3.4 The Change to Success Sigmoid Curve

Another way of looking at the effects on a person or organisation when change is implemented is by using the biologically based sigmoid (S-shaped) growth curve. What are the effects of this change and when can it be expected that success will be rewarded from making this change?

When either an individual or organisation goes through change it can be expected that performance or success may decrease before there is an increase. Change may require time and financial cost, there may be some bad decisions made along the way. Once change is implemented and there is success, then there will be a ceiling of how much success is achieved over time. It is important to pre-empt or anticipate when this ceiling is going to be and start to refocus what the next change of strategy may be. Try to absorb any cost or negative effect of change while still on a success trajectory as when the change occurs less downward effect will be felt. The key is to not wait until the ceiling has been reached and going on a downward success trajectory and then the added decrease from the effects of change implemented before achieving success again.

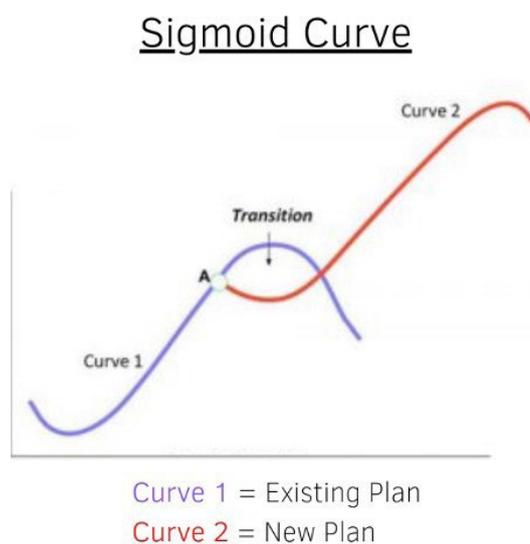


Figure 4 Sigmoid curve illustration: To illustrate the above Sigmoid Curve; The measure of success is on the left axis and time on the bottom

An example of this is a succession model on a farm business over two generations. Imagine we have farmer Bob. Bob enters his farming career and he invests in systems that cost money and develops the property. Some things go well some things don't. After about five years Bob sees his hard work paying off, His enterprises start performing and his knowledge increases. Over Bob's lifetime, the performance and production and the profit of his business have increased. There becomes a time when the systems Bob has created many years ago, will hit their peak production. Then,

because he doesn't change with the times, adopt new technology and pivot to the demands of the times, the farm's performance will decrease. However, before this happens Bob recognises he has fulfilled his goals on the farm and sees the next generation's enthusiasm so gives his son Jack the reins. Jack has fresh ideas, enthusiasm and education but lacks experience. With this, Jack works hard changing farm practices, purchasing new technologies and trying new modern methods. Not everything works, this comes as a cost on cash flow and performance. After figuring things out and much of what he has done is positive the farm starts performing, production and profits start to increase after his hard work and investments pay off, as you will see in curve 2.

Part of the success of each generational business, is farming to the demands of markets and authorities at the time. Systems implemented and investment will also reflect these demands. Stakeholder buy-in is also reflective of what stage people are in their farming career and their aptitude to embrace this change. How regulation is delivered is the next focus and reflects the rate of uptake and change invested in the business.



Case 2: Culture in Agriculture

It became evident that culture is such an important part of agriculture, including intertwined relationships of both negative and positive outcomes.

In Italy and Spain we visited several farming practices that championed examples of this. The Parma region in Italy, famous for producing Parmigiano Reggiano cheese and Prosciutto di Parma. While in Spain we visited Jamon ham and the renowned Foie Gras producer Eduardo Sousa.

These food systems encompassed regional specific production, genetics, animal husbandry, traditional and cultural processing methods and stringent quality assurance to develop branded products. This was a master class in telling their story and eating experience.

Many of the food producers were farming in a circular system whereby they purchased in little or no inputs. They had control of the whole production chain from farming and processing through to sales and most commonly this was all achieved on site. We also visited companies that leveraged these cultural food producing systems and scaled them into large scale exporting businesses. While value is captured in these systems it was also evident that this may have stifled opportunity to innovate outside their niche with challenges of profitability / cost management and sustainability also apparent. The government paddock to plate legislation supports heritage, cultural and traditional values with financial subsidised support.

In countries, like Chile, where there weren't engrained traditional and cultural agricultural systems, it was more apparent that decisions are more financial and commercially focused. It was described as an island nation approach and one not dissimilar to New Zealand where there is a pioneering instinct to find opportunities with few preconceived views.



Natural foie Gras production Spain



Scaling Prosciutto di Parma in Italy



3.5 How is regulation best delivered?

Agriculture is heading into a much higher regulatory environment, driven by organisations and or through the consumer. For example stricter quality assurance and accreditation schemes, demanding produce is sustainable environmentally and ethically, and the measure is often determined by the consumer not the producer. As a result, policy makers introduce overarching regulation to manage these issues as well for example, emissions trading schemes and water and land plans.

For the most part often the fundamental reason for regulatory change is agreed upon from both parties. The unfortunate part is how the change happens and in what forms of regulation applied is when the wheels start to fall off. There have been several examples of this in recent times in New Zealand with water, environmental, biodiversity and emissions trading schemes.

Firstly the regulators are up against the spectrum of personalities as described previously in the diffusion of innovation model (Fig 2). Then the process as described earlier, that the individuals go through in their thought patterns much like the five stages of grief as explained by psychiatrist Elisabeth Kubler-Ross being denial, anger, depression, bargaining, and acceptance.

Regulators need to sell what the problem is and the effects that are created from this.

Secondly farmers need to understand why the problem exists and why it needs to be fixed.

Thirdly how do we all as stakeholders go about fixing and mitigating and/ or fixing the effects? Well thought out execution of this process is paramount and will determine the level of buy-in for the end result.

Project Cane Changer

The example of the Queensland Australian Sugar Cane industries' Project Cane Changer highlights a problem with the runoff from Queensland sugar cane plantations impacting water quality and the environment, directly affecting the health of the Great Barrier Reef. The Great Barrier reef has been under threat, with global warming and human related activities threatening to deplete the sensitive ecosystem.

Recent attempts by the Australian Government to modify producer behaviour through legislation and incentives have not been as successful as the Government would have liked. Initially the results had been slow or insufficient.

To help address this situation the Australian Government partnered with the producers to fund what became known as Project Cane Changer with the goal to accelerate the adoption of positive farming practices to improve water quality and protect the Great Barrier Reef (Source Centre for Behaviour & the Environment, Australia 2007).

The solution was to change farmers' behaviour and to use nutrients and chemicals through best management practices. This created and committed a positive position for farmers to operate in and countered the negative sentiment they had been dealing with.



Project Cane Changer's main pillar was to use social science initiatives driving emotional appeals and personalising the message. This constructed a positive environment and social identity. This made the farmer own the problems and own the outcomes.

The Cane Changer project demonstrates how emotional appeals can be used to drive positive environmental outcomes and behavioural changes.



Cane growers Australia

Outcomes from this project:

The driving force to start with was a reluctance for farmers to sign up and be part of the project because of the threat to their social identity. By asking them to sign up to the best management practice programme may have meant they acknowledged they had been operating with the wrong practices and validated them as environmental vandals. The same emotions were experienced as described previously in the Kubler-Ross diagram.

The author also notes, the opposite evolved as they saw themselves as proud environmental stewards that adapted to change in their farming practices.

Written records hadn't been standard practice in the past. Once kept, written records enabled them to adapt and modify their farming practices better, this is an effective behavioural change in its own right.

They used a holistic approach to behavioural science, with one of the strategies to construct a strong social identity by the way of a slogan 'setting the record straight'. This made farmers own the initiative, with accreditation the more positive the farmers identity became.

The project is still a work in progress and the goal posts are continually changing. This isn't a concern to the farmers as they are on board and part of the movement.

Other industries use the Project Cane Changer example and see many learnings that Government and Stakeholders can take from this.



The use of social Science initiatives such as Kubler-Ross and Coveys have a real place to help solve the problem of constructive buy-in and uptake for a positive result. Too often have we seen legislators get off on the wrong foot with their audience and from there lose any political capital they had to get a constructive outcome.

Social science consultants were something I knew little of until early in my Nuffield studies we visited Umwelt Australia a consultancy firm specialising in social science and environmental outcomes situated in the New Castle/Upper Hunter district. Umwelt's core business is to facilitate the right environmental and social outcomes on behalf of large coal mining businesses in an area that has high aesthetic and productive value in other land uses, like vineyards and stately homes. It became evident with examples whereby they facilitated buy-in from key stakeholders that resulted in the right outcomes for all.

These examples highlight the responsibility and the opportunity regulatory organisations have to implement social science tools and process. The need for them to make this an important part of their consultation and implementation process. Not only are the issues being addressed from an environmental viewpoint, the regulators, farmers and public are on side with common goals. Personalising the issue has shown that if the farmer has the opportunity to be part of the process the farmer is happy to be part of the solution.



Case 3: Government Influence - Support or legislate and the effects on change

Each country we visited had their unique mechanisms enacting regulation, taxation, support and incentives to farmers, often the same example could be treated in the opposite way by different nations. For example the Argentinian Government recognises the farmers are a reliable income revenue, they tariff farmers up to 40% of the value for arable export, which has hampered any incentive to innovate and produce to capacity.

The US has farm insurance programmes and subsidy support for farmers, this ensures a profitable industry that in turn supports the economy and is sustainable into the future in areas where there is little option for diversification.

The EU countries like Spain and Italy will produce arable crops under heavily subsidised EU Farm to Fork and Green Accord legislation, often encompassing environmental incentives. There is also a varied amount of government support through research and development incentives, tax breaks and free trade agreements.

All of these have a huge influence on the farmers' ability to innovate and prosper sustainably into the future. While it is a balancing act between support and stifling innovation and progress by supporting the producers into a comfort zone that doesn't challenge them to change.

New Zealand can learn from this. While no one regrets the agricultural SMP reforms in the 1980s, we are seeing support creep in around carbon and emissions policy. While legislation and regulation is used to manage many facets of the agricultural industry it is important that we don't become reliant on a control from the top approach and encourage farmer led change to manage many of or challenges like environmental management and long-term sustainability. The other concern is that countries like EU are heavily legislating their farmers with strong idealisms, they are also a major trading partner to NZ and there is pressure to inherit their policy as part of trade agreements to keep market access.



GFP USDA United States Department of Agriculture visit, Washington DC



3.6 Literature Review Summary

Starting the process by understanding personal behavioural response patterns as shown in the Kubler-Ross diagram highlights the importance for individuals to be aware of their own behavioural patterns when evaluating change.

From there I illustrated the Farm Business Innovation Bell curve, showing the spectrum of innovators-laggards within the industry. The legislators and policy writers need a firm understanding of these dynamics and how their audience will naturally react to their imposed changes. The Everett-Rogers diagram shows the attributes of innovators, mainstream adopters and laggards, this can be used as an example on an individual or organisational basis.

Farmers need to understand their circle of influence and control as illustrated in Coveys Circle of influence and control diagrams. This show where farmers' time is most effectively spent.

The change to success sigmoid curve illustrates the process of a change event and the success gained from it. As part of the process there is cost but without change there isn't success and also note that the success will always hit a plateau or even decline so it is important to be preemptive with change.

How is regulation best delivered? The example of the Cane Changer project showed how they used social science initiatives in a positive environment to personalise the process with farmers. This example shows the potential for regulators to work with stakeholders and achieve beneficial outcomes for all and most importantly achieve the results needed.



4.0 Interviews

As well as many more conversations I interviewed two main people. One to get insights on individual characteristics and the other organisational conversations.

4.1 Doug Avery

Doug Avery has become well known as the self-titled Resilient Farmer, through his own trials and tribulations on farm and in his own personal space struggling financially from droughts, which contributed to poor mental health.

Doug highlighted his thoughts on what makes change in farmers. Below are some of the main thoughts he conveyed:

- “You win or you learn”
- “Learn from darkest days”
- “Failure – not to bounce back, bounce forward”

These concepts are shown in the diagram below but Doug highlights the importance of backing yourself to make a decision and backing yourself because if you don't you become complacent and get stuck in your comfort zone. The biggest learnings can be had from your darkest days when you believe things can't get any worse. If things are always good e.g. production and profit aren't challenged and there are no disruptors then there is no motivation to make any changes. There is more to learn from failing than from succeeding.

“Shit happens”.

- Wellbeing needs to be developed. Children need to learn to fail, it is healthy, it builds resilience and wellbeing. If children aren't exposed to this throughout their upbringing, how are they going to cope in the real world?

“If you do what you've always done, you get what you have always got”.

- How can you expect to have something different if you aren't prepared to change?

Boredom increases creativity and wellbeing and resilience should be taught at schools. Doug has real concern for the younger generation who are provided stimulation through electronic devices. This alters behaviour and mood swings in children. If children are put in a position of boredom, then they will be motivated to fill their days constructively, they learn motor skills that help them develop psychologically and creatively. This concept goes for people of all ages!



Who do I need to help me? – flying formation of geese.

If you establish your team around you then there are people with different expertise and skill sets that will do the hard pedaling for you.

Often a task seems so daunting, the truth is you don't need to know the answers. Expertise and resources are all around us. Paying people is cheap and people want to help.

“The more you learn the more you realise what you don't know”- Doug makes the point that as his journey of understanding and growth has developed, he has realised that the more he has learnt, the more he realises he doesn't know. Learning can be like a drug to fulfill an inquisitive mind. The opposite can be seen from a gathering of unhappy defensive farmers concerned and driven down by the situation. For example, regulation or change brought upon them but they have strong views that are hard to shift. This can often be referred to as being a knowledge gap. If someone does not understand something, it can be easier to maintain their current opinion than opting to open their mind to new learning and understanding.

“Be prepared to not know the outcome”. Have 10% of your business under scrutiny, after change things worsen. (As highlighted in the Kubler-Ross illustration page 14).

Often referred to the ‘*crazy cats*’, Farmers should work on at least 10 % of their system as new ideas, challenge what they have done and look at new ways of doing things. This could be breed of sheep, cultivars, winter forage crops, technology, different farm enterprises. How many things have you changed this year? How many ideas do you have to change? Be warned this area is healthy, it's exciting and should be encouraged, but could also come at a cost if there are too many crazy ideas and direction is lost!

“Farmers need to learn to be vulnerable”. What if it goes wrong? They need to work on their mindset and understand their vulnerability pathway. Below is example of what Doug describes as the vulnerability pathway.



4.2 Vulnerability Pathways



Figure 7 Vulnerability Pathways, as discussed by Doug Avery, detailed by Ed Pinckney

The above diagram shows the pathway of vulnerability. The only way to get out of your comfort zone is to apply courage. This may not always be successful, then you learn. When you are successful you increase your capability which then gives you confidence to grow but, if you don't grow again from there, then you end back in your comfort zone.

Summarising Doug's Discussion.

Doug highlights a lot of points around mindset and attitude. The discussion was also relatable to much of the literature written by Kubler-Ross and Everett-Rogers. Doug's main point is the importance of building resilience individually and in the community. We as farmers need to keep on learning and challenging ourselves to increase our capability and to be able to embrace change.



4.3 Thriving Southland CEO Richard Kyte

Thriving Southland was established in 2020 it is a community-led group focusing on environment and people. Connecting primarily through catchment groups working towards common visions, providing resources, organising events, dealing with local issues and driving change and environmental improvements.

I interviewed Richard Kyte, CEO of Thriving Southland who leads a team that helps facilitate environmental change. Organisations like Thriving Southland are in a position where they have to navigate government reform and legislation that isn't clearly defined when there is a lack of direction and leadership from government. The result is splinter group activist groups like Groundswell, which while it does create public awareness can also create a division in support and knowledge, potentially hindering any practical progress.

It is important that these issues are led from the ground up, dealing with their common issues rather than a one size fits all approach. Since Thriving Southland started two years ago it has exceeded its goals in many ways with the participation of local catchment groups and goal setting. Richard however, says that sometimes it is important to slow down before you speed up. The risk is that if they set hefty targets and goals that members will get defensive and stand back from them, but if they get individual buy-in and make them part of the process then more will be gained long term. The biggest risk is losing the stakeholder support by trying to go too fast and achieve too much too soon. While Covid has played havoc with organising events it has given Thriving Southland a real opportunity to concentrate on making sure their processes and systems are robust within the organisation. It has given them the opportunity to analyse what they are doing well and what they need to change. The positives out of this are that there hasn't been an unintended flurry of activity without any analysis of how they are progressing before it is too late with damage already done.

Thriving Southland has goals to increase 'good management practices' through positive change models. Change needs to be scientifically driven and document proactive change by using catchment groups to drive it, which brings trust in the community, and lastly celebrating success.

Richard Kyte referred me to the literature on Project Cane Changer, highlighting its success in gathering stakeholder engagement through using behavioural and social science to help get buy in from all parties involved and work towards a common goal.

Summarising Richard Kyte discussion.

Thriving Southland is a relatively new and forward-thinking organisation designed to help facilitate change mainly in the environmental space in and around Southland. Its progress to date has exceeded expectation in terms of establishing community catchment groups and participation. From the outside it was interesting to hear a mixture of scepticism and confidence on its establishment- very much modelling previous diagrams around innovators and laggards by Everett-Rogers. Thriving Southland will play a very important part in supporting farmers with change by making them part of the process and, quite similar to the cane changers model, using social science by helping make it a positive process for all stakeholders.



Case 4: Innovation with research and development

In each country there was evidence of farmers, R&D organisations, industry corporates and government working in both silos and in collaboration. The best example of a collaborative, and highly integrated, research, development and extension model was in the North Carolina State University plant science and innovation hub. This is a recent development aimed to integrate independent researchers and industry bodies (many of them traditionally competitors) and government organisations under one roof to collaborate on initiatives from science through to commercialisation. Joint ventures are now being commercialised as an outcome of this initiative. What's more, the farmers and producers fully back this organisation and openly use its resources to support on-farm and production initiatives.

Carolina Gold rice is an example. it is a heritage variety that has been out of commercial production for over 120 years. In conjunction with North Carolina State University, Tide Water Grain has commercialised and has the rights to grow a value-added product that is superior in flavour and nutritional benefits.

I think in New Zealand there is more potential for farmers, research organisations, corporate and government to work in conduction and collaboratively with research and development projects and commercialisation of technologies.

Tide Water Grains owner Alston Spruill showing the opportunity of value adding heritage rice variety Carolina Gold, known for its superior flavour and nutritional profile.



5.0 Survey: Adapting to change:

Ten people were interviewed as part of the survey. They are from different backgrounds throughout the agriculture industry. Consisting of environmental, research and development, hands-on farmers and consultants. They are all influential in their sector. It became apparent that their answers corresponded to their area of expertise but there were common themes throughout.

I kept the survey brief and the questions open-ended so as to let the interviewees express their views in their own fashion. I soon found that it was hard to compile any of the survey responses in any statistical form due to the variation of the answers but all the same they gave some insights that challenged thought.

How do we better equip farmers to embrace imposed change?

Imposed change may be interpreted as legislative; from government, technological change drones, precision agri, breeding (e.g. sexed semen), climatic/environmental, market, succession, diversification or regenerative ag etc. I'm sure each form of change holds certain trigger points for motivation and emotions, which may determine the outcome.

If we were to assume the agricultural industry is made of the following:

- Top 20% are innovative and early adaptors to change.
- Middle 60% are the early and late majority.
- Bottom 20% are the laggards.

You can easily imagine this on a bell-shaped curve.

Questions:

5.01

1) How do we make a measurable gain of 20% productivity in the agricultural industry when looking to influence the demographics?

- The top 20% naturally already apply themselves to change and personal growth. This improvement happens organically. The RMPP Action Network groups are effective at reaching the middle quartile and can also drag the bottom along, even if it starts for the social interaction and can influence from there.
- As an organisation, as optimism in an industry with strong commodity prices for that resource increases, there will be an increase in research and development. Conversely, if the farmer is driven in to change by the force of nature with unsustainable prices and farming systems, this will force the farmer to look at diversifying their portfolio for a better outcome.



- I think there is a lot of knowledge within the industry that is acquired from previous generations – ‘this is the way we do it because we always have and it works’.
- To make a step change in productivity we need new people with diverse backgrounds to be attracted to and join the industry. They will enter without the acquired wisdom and not be afraid to ask questions and learn, make mistakes but the key thing is to take their knowledge from other areas and innovate.
- The early innovators and early adopters are obviously going to influence any uplift in productivity, and different technology will be taken up by different age groups. Digital technologies will be driven by 20–30-year-olds.
- To solely focus on what will drive a 20% gain, look no further than the profitability of any given sector.
- Genetics by stud breeders with awareness of consumer behaviours.
- Legislative sledgehammers will force new ways of thinking.
- Carbon subsidies are offering huge profits for forestry that will drive land use; but what are the risk profiles when you are 100% reliant on flakey politicians?

5.02

2) Are the innovative farmers always the best rewarded?

Sometimes the second mouse gets the cheese with little cost. Is this holding back organisations that are willing to be the innovators and what can we do to help this?

- To ensure the spread of innovations we need to take risk out of the system, so we need better integration between science and the farmer, both in tech transfer and also working together in trials.
- There are those that innovate in operational things and their businesses benefit directly (e.g., Halter technology in the dairy industry). Then there are those who are good asset managers and are rewarded through capital gain.
- Government should provide 100% deductibility for R&D.
- First cab off the rank often bleeds red ink and goes broke. Second cab tries to screw first cab but lacks expertise in the necessary field of endeavour, so they too look for the exit door. Third cab makes all the money as they get to buy the investment at a few cents in the dollar, are well organised, have the expertise to make it work, and do just that.

5.03

3) What are some of the imposed changes that you are dealing with at the moment and of the different changes, what are you finding the most challenging to deal with?

- Environmental legislation that lacks clarity, is not always supported by science and ignores pastoral farmers’ carbon contributions.
- Vested interests control the narrative.
- Farmers are poorly represented in Wellington.



- We are going through a self-imposed change around how our system can eliminate bare ground wintering. The most challenging aspect is looking to maintain a high level of profit through the transition.
- Quite clearly the challenge is with 'Carbon Farming' and the influence this is having on land use decisions and land values. Following this is the intense and overwhelming regulatory environment that agriculture now finds itself in.
- People are the main issue outside of environment and consumers. This is mainly due to Covid with the lack of access to NZ for the RSC staff from the Pacific, but by being proactive by working with our long-term partners we have been able to mitigate most of these issues.

5.04

4) How do we get the best buy-in from farmers to change, including new ways of doing things?

- Farmers by and large learn from seeing and doing. Field days and demos. make heroes of high performers. Set up examples of best practice.
- Allowing them to understand why these changes are required and allowing them to chart their own pathway through these changes.
- Head and heart – both facts and figures and an emotional calling starts with TRUST and ends with TRUST. Without it go whistle in the hills, because no one's listening.

5.05

5) What are the three key attributes of an agricultural business operating in the top 20% performance bracket?

- They are motivated and passionate about what they do.
- They know what they don't know.
- They know their place in the industry and how they are connected.
- They are intelligent and curious.
- They are good team players.
- A focus on people and engaging them in a positive way with the journey you are on and sharing the success with them.
- Understanding your strengths and identifying your weakness and working to address these.
- Relationships along the value chain. Not afraid to try new things and potentially fail – but learn from the failures.
- Open to new ideas and feedback.
- Understand everything comes with risk – they trial change before fully implementing
- They listen and learn. Discussion groups, field days, the more they TRUST, the more they will share and open up.



- Will appreciate that to fail, is to succeed.
- The top 20% are always sharpening their skills, testing and or adopting new technologies and know how to identify the BS.

5.06

6) Can you give me an example of an agricultural business you look up to in the sense of dealing with change and describe why they have been successful?

- Omarama Station's progress has been well documented, so not breaching confidence. The Subtills have been early adopters of contemporary environmental management and are striving for carbon neutrality. They understand value-add and they are marketing their meat and fibre into value chains that they have engagement with and control over.
- They exhibit the attributes described in 5 above.
- A good local example that has impressed me is Blue Sky Meats. They realised they needed a complete change of culture and focus to succeed in the future.
- A change around governance and management and more of a focus around being a niche processor building better relationships with suppliers and customers.
- Avery's in Grassmere in Marlborough-They identified the key thing that had to change – mindset.-
- Gallaghers started out making forage harvesters and over time have built three great global divisions, none of which are forage harvesters;
 - I. Electric fencing equipment
 - II. Security systems
 - III. Fuel pump technology
- They invest nearly 9% of revenues in R&D and have over 100 R&D staff.
- Strong founders have kept venture capitalists and foreign takeover hawks at bay.



5.1 Survey Summary

The purpose of the survey was to gather a wide range of views from reputable people practicing in the industry. I found that it was difficult to analyse it in any mathematical /statistical form as I wanted the sentiment and to look at any common themes that came through in their discussions.

There is definitely a bent towards what the individual's background was e.g. environmental, consultancy, technology etc.

There are several re-occurring themes throughout the survey and they also link back to much of the literature and discussions previously documented in this report.

The main points being:

- The innovators have a high self awareness and drive which helps them embrace change. They are aware of their circle of influence and they work on making it as big as they can. They are good at the soft skills
- The innovative companies have an innate culture that embraces change as a daily ritual
- Governments have a huge role to play, as they are more often the instigators of legislation change. How they go about this will directly affect the outcomes. Government policy to encourage innovation is as important as legislation. Encouraging through co-government and private enterprise initiatives in R&D and a tax system that encourages Industries to innovate not just for increased production but, as importantly, to manage environment initiatives



Case 5: Making the most of what they have - mindset

Whichever country visited, it was evident there are both people innovating and growing their businesses and then there are people that are struggling to perform and re-evaluating their future.

On one day in Argentina we met a third-generation farmer who is losing money and business wealth, much as a result of government policy. He was despondent and sees little opportunity for the future of himself and his children to grow up in a country with such corruption and little opportunity. He also happened to be a local farm consultant and was actively looking at other countries to immigrate to.

Later in the day, we met a young farming couple who, with the help of their family, were developing a large pig breeding and finishing business as an extension to their traditional cropping business creating certainty of price, value adding and getting away from commodity trading. Their growth over recent years was impressive and their goals for future growth were aggressive. They looked to have a full understanding of all aspects of their business from production to finances and people.

By using their wheat and corn produced on farm they had control of the value of the feed rather than being price takers and vulnerable to government tariff charges and commodity price variations.

Ancali Dairy is milking 6000 cows through robots at approximately 65 cows per robot. Plans are to double the number of cows milked. Currently they cows are yielding 44 litres per day from 2.5 milkings every 24 hours. There are other breeding and performance KPIs that also need to be addressed for better performance. The trade off from high performing cows.



7.0 Conclusions

- 1) An increase in self-awareness creates resilience and aptitude to successfully navigate the challenges we are facing. Opportunities for people to keep up-skilling and learning both their constraints and strengths are important both for them personally and their ability to embrace change.
- 2) Strong focused leadership is required through times of change along with decisions and implementation backed by science-based evidence and all stakeholders sitting around the table.
- 3) Government enforced regulation isn't always the best way to enforce change. Firstly, stakeholders need to get buy-in and engagement on what and why there is an issue and together create a pathway to success.
- 4) All organisations, government and individuals need a better understanding of social science initiatives to see and identify what the motives, pressure points and issues are. There is a greater need for social science organisations to partner with regulators to implement processes and ensure correct stakeholder buy-in from the start. Once that trust is damaged it is hard to repair and move forward in an advantageous direction for all involved.
- 5) Education will play an important role for all stakeholders to understand change, opportunities and issues in the future. There will always be a bell-shaped demographic in the agricultural industry but there is an opportunity to condense and also keep the innovators moving forward so that the rest of the demographic progresses forward.
- 6) Farmers need to understand their circle of Influence / Control to find where their time is most effectively spent. Their influence will then grow from improved skill sets and networking. Spending too much time in areas they can't control will result in poor engagement, and influence for the time invested.
- 7) Imposed change is not just legislative, it may be climatic, market driven, geo-political and many more ways that farmers need to have clearly defined decision-making processes to create the best outcomes and opportunities. How decision-making processes can be advanced can come through education, and support within Industry through to government capability.



8.0 Recommendations

- Farmers need to be exposed to educational information through their current learning streams teaching greater self-awareness, capability and insights into their natural response mechanisms when navigating imposed change. Covering some of the theory that has been documented throughout this report.
- Regulatory organisations need to spend more time thinking of how to deliver change to their audience through social science initiatives. Organisations have recently lost political capital implementing change, farmers lose trust which results in poor outcomes for all stakeholders. This needs to be avoided.
- Government has an important role in facilitating change through other means than just regulatory. There needs to be more effort into encouraging change through, tax breaks for R&D, investing and partnering in innovation and technologies that will help change like improving environmental outcomes.
- Social science consultancy should be and will be commonplace in navigating change process now and in the future.
- Industry organisations have a responsibility to support and help educate farmers in response to imposed change so not just the innovators are being proactive but the 60% of early and late adopters are in close second place.
- Farmers have a responsibility to embrace imposed change by continually investing in their own skill set and knowledge base. This should be treated like investing in any other business input with finances and time allocated accordingly.



9.0 References

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Interviewees

- Doug Avery – The Resilient Farmer
- Richard Kyte – Thriving Southland

