

Setting the foundation for a strong dairy business

**A study of international business practices to help
ensure Australian dairy-farmers remain at the
forefront of profitability into the future**

A report for



By Brendan Hehir

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Executive Summary

The objectives of this research were to explore the activities of the top 5% of farmers and understand the systems and mindsets they employ to maintain flexibility in a volatile environment without compromising the underlying profit drivers.

Without a strong co-operative presence Australian dairy-farmers now have very little investment beyond the farm gate. While the objective of companies is to maximise shareholder returns, there is unlikely to be investment by processors in stainless steel processing capacity that is under-utilised for nine months of the year. This will mean a continuation of a milk payment system that attempts to incentivise milk production outside the spring period. However, to produce this milk will require more inputs and infrastructure on farm, resulting in a higher cost base system that will likely have a greater focus on production and yield.

In these conditions, it is fundamental for long term business success farm businesses have a clear knowledge of underlying profit drivers. This was exhibited by the top operators, who also excelled at communicating these with the rest of the farm team, evident by the operational decisions made by staff members. When the focus is moved away from production or yield, and instead focuses on profitability, flexibility becomes a lot easier to achieve in changing environmental conditions. This is because possible solutions are no longer constrained by those production or yield metrics. Once this clarity is achieved it will provide the opportunity to generate strong returns within the business.

This strong financial focus started with a budget process that was built up with careful attention to detail, often reviewed by someone external to the business. It was then reviewed on a regular basis, with the standard practice being a comprehensive review of the financial budget to actual performance undertaken monthly. By reviewing on a monthly basis, it provided early warning signs if the business was starting to deviate from budget, meaning that corrective actions could be quickly undertaken, rather than being unpleasantly surprised with the financial performance when conducting a half-yearly or end of year review. Involving staff in this process will help them feel more ownership and will nurture more responsibility and autonomy amongst employees in the business.

This financial focus extended to the discussion groups visited and formed a key factor in keeping the individual business mindsets sharp. With a comprehensive information pack sent out pre-meeting, there was ample time for all members to study the topic allowing them to come prepared and with relevant questions ready to ask. The requirement for all members to submit a monthly snapshot as part of the discussion group formed part of the structured business systems, helping keep the focus on the farm business. The key to this success is providing the data every month, with the process of providing the data more important than the actual data itself. Advances in technology and the rise of cloud computing will make this financial snapshot easier to collate and track into the future. Having a farm system that can withstand volatility is critically important. During volatile conditions, those least affected will use the volatility as an impetus to review their own business and sharpen their focus.

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Foreword

I have always had a strong passion for dairy farming and numbers. Being quite analytical, I studied economics and finance at Melbourne University, then worked in the utilities industry for four and a half years, until I moved back to the farm in May 2012. Since coming back I have studied some practical dairy courses, joined a dairy business network group, formed a discussion group with like-minded progressive farmers looking to push the boundaries within their business, engaged with many consultants to help challenge and improve my business thinking and built a spreadsheet to simulate optimal cow diets – solving for lowest cost, highest production and most profitable (MOFC) – which shows that the highest production is not always the most profitable.

With significant water price increases in the north showing no signs of slowing, variability within both grain and milk pricing, relentless rises in electricity and other input costs, the scrutiny and demise of Murray Goulburn (the largest dairy co-operative in Australia) all contributed to more fluctuations in profitable returns for dairy farmers. I wanted to travel abroad to look at ways the top farmers ensured they capitalised on high milk prices and see what we could learn from them.

Over 18 weeks my travel took me across four continents. At the Contemporary Scholars Conference, I met 80 scholars from seven nations, from the complete suite of agricultural disciplines which provided a solid grounding for the Global Focus Program (GFP). The GFP provided a wide array of experiences, from the wheat research facility and vast trial plots in Mexico to the rolling green fields in Ireland, the gridlocked roads of Paris to the driving rains of New Zealand. Having successfully navigated driving on the wrong side of the road, I felt equipped to take on the world myself for another two and a half months. This started with the Nuffield Triennial in England, with time then spent in England, Ireland and the Netherlands. From meetings in train stations to utes in paddocks, over home cooked meals, allowing me to pick the minds of some of the brightest, most passionate and successful individuals. This always left me inspired and challenged; brain dead but yearning for more. The hospitality and warmth afforded to me during my travels made me feel like I was back home, and I will remember those experiences forever. I look forward to extending that same hospitality and richness of thought-provoking discussion to future Nuffield Scholars.

Acknowledgments

To all those who gave leads on contacts, for those giving up their time for meetings, keeping me headed in the right direction for my next farm visits, for a warmth of hospitality that made me feel welcome every time I knocked on a door, thank-you very much.

To Nuffield Australia and the Gardiner Dairy Foundation, I am sincerely humbled by the opportunity you provided me. I hope I can contribute some of my learnings for the development and improvement of dairy farming businesses across the Australian landscape.

To the Brazil 2017 GFP group: Dan, Cam, Glenn, Kristina, Georgie, Ryan and Roland, spending seven weeks with such passionate individuals was stimulating and a wonderful experience that I will cherish forever, and I look forward to keeping in touch with you for years to come.

To George, who came as a backpacker and ended up staying two and a half years managing many facets of the operation, and the rest of the team of permanents, Leanne, Chris, Ernie and Gerard; you all stepped up while I was gone and I thank-you all for shouldering extra responsibility during this time.

None of this would have been possible without the support of family. Updates and messages from home that kept me going on the more challenging days, they meant a lot, thank-you.

A special thank-you to my partner Kate for her encouragement, particularly during the presentation and report writing phases. Consolidating 18 weeks travel into 10,000 words has been difficult and stressful to say the least, and your support in helping me get this report over the line is very much appreciated.

And the biggest thank-you is to my very own parents. You knew how much extra workload and stress this Nuffield experience was going to bring on yourselves, and yet you were unwavering in your support of my application the whole way through. With the new farm and seasonal conditions, you effectively climbed Mount Everest while I was away, yet you never burdened me with issues, and only ever provided me with positive updates on how things were going. Due to this I was fully able to immerse myself in the Nuffield experience, knowing that everything at home was in good hands. I am eternally grateful for the sacrifices that you made.

Abbreviations

CoP: Cost of Production

CSIRO: Commonwealth Scientific and Industrial Research Organisation

DBN: Dairy Business Network

FPPF: Feeding Pastures for Profit

KG: Kilogram

MOFC: Margin Over Feed Cost

MS: Milk Solids

NZ: New Zealand

NZX: New Zealand Stock Exchange

OAD: Once a Day

OPEX: Operating Expenses

PKE: Palm Kernel Extract

R&M: Repairs and Maintenance

UK: United Kingdom

2IC: Second in Charge

3IC: Third in Charge

Objectives

The objectives of my Nuffield research were to:

- compare the Australian trends to overseas trends. Do the same cost and milk price trends exist overseas as they do in Australia?
- explore the activities of the top 5% of farmers.
 - What is their mindset?
 - How do they view flexibility and what changes do they make to their production systems in a high milk price year?
- understand the systems that these farmers use:
 - On-farm to keep managers involved, engaged and motivated
 - In the business to keep focussed
 - And understand how emerging technologies can play a role in this.
- learn from countries who have experienced severe milk price shocks, enabling us to be better prepared as individuals and an industry.

Chapter 1: Introduction and overview of the Australian dairy industry

1.1 Current industry overview

The Australian dairy industry is a dynamic industry and a mainstay of the Australian economy. Data from Dairy Australia's industry website shows that Australian milk production was 9,015 million litres for the 2016-17 financial year and has averaged 9,451 million litres of milk per year between 2012-13 – 2016-17. The *Australian Dairy Industry In Focus Report (2017)* published by Dairy Australia shows that on a milk equivalent basis approximately 60% of this production is currently consumed domestically. This domestic consumption has expanded over time, from approximately 4,000 million litres in the early 2000's, to the 6,000 million litres it stands at today. The 40% that is exported generated about \$3 billion of revenue in 2016-17, ranking Australia fourth in terms of its share of milk equivalents exported, behind New Zealand, the European Union and the United States of America. These exports accounted for 82% of the total value of farm gate production and "*based on a farmgate value of production of \$AUD 3.7 billion in 2016-17, it ranks third behind the beef and wheat industries*" (Australian Dairy Industry In Focus 2017 Report). The Australian dairy industry is also a strong employer, with an estimated 42,100 people directly employed in the industry, divided between the nations 5,789 current farms and associated dairy companies.

1.2 Historic industry trends

Data from the Australian Dairy Industry In Focus Report for 2017 shows that between 2000 and 2010 there was a contraction in the number of dairy farms in Australia by 42%, or 5,385 farms; and another 1,722 farms between 2010 to 2017. Comparing this to the 5,789 total dairy farms that exist in 2017, there have been more farms cease to operate in the last 17 years than operate today. There are several reasons behind this reduction in farm numbers, with drought, high input prices, low milk price, poor access to capital, lack of appeal as a career and average age of farmers just some of the many reasons. Over the same time the average herd size has increased, with the average farm milking an extra 93 cows, 55% more in 2017 than they were in 2000.

Figure 1 below shows a summary of this data, with the data taken from the *Australian Dairy Industry in Focus Report 2017*.

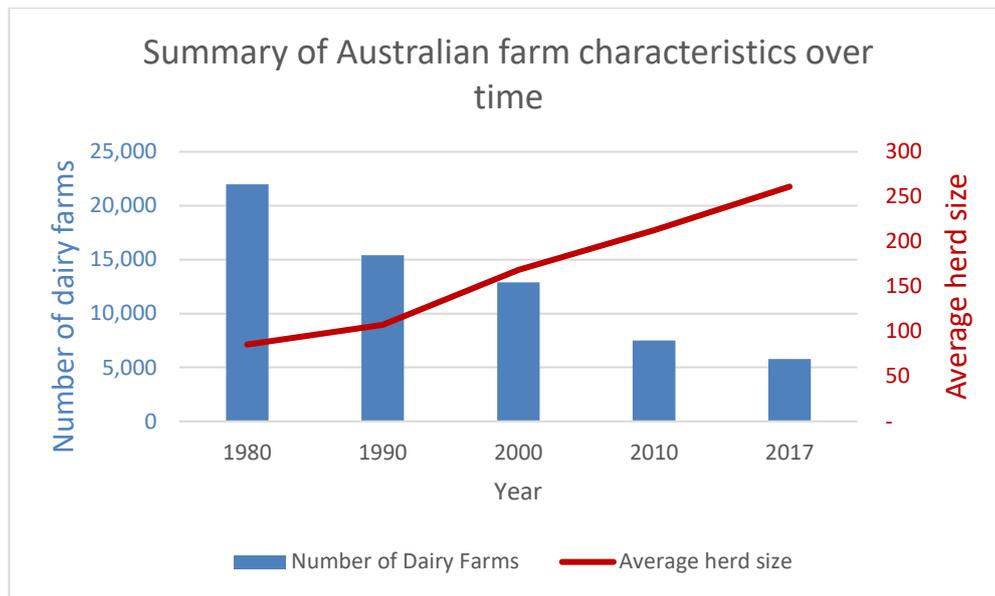


Figure 1: Summary of Australian farm characteristics over time

1.3 A global food future

According to the United Nations ‘The World Population Prospects: The 2017 Revision’, the world population in 2017 was 7.6 billion, and forecast to reach 9.8 billion by 2050, an increase of almost 30% in population over the next 33 years (Figure 2). Urban sprawl and competition for depleting natural resources will make feeding this population a challenging proposition. With the agricultural sector continuing to improve its productivity and with new methods and technologies continuing to be developed to grow protein and meet this future growth, this future scenario is one that is being embraced by the international community. The author believes with these challenges of feeding an expanding population will come opportunity and that there will always be a demand for quality dairy products, benefiting the Australian dairy industry in a strong position. Further analysis of the United Nations Report shows the projected growth by income category, using 2015 as the base level. Note that the majority of growth is in the lower-middle income category, and that the low-income category contributes only 32% of the population growth by 2050.

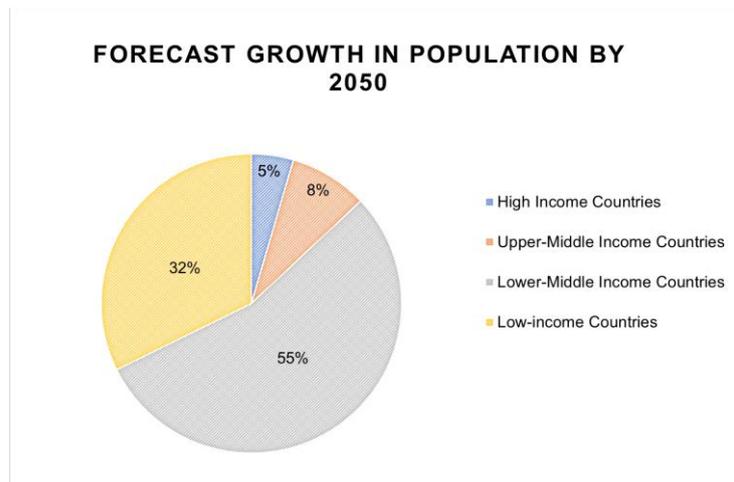


Figure 2: Forecast Increase in Population by 2050 (United Nations, 2017)

As the middle class of society grows, they should be able to afford more value-added dairy products. The Food and Agribusiness Roadmap produced by the CSIRO is just one of many reports showing how this middle class *“is predicted to drive a sharp increase in spending on high-end food and agricultural products, with higher disposable incomes leading to more discretionary spending”* (Food and Agribusiness Roadmap – CSIRO). The already strong demand for organic and specialty dairy products is proof of this middle-class propensity to spend on high end products. If the Australian dairy industry can meet the future demands of this wealthy middle then this will see a higher value obtained for the end product, which hopefully will be passed back to the dairy farmer.

1.4 What does this mean for the Australian dairy industry?

With these forecasts for population and affluence, the scene is set for dairy to be able to capitalise on this future increase in demand. However, if higher prices are going to flow back to the dairy farmer in the future, how do farmers make sure they are ready to fully capture these prices – and not let their costs follow the milk price up, like the trends that exist in the industry today? If the declining trend in the number of farms and cows per farm continues, how are farmers going to operate unless they have well established systems and processes in place?

Answers to these questions are going to be critical for a disciplined and successful dairy business operation and are needed to ensure that Australia remains at the fore-front of dairy business benchmarks, helping safeguard their place amongst the world’s best dairy producers for years to come.

Chapter 2: Comparing the trends

2.1: Do costs follow the milk price curve?

While everyone enjoys receiving a high price for their milk, these prices can lead to a steep increase in the cost of production and can come at the expense of maintaining flexibility.

It is apparent that the cost of production seems to follow the milk price up and down. Removing or reducing this correlation would present an enormous opportunity to maximise profit when milk prices are high and increase resilience when milk prices are low.

Decoupling this link is not easy when there is often an emphasis on per cow yield as distinct from profitability, and a commercial sector constantly presenting products which can provide marginal gains but can also seriously erode margins when constantly aggregated.

2.2: What does the Australian data show?

The Dairy Farm Monitor Project data, which has been running for more than ten years and is a well-known project within industry, shows that there is a correlation between milk income and total farm costs that warrants further analysis (Figure 3).

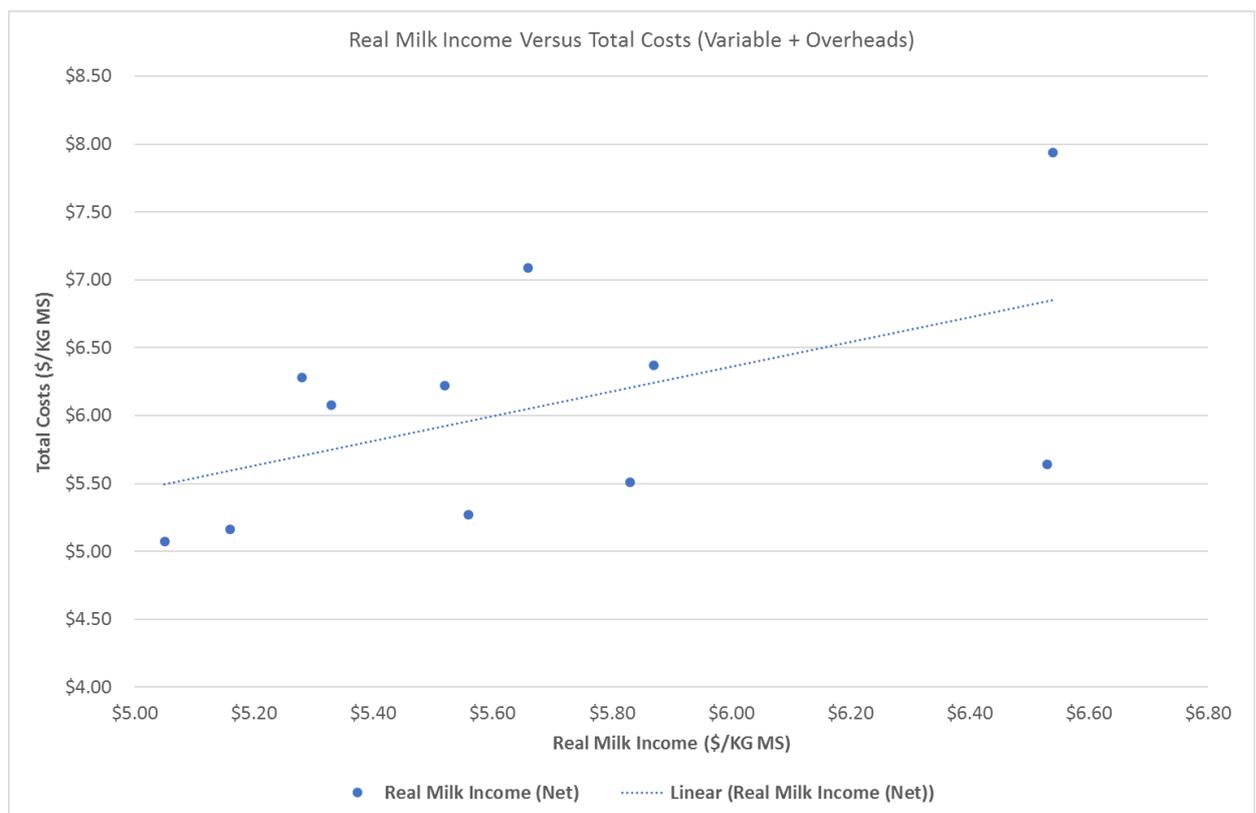


Figure 3: Milk Income versus Total Costs (Dairy Farm Monitor Project)

Of more interest to the author is the contention that once costs follow the milk price and become built in the system, they become harder to remove. If this is true, it could be possible to model the cost of Production as follows:

$$\gamma = \beta_0 + \beta_1$$

Where Y = Prediction of Costs

B0 = Current Year milk Price

B1 = Previous Year Milk Price

Or It could be modelled with a two-year lag as follows:

$$\gamma = \beta_0 + \beta_1 + \beta_2$$

Where B2 = Milk price two years ago

Completing this modelling shows that in these simple mathematical model, milk price, previous year milk price and milk price of two years ago are all significant variables in the current year cost of production.

In the case of the first model, this suggests that for every \$1 increase in current year milk price, cost will rise 56.9 cents, and there will still be a lag from the previous year milk price of 33.9 cents, and 87% of cost can be statistically explained by these two variables.

In the case of the second model, it suggests that for every \$1 increase in current year milk price, cost will rise 41.8 cents. There will still be a lag from the previous year milk price of 25.7 cents, and a lag from the milk price of two years ago of 22.7 cents, with a model fit of 83%. From this it can be interpreted that milk price and cost of production are correlated, and previous year prices are significant in this correlation. Furthermore, 83% of cost of production can be statistically be explained simply by modelling these three variables.

Ideally, more data points and further statistical testing and reporting is required, which is outside the scope of this report. However, it can be reasonably inferred from the data points presented that this lag would suggest that once the costs are borne by the business and become part of the production system, it is hard to remove them in a short time frame.

2.3: What do overseas trends show?

Matt Newman, senior economist with Dairy NZ, shared some similar insights into New Zealand data. Analysing 21 years of data from the Dairybase project in New Zealand, a clear trend

emerges. Operating expenses (Opex) can be statistically explained with 75.2% accuracy, based only on the milk price received during that same year. This New Zealand data infers that for every \$1 increase in milk price, the operating expenses will increase by 45.5 cents (Figure 4).

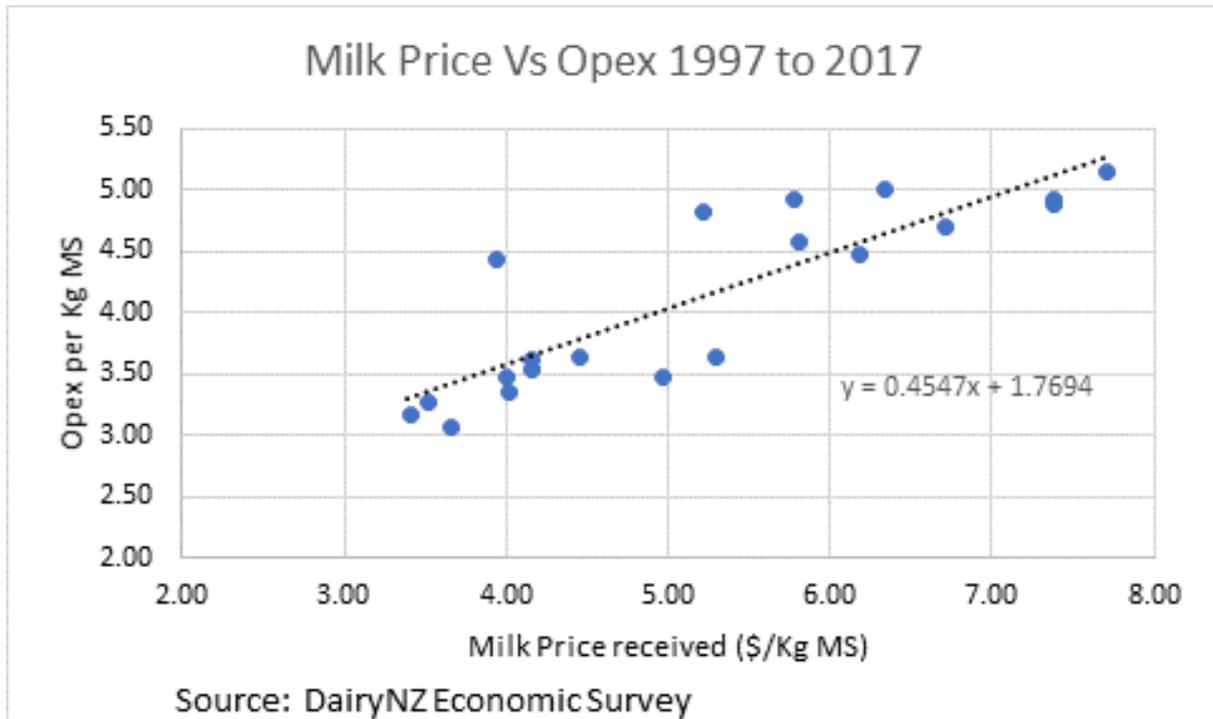


Figure 4: Milk Price versus Operating Expenses per kg of Milk Solids (Opex/kg MS)

2.4: Possible explanations

When discussing this theory of the cost of production (CoP) following the milk price (MP) with Irishman Mike Brady, 2005 Nuffield Scholar, as well as a land agent and agricultural consultant, he offered the following insight: *“The average farmer is mentally lazy, and does not like paper work, does not believe in budgets, and the only thing that concerns him/her is the size of their overdraft. Therefore, in years of low milk price they over stress and in years of good milk price they over-spend, and that is the reason why the statistics show that the cost of production follows the milk price. In years of low milk price, the poor or average farm manager skips on essentials: i.e. soil amendments, vaccinations, no capex, no R&M, no planning. Cut whatever they can, even feed less to the cows. The top 10% have less variation due to ‘profit focus’”*. (Brady, M. July 2017)

Dave McLean, a senior agribusiness manager with Westpac and in the banking industry since 1987, highlighted some of the perils a high opening milk price can have on the cost of production. His experience shows that when there is a \$7 or higher opening milk price, there

are increased demands on money from many of the associated industries (McLean, D. June 2018)

New Zealand dairy farmers Colin & Dale Armer suggested a reason for this link is because that *“farmers are poor at tracking their numbers until the end of the financial year”* (Armer, C. 5th June 2018).

The following chapters will explore some of the ways farmers from around the world are dealing with these correlations and will draw conclusions on areas where the Australian dairy industry can improve.

Chapter 3: Discussion groups

The Australian dairy industry is good at facilitating dairy discussion groups and they provide many benefits to farmers. However, with the increasing pressures faced by everyone to do 'more with less', it is imperative that they are managed and run in a way which obtains maximum value for their members. Time spent studying discussion groups in the United Kingdom (UK) found some interesting differences, some of which could be used to benefit the Australian industry.

3.1 Communication of the topic for discussion

When planning a farm visit, it is always challenging to know how much information to provide in advance. Does an email go out with only an agenda and provide handouts on the day, or if an information pack goes out in advance, will people read the information provided?

When attending the Moovers & Grazers discussion group on the 28 June 2017 (Leicestershire, England), the group had approached this challenge by preparing a comprehensive pack that was emailed out in advance of the meeting. This pack contained the following:

- Fact sheet – outlining the issues for discussion.
- Annual physical summary sheet – monthly actuals of herd data, production, milk quality, feed efficiency, forage efficiency, margins.
- Monthly budget report – comparing actuals to budget, and a report comparing actuals against the same month the previous year
- Year to date annual report, and comparison to the same time the year before.
- Full year itemised budget – using management accounts, which generated amongst other information a Cost of Production and Comparable Farm Profit.

By providing this information in advance the members of the group had time prior to the day to study the topic and turned up ready with relevant understanding and questions. When discussing this with the members during the day, they saw getting the information in advance was invaluable to providing a comprehensive background understanding. It also provided an opportunity to follow up if any other information was required, avoiding a situation of losing valuable time on the day searching, for or clarifying information, or worse again, not being able to confirm a figure, making the resultant conversation less informed and valuable.

Communication of the agenda before the day is not where the communication ends. Typically, at the end of a discussion group day, all the participants share their thoughts on what the host farmer should do to tackle the issue that has been discussed. To have these notes in a format that the host farmer can look back on at a time that best suits him/her is therefore important. Discussing this with local farmer Scott Fitzgerald in March 2018, Scott mentioned how after his last time hosting a discussion group, he rolled up the butcher's paper containing everyone's ideas and "stuck it behind the filing cabinet, and hasn't looked at it since" (Fitzgerald, S. March 2018. Wyuna, Australia). Scott acknowledged the information in this format was not particularly useful to him, as it was not something he could access if he had five minutes to spare. This is in direct comparison to the experience of Irish dairy farmer Joe Leonard, who mentioned how, after the last discussion group visit to his farm, his advisor Matt Ryan prepared a summary of the group suggestions and emailed them through. An electronic document allows for key words to be searched, something that cannot happen with a paper copy or a photo of a whiteboard.

3.2 Group data collection, dissemination and attendance

For a regular group meeting, the questions of what group data is relevant to collect, along with the frequency of this data collection and reporting is an issue that often comes up. A standard and consistent method of reporting both physical and financial data is important, but secondary to having a strong group cohesiveness that embraces confidentiality. In the Moovers & Grazers group meeting, it became evident quickly how their system worked and was made effective. Active members of the group had to provide a monthly summary of key financial and physical measures, well in advance of the meeting. No formal policy was required to deal with people who did not send in their figures, as according to Andrew Mycock "this rarely happened". A summary was passed around just before the end of the meeting, with the opportunity for questions about any of the figures. The author noted how this was an efficient use of time, as there were no discussions that were side-tracked about monthly figures.



Figure 5: Moovers & Grazers discussion group members, at the farm of Angus Dalton

3.3 Timing of the meetings

Typically, in Australia a discussion group meeting will be scheduled for 10am for a 10:30 start, finishing at 2pm. This is done to fit in between standard milking times; however this rarely goes to plan. Working with animals, machinery and people, it is inevitable that issues arrive, and the 10:00am is often a challenge and a disruption to the group when people turn up late. Not only this, but with people time poor and rushing between milkings, the social aspect of the group can often be cut short. This social aspect should not be discounted, as it is a chance for farmers to share their issues and vent any frustrations, acting as a stress relief outlet in a forum where everyone fully understands where they are coming from.

This issue of meeting time was addressed several ways through different discussion groups, adopting a time that worked best for the members of the group. The Moovers and Grazers discussion group in the UK, meet from 12:30 to 5pm. When talking to farmers on the day about this meeting start time, the consensus was they liked it because it gave everybody ample time in the morning to sort issues out. When discussing the issue of it running all afternoon, they indicated the benefit they saw from an afternoon meeting, as everyone had milkers in for the

afternoon milking, so no-one had to rush off to get back for milking, meaning the conversation was never moved on quickly due to lack of time – allowing the farmers to extract all the value out of the topic.

Another long-standing discussion group in Ireland which Nuffield Scholar David Kerr (2006 Scholar) is part of, meet twice a month. This group, who have been meeting for 17 years, conduct their first meeting in a two-hour timeslot running over lunch, going through the case study for the farm they are visiting and then allowing for a brief discussion. They then use the next week to digest the issue and formulate their views on the topic, arriving prepared for the follow-up meeting. David saw a big benefit in this as it gave every personality type time to formulate their views, avoiding the situation on a day where the ideas of the quickest thinkers could otherwise take up majority of the discussion time.

In conclusion, the strong financial focus held by the discussion groups visited formed a key trait in keeping the individual business mindset sharp.

A comprehensive information pack sent out pre-meeting gives all the members time to study the topic and come prepared, ensuring the maximum amount of value is extracted on the day.

The requirement to submit a monthly snapshot as part of the discussion group forms part of the structured business systems, which help keep the focus on the farm business. The key is providing this data every month, with the process of providing the data more important than the actual data itself.

Having a meeting time that does not put pressure on the morning routine is beneficial, so having members turn up feeling relaxed and ready to contribute without the stress of daily farm issues fresh in their mind.

Chapter 4: Keeping the finger on the pulse

Critically reviewing the performance of a dairy business is a topic that often gets discussed, with few completely satisfied with the process they follow. The question of '*where should the focus be?*' is a question that many ask and was pursued with vigour during the author's travel. A discussion of this, along with what role technology can provide, is explored below.

4.1 The basics

A vigorous budget-setting process is a pillar for any business wanting a strong focus on financial performance. However, as the data interpretation can only be as good as the data that is being fed into the program, getting this first step right is crucial. When visiting UK dairy farmer Tim Downes in June 2017, it was evident that an elevated level of importance that was put on getting the base data right. Andrew Hawkins, a consultant from Promar, a prominent UK and international consultancy firm, was building the budget for the year ahead, starting with the most basic of information – cow numbers. Despite all the relevant information being on hand, some 35 minutes later herd numbers were still being discussed and refined. Once Andrew was satisfied with herd numbers, the discussion then moved to how much calf milk had been taken out of the vat? Clearly fascinated at the level of detail being exhibited by the consultant, the author asked was it necessary to have spent the last 20 minutes chasing the last few cows and litres when it was over 98% correct after 15 minutes? The response from Andrew was "*the more accurate we can get the inflows, the less it is rubbish in, rubbish out*" (Hawkins, A. June 2017).

This attention to detail was also evident when discussing budgets with Jimmy Pritt in June 2017 (Leicestershire, England), in that when setting them it was important to be realistic, if you wanted to have information that could be used meaningfully on the other end. Mark Pilkington echoed these sentiments when discussing his budgeting process, with Mark preparing the budget and then getting in an external consultant to review it. Elaborating further on this Mark felt he "*should have someone outside the business to give governance oversight*" (Pilkington, M. June 2017), helping to ensure the integrity of the budget process remains valid.

4.2 Constant review

It can be hard to provide a definitive update on the financial performance of a dairy business during the season. There is a perception that it is not worth conducting a monthly financial review due to issues around the timing of bills coming in, and that under a cash accounting methodology, real financial performance cannot be known until the end of the year. However, a review process along the way allows everyone to see if targets are being hit, impacting decision-making and keeping everyone better informed. When discussing this with farmers, some clear trends emerged. UK dairy farmer Jimmy Pritt was asked how often he reviews his budget, to which he replied, *“not as often as I should”* (Pritt, J. June 2017). He currently reviewed it quarterly, but wanted to do it more frequently, because *“if you want to be focused, at the end of the day you need to have your finger on the ball”* (Pritt, J. June 2017), and he believed a monthly review process would allow him to better achieve this.

Quizzing UK dairy farmer David Christensen about his budgeting and review process, he *“sits down with business partners every month and does a review of the monthly and year-to-date financials”* (Christensen, D. June 2017). This was similar to Mark Pilkington, who in his interview said that he consciously allocates time every second Tuesday of the month to review the budget.

2013 Nuffield Scholar Robert Thornhill also expressed a desire to undertake this budget review process monthly. Robert also made the point that if you are using a consultant, you need to make sure the consultant will be frank, because he *“does not want someone to tell him he is doing a good job, when he is not”* (Thornhill, R. June 2017). Robert also added a reminder about why he does a budgeting process, and that *“it is not about who is best, it is about fulfilling goals”* (Thornhill, R. June 2017)

As well as giving a strong focus on financial detail, there was a high level of focus on monitoring pasture growth, for either conserving feed or for direct grazing. All the farms visited by the author measured grass on a regular basis, the majority using a plate meter. When talking to U.K. dairy farmer Chris Homer about this, he explained how he uses the plate meter as a guide to help paint a picture on his grass wedge, and by looking at the information it will flag when he is about to enter a grass deficit or surplus, allowing him to take the necessary corrective action proactively rather than reactively. This was also the case when talking to Jimmy Pritt. Jimmy believed that without measuring the farm weekly, he would not be able to keep his

finger on the pulse as well, and that his forward planning would not be as effective, meaning at the end of the day he would not get the same level of performance from his pastures. Irish dairy farmer Kevin Twomey elaborated on this as well, and how he saw the *“decisions about the wedge far more important than the wedge itself”* (Twomey, K. June 2017), and frequently measuring and analysing pasture would achieve much more consistency in the decision-making process around the grass wedge.

4.3 Engagement and collaboration

On the farms visited collaboration was an integral part of the operation, with sharing of information and responsibility key. In most cases it was the herd manager who would measure the growth rates on the farm each week, with this information being recorded in an online platform, usually Agrinet. By allowing the herd manager this task it gave them a sense of responsibility, and by sharing monthly financial performance with them, a greater understanding of the some of the drivers of farm profitability. Discussing this with David Christensen, David mentioned how important it was that staff were made to feel “part of the family” (Christensen, D. June 2017). He made sure the herd manager had a chance to see monthly budgets and was involved in business decisions. This helped them take on more responsibility and become self-managing, meaning David was not fielding calls from his sub-managers, having to trouble-shoot daily operational problems. Mark Pilkington took a similar approach on his farm, with weekly datasheets for the herd manager to view and having open monthly meetings. Mark’s ambition was to ultimately have the herd managers increase in skills to get them into a position where they could run a farm themselves, opening up the opportunity for a 50:50 or similar share-farming arrangement. Irish dairy farmer and 2007 Nuffield Scholar Kevin Twomey talked about a similar strategy in his operation, stating that you had to have goals in place to keep it attractive for the employees. He brought technical specialists into the business just before business-critical times of the year and put high-level staff through a budget building session. Kevin gave employees the opportunity to see business financials and was targeting a five-year window to develop skills amongst employees. If there was expansion opportunity during this five-year period, Kevin could then use the newly skilled-up employees to take on extra responsibility, in the knowledge the business would be big enough to accommodate them in any expansion.

4.4 Benchmarking

Benchmarking between previous years and against peers was another benefit that was promoted by the pasture measurement. Sitting in a group and comparing pasture numbers was an efficient way the farmers could check their figures, with the farmers at the discussion group in July 2017 mentioning it also provided a drive to do well amongst the group. As the most accurate comparison is always against yourself, with previous years data available in Agrinet it made this easy and allowed for a more objective analysis of which paddocks needed renovation at the end of the year, rather than relying on the farmers memory that 'this paddock didn't perform that well, let's over-sow that one'. This is different to the Feeding Pastures for Profit course, where even though pasture is monitored, it is not stored in a way that allows a comparison of pasture yields between paddocks and between years.

4.5 The role of technology in this space

As computing power continues to evolve, the advances in technology are happening exponentially. Self-driving vehicles, drones and artificial intelligence are all technologies that will have an impact on dairying into the future. However, there were two key area that the farms visited had embraced: cloud-based computing and drone technology.

Cloud based software programs are a significant improvement on a paper-based accounting system and can provide real-time tracking against budget. As accounts can now be uploaded to the cloud and coded automatically, it has never been easier to generate an up-to-date financial summary of business performance.

Similarly, the advances in drone technology are almost to the stage where accurate grass measurements can be taken using drone technology. This could be one less physical job that the decision makers on farm will have to do, while still getting accurate, reliable and timely information at their fingertips. It will be able to be collected at the optimum time, not just when they have time to go and do it.

In summary, budgeting is a key pillar in achieving business success, and it begins with making sure the budget is as accurate as possible. Completing a budget and sticking it in the top drawer of the desk for a year is not a good business practice, yet this happens frequently in farming businesses around the world. The top operators review their budgets monthly and update them when significant changes happen on farm. The key to both the regular financial and physical reviews is that they were able to identify early warning signs that they were

starting to deviate from budget and could rectify the situation quickly if required, rather than having to wait for a quarterly or half yearly review to change their behaviour.

Engaging staff in the budget process and sharing the plan with them will help them feel ownership, nurturing more responsibility and autonomy amongst the staff.

Benchmarking is a useful tool however it is important to remember the key is the comparison between years in your own business, not to other businesses in the group.

Increases in the computing power and the rapid adoption of technology are changing the way accounting software is used and it is becoming more user friendly and accessible for farmers to use out of the office.

The benefits of doing an excellent job of budgeting and planning flow through to the bottom line of the business and is an area where a lot of businesses can continue to make improvements.

Chapter 5: Clarity, mindset and flexibility

Simply being involved in a discussion group and regularly reviewing financials are a good start, but the top farmers ensure their businesses remain at the highest level through a disciplined approach with everything they do. If the aspects of dairy farming can be likened to a Rubik's cube, then clarity, mindset and system flexibility form key principles to solving the cube efficiently and from any starting position.

5.1 Clarity

Clarity of purpose in any business is essential and this is no different when reviewing the physical and financial performance of a dairy business. Renowned Irish dairy farmer Mike Murphy said *“the reason for difference between the top 5% comes down to clarity: what, why, purpose, and they have clear objectives. And they do not deviate in a high milk price year.”* (Murphy, M. July 2017) Mike's clarity on system planning “gives him free cash and time”.

This theme was also picked up in a discussion with Irish farmer Kevin Twomey. Talking about decision making and farm expansion opportunities, Kevin made the comment that expansion opportunities close to home do not come up often and that clearly understanding your financial position allows you to act quickly, which is key to making the most of these opportunities. When talking about how Kevin went about achieving this, he said that on new farms he reviewed his financial budgets monthly. He is also a passionate believer in five-year plans and that through a constant use of the five-year plan it makes you become very familiar with key financial metrics, which makes you very quick at analysing and evaluating any new opportunities. Clarity of business strategy was also evident talking with Irish farmer Shane Fitzgerald. He was asked early on in his farming career about what he would do if the neighbours property came up for sale. At the time Shane did not have a clear path of how he could integrate it, but now looks back on that question as a key discussion that was a catalyst for providing clarity in his business.

5.2 Mindset and motivation

Motivation and mindset are key attributes in life. What drives one farmer will not necessarily drive the next farmer, with cow type, pasture system, hours worked, labour employed and fertilizer practices some of the many differences that exist. When discussing this mindset with UK consultant Brian Barnett, he brought up the role of benchmarking. In his view it is the

lowest cost of production farmers that are generally most interested in their cost of production and that the *“highest cost of production is generally not driven by profit, instead driven by other motivators such as litres or pedigree”* (Barnett, B. June 2017). He believes that, generally speaking, the lowest cost of production farmers share benchmarking data, whereas the highest do not.

Applying this mindset to two different aspects of business operation – adaptability and profit focus - yielded some interesting points. Brian Barnett suggested that *“low cost guys have a plan and do not willy-nilly chop and change. But they are adaptable; they don’t moan, and they get on with it”*.

When discussing this profit mindset with Mike Murphy he stressed his relentless focus on habits. He was *“uninterested in per cow production”*, and instead kept the staff in the habit of planning for top quality grass residual management. He was not bothered in missing some profit in exceptional years and did not want to become a *“busy fool”*. His mindset is that if *“chasing litres changes habits, then it is unacceptable”* (Murphy, M. July 2017).

Visiting UK dairy-farmers Kieran and Gaynor Wellwood who farm with their son Rory, the discussion centred around motivation, with Rory *“driven to be the best”* with his fertility, litres grazed off grass, and cost of production (Wellwood, R. June 2017). His father Kieran talked about mindset and stressed how *“You’ve got to be on knife edge to push efficiency in the business”* (Wellwood, K. June 2017).

UK dairy farmer Andrew Stevens also provided a very important reminder about living life, and stated that at the end of the day *“It’s not about who’s best, it’s about fulfilling goals”* (Stevens, A. June 2017)

5.3 Flexibility

With no two seasons being the same, dairy farming is renowned for having to adapt to different climatic scenarios on the run. Late springs, dry summers and wet winters are just some of the challenges that present themselves and can be solved in different ways. Having a system that can adapt to these climatic conditions is another key to business success.

Kieran and Rory believe that *“Once tied into a system can’t get out, and cows won’t adapt to change. The temptation is to chase marginal litres, go up to another layer or system up and can’t get back. The only way is to not chase the litres; chase days in milk instead”*.

Gaynor Wellwood, dairy farmer and consultant/facilitator with Andersons, talked about the cost creep and discipline that is required if trying to operate a split calving system, with the view of maximising flexibility. Gaynor showed how easy it was to become “*caught in a halfway house*” (Wellwood, G. June 2017). Data collected by Andersons and analysed by Gaynor showed that with this flexibility of split calving came a cost penalty even though the split calving farms had a higher income of 1 pence/litre. However, these farms also had higher variable costs of 1.3 pence/litre and higher overheads of 1.1 pence/litre.

During a visit, farmer Andrew Stevens stated that he felt that the hardest thing with flexibility was “*not getting sucked into too many things*” and would prefer a more rigid system that “*might lose a bit*” in the best years, “*but it means that have we not built extra costs into the system*” (Stevens, A. June 2017).

Discussing flexibility, Colin Armer talked about the principles that drove profitability in his business and the importance of making sure those principles were always adhered to. With grass utilisation a key principle in Colin’s business, flexibility for Colin is the plethora of decisions he can make to maintain that principle. Once-a-day milking, drying cows off early, taking out paddocks and leaving them as standing hay for the cows to graze off later on, are some of the decisions he can make to ensure that grass utilisation is not compromised.

In summary, clarity in understand the underlying profit drivers of your system is fundamental for long term business success. Once this clarity is achieved it will provide the opportunity to generate strong returns within the business. Combining this clarity with a mindset that focuses on profitability instead of a production or yield metric, ensures flexibility becomes a lot easier to achieve in changing environmental conditions because possible solutions are no longer constrained by those production or yield metrics. The prevailing view among the farmers interviewed was not to chase production in a high milk price year, because of the concern that the inputs used to chase this extra milk would undermine the daily decisions around grass management and take the focus away from fully utilising one of their main profit drivers.

Chapter 6: Responding to volatility and uncertainty

6.1 Volatility

The New Zealand dairy industry is a good place to turn for a look at volatility and strategies to help mitigate it, with volatility existing within the year as well as between years. A discussion of this volatility is explained below.

6.1.1 Year to year

A quick look at the yearly payouts from their main milk co-operative Fonterra shows just how much fluctuation has been experienced in the last few years, with their 2014-15 payout being almost half of the milk payout received the year before. A chart of New Zealand final milk price history, as paid by Fonterra back to 2001-02 is shown below in Figure 6.

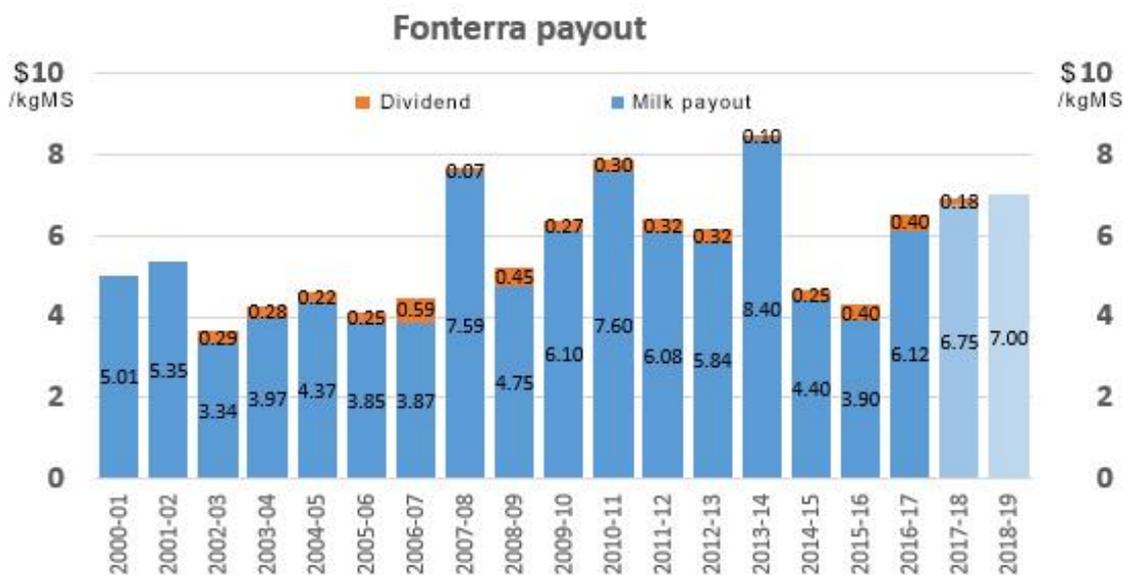


Figure 6: Historic New Zealand Fonterra final payout

When discussing this 2014-15 price drop with New Zealand dairy farmers who were attending the Nuffield Triennial Conference 2017 in England, there was a strong view that with hindsight this drop was fundamentally good for the industry, as it made farmers have a hard look at their businesses, refining their business approach and re-evaluating their farm systems.

Nicola Kloeten, New Zealand Nuffield Scholar, dairy farmer and Ag First consultant, mentioned that the 2014-15 milk price drop really made people refocus on *“a want versus a need, because it’s been years since they have had to do that”* (Kloeten, N. June 2018). It was her view that

the severe drop gave a lot of people a 'bloody nose', but that if the low prices had lasted for six months longer then it would have gotten the bottom 10% out of business, and opened opportunities for a new generation to come in. Dave McLean, Agribusiness Manager with Westpac in New Zealand is well equipped to comment on dairy farming volatility, having been in the banking industry since 1987. In an interview with him in June 2018, Dave commented that a lot of his farmers "lived on the fat they had accumulated" (McLean, D. June 2018), and that a key to survival was not capitalising all the profit into costs during the good times.

6.1.2 Within a year

Not only does the New Zealand dairy industry have large variation between years, but there is also a large variation within the year on the expectation of where the milk price will finish. When discussing this Nicola Kloeten, in her opinion, commented that this was a bigger issue than seasonal variation. Analysis shows that in the 11 years from 2006-07 to 2016-17, six years have experienced milk price reductions, with 16 reductions occurring over those six seasons. ten out of the 11 seasons have included price increases and in four years the final closing price has been lower than the opening price.

The 2008/09 year had opened at \$6.65kg/MS (kilogram of Milk Solids), but with reductions in November and again in January, ended up closing \$1.93 lower at \$4.72kg/MS. When discussing this with New Zealand Ag First consultant Dave Miller, he made the point of how uncertain it can be to chase marginal milk in this volatile setting and said, "*the trap with marginal milk is when the farmer thinks it will be \$7:00, but if it doesn't end up at \$7:00, the margin is gone, or negative*". (Miller, D. June 2018).

Dave McLean mentioned some quick checks he conducts to help protect his businesses against this milk price variability. Dave will look at his clients' budgets and then run them against a 'status quo' using a price per kg/MS slightly below the long-term average and test a higher interest rate. With New Zealand dairy farm average debt levels running up around \$22kg/MS (Miller, D. June 2018) it is obvious how even a small interest rate rise can have substantial impact on the bottom line, unexpectedly turning profits negative. A summary of this volatile price history is shown below in Figure 7.

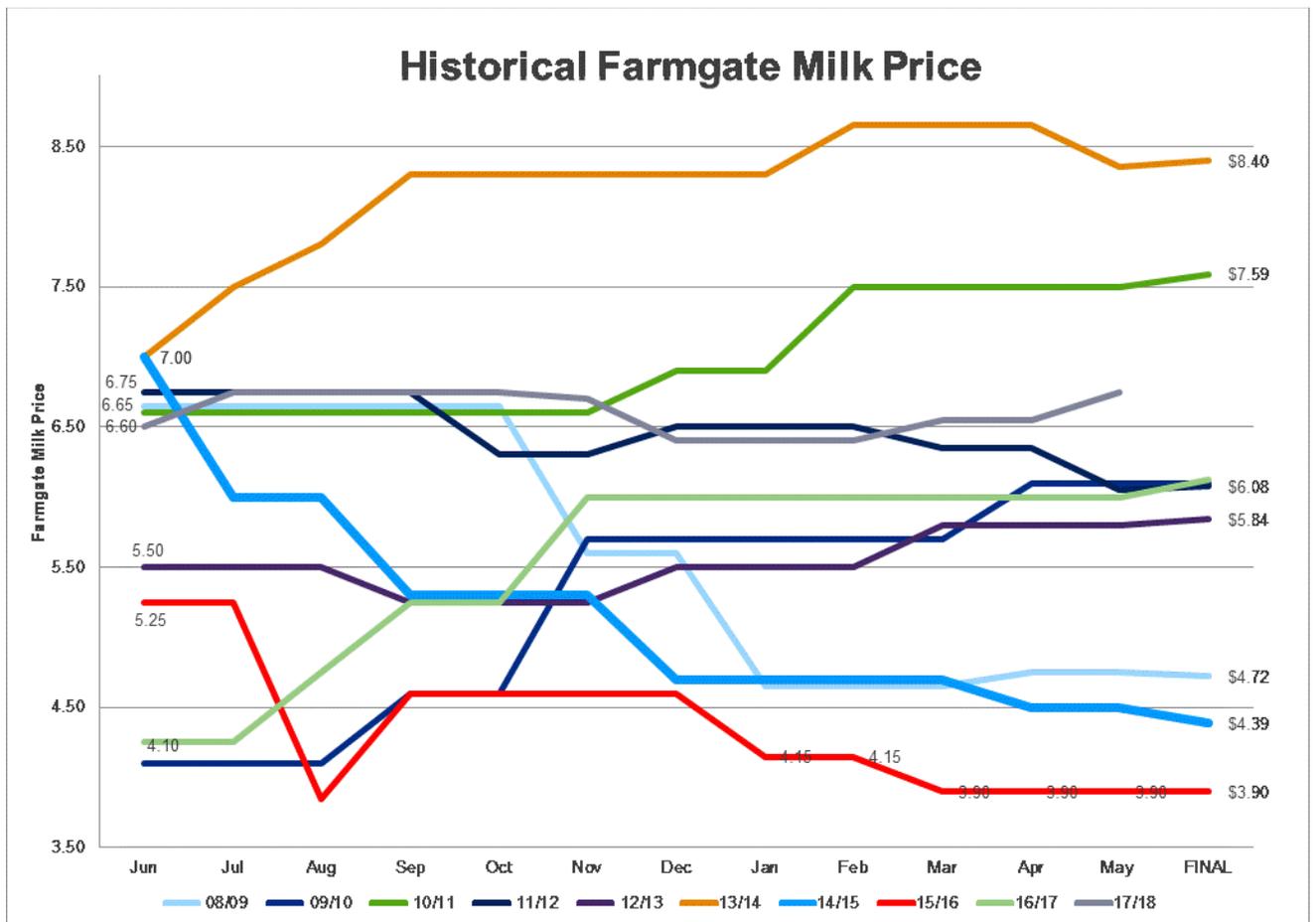


Figure 7: Within season changes to New Zealand farmgate milk price

6.2 Operating in a volatile and uncertain environment

Before taking a look at the methods used to manage this variation, it is important to understand the different farm systems in New Zealand, along with their payment structure and compare this to Australia.

6.2.1 Farm systems

The New Zealand system is broken down into five different models, which is then further characterised into three categories for the purposes of this analysis. These systems and their categories are explained below, taken from the DairyNZ Economic Survey 2016-17.

System	% of owner-operator herds	Category Grouping	Category %	% of total feed imported	Imported Feed used for the purpose of:			
					Feeding dry cows	Extending lactation	Beginning of lactation	All year feeding
1	5-10	Low	25-35	0				
2	20-25			4-14	✓			
3	35-45	Medium	35-45	10-20	✓	✓		
4	20-25	High	20-35	20-30	✓	✓	✓	
5	0-10			25-40	✓	✓	✓	✓

Figure 8: Summary of the 5 New Zealand farming systems, as described in the DairyNZ Economic Survey 2016-17

Contrasting this to the farm system breakdown in Australia, shown below in 2015 (Figure 9).

Feeding System	Proportion of farms	Category Grouping under NZ System	Min grain fed (tonne/cow)	min % of total feed imported (assuming 6.6T cow/year)
Pasture only	4%	Low	-	0%
Low bail	19%	Medium	1 (Max)	15%
Industry average		High	1.60	24%
All other systems	77%	High	1.83	28%

Data from 'Dairy Feeding Update - Briefing Notes 2015'

Figure 9: Breakdown of farming systems in Australia, summarised from Dairy Australia 'Dairy Feeding Update – Briefing Notes 2015'

It can be seen that in Australia only 4% are purely pasture based with a further 19% considered 'low bail' = 'Grazed pasture + other forages + up to 1.0 tonne grain/concentrate fed in bail'. This means that 77% of farms feed more than 1.0 tonne grain/cow, plus other forages, pushing the majority of these 77% of farms into the high category grouping under the New Zealand system breakdown.

6.2.2 Payment systems

The chart below highlights the typical payment difference between Australia and New Zealand. The pink line shows the Fonterra New Zealand proportional pricing, based on Fonterra Farm Source May 2018. The green line is based on the typical payment received by a 50:50 split calving Jersey herd based in Warragul. The blue is a payment structure that reflects hitting the minimum requirement to receive the Winter Milk Incentive, which used to be offered by Murray Goulburn, modelled on a northern Victorian herd.

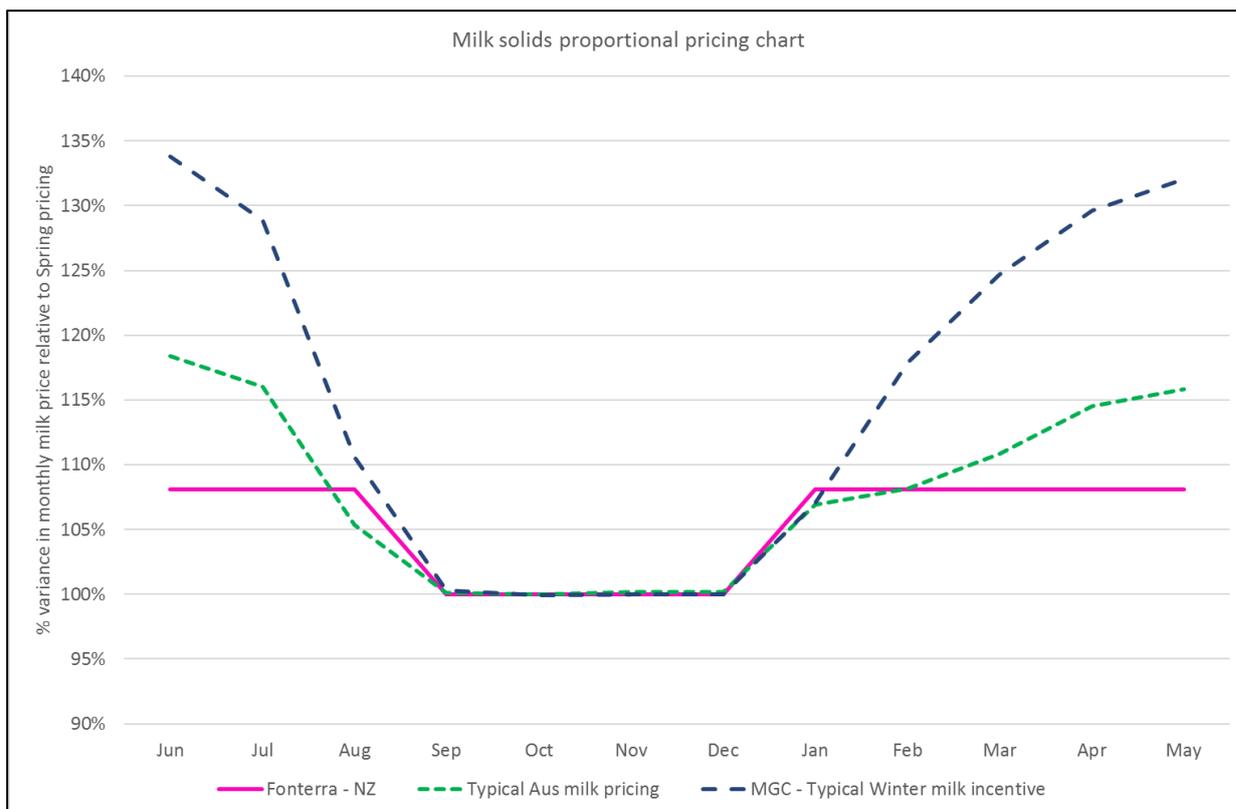


Figure 10: Summary of typical milk solids pricing structures

It can be seen from the chart above that there is very little incentive for farmers in New Zealand to produce outside the spring peak. This is very different to the mentality in Australia, where there is a stronger affiliation to optimising processing plant capacity. Dave Miller explained how with Fonterra’s cost of funds being about 3.5%, compared to farmers cost of funds in the range 5.5-6.5%, it is cheaper for the processor to invest in processing capacity than to incentivise a farmer to make changes to his production system. Consequently, New Zealand has gone down the method of investing in stainless steel because it is cheaper for the co-operative to cover this cost than the farmers.

6.3 Methods used to manage volatility by New Zealand dairy farmers

Given the pricing signals and climatic conditions, the New Zealand choice of farming system becomes easier to understand. Methods such as Once-a-day (OAD) milking during ‘droughts’ which can occur after a few weeks of no rain, locking up ‘standing hay’ and grazing it back later on – therefore not incurring a conservation and subsequent feed-out cost, Palm Kernel Extract (PKE) to fill a short term feed gap, were some techniques that could be used, and worked into their system because they do not have production hurdles they needed to meet to receive their milk price. Also available to the New Zealand industry was the New Zealand Stock Exchange (NZX), allowing the farmers to effectively lock-in a milk price. While locking in a price

alleviates down-side price risk, it also removes the opportunity to capitalise in the situation of a milk price rise.

In summary, because the top farmers did not over-capitalise their businesses in the high milk price years, they were in a stronger position to withstand the milk price drop, however they still used this milk price shock as an impetus to review their own business and re-sharpen their focus. The answer to the question of “what to do with their spare cash?” reveals a lot about true business performance and is a question top farmers ask of themselves. With milk price volatility, conducting a budget sensitivity analysis using a range of milk prices is a good method to check how the current budget would look under a more volatile milk price.

With the demise of Murray Goulburn, Australian dairy-farmers now have very little investment beyond the farm gate, with stainless steel processing capacity typically owned by industry players and investors who see milk as a raw material. With the objective of companies to maximise shareholder returns, there is unlikely to be investment in under-utilised capacity, as they will be unable to extract the full value of the asset. This will mean a continual pricing structure that rewards milk production outside the spring period. However, to produce this milk will require more inputs and a higher intensity than New Zealand and in adverse conditions these inputs must still be used, otherwise the production levels required to receive winter milk incentives will not be hit, which would then put a financial strain on the businesses relying on the higher milk price to support out of season production. Consequently, a lot of the tactics used in New Zealand to manage volatility will not work in Australian systems that chase milk production outside the spring peak

Conclusion

Frequency of analysis of financial performance needs to be improved.

With businesses required to do BAS quarterly, all the information required to view how the budget is tracking is available. At the same time the BAS is completed a 'budget to actuals' review should be undertaken, to see how the business is tracking. As time goes on, and the processes to do this become more familiar and streamlined, this process should turn into a monthly process. New accounting software packages will make this process easier than it has been in the past.

The strong financial focus held by the discussion groups visited formed a key trait in keeping the individual business mindset sharp.

The key is providing this data every month, with the process of providing the data more important than the actual data itself. So as not to burden members, this should begin with some basic variance reporting and slowly add more drivers as the process for providing and capturing this data becomes streamlined.

With the benefits that discussion groups convey, the industry needs more farmers to join these groups.

In the next 12 months, if for every three dairy farmers currently in a discussion group, they could find two new members, and in the following 12 months those five members find two more, in two years' time that would more than double the number of dairy farmers in a discussion group.

If various meeting times were available for new members to choose from, then it might help attract more new members to the group.

As well as making it more attractive from a time perspective, splitting a meeting into two shorter meetings may foster better ideas amongst participants, ultimately benefiting everyone in the group.

Nominate one person to provide the group with the farmer updates every month and rotate this task around the group.

This will help build public speaking confidence and strengthen analytical skills amongst group members.

With a large % of Australian cow diets coming via direct grazing, objectively understanding what paddocks are poorer performing and need renovation should help improve farm productivity.

The FPPF approach is a useful tool in setting rotation length, but unlike a product such as Agrinet, it does not allow historic grass measurements to be stored, nor does it allow comparisons between grass measurements.

Recommendations

- Disciplined monthly reviews of the financial budgets are key to business success.
- Participation in a discussion group that is challenging and stimulating is a good motivator to continually improve business performance.
- Consider changing the time that discussion groups meet.
- Never compromising underlying profit drivers within the business, and do not deviate from a winning formula in years of a high milk price.
- Record grass covers so a more objective approach to regressing can be undertaken.
- Farmers need to carefully consider all the costs before moving to a production system that relies on winter milk.
- As farm intensity increases, volatility becomes a bigger risk.

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Plain English Compendium Summary

Project Title: **Setting the foundation for a strong dairy business
A study of international business practices to help ensure
Australian dairy-farmers remain at the forefront of
profitability into the future**

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- Objectives**
- Compare Australian cost and milk price trends to overseas trends, to see if similar trends exist overseas.
 - Understand the mindset of the top 5% of farmers, how they view flexibility and what changes they make to their production systems in a high milk price year?
 - Explore the systems used to help keep a strong financial focus, and how to keep managers involved, engaged and motivated. Understand how emerging technologies can play a role in this.
 - What can we learn from countries who have experienced severe milk price shocks, enabling us to be better prepared as individuals and an industry.

Background

With the world population set to grow by another 2.2 billion people by 2050, there is a huge opportunity for dairy to be able to capitalise on this future increase in demand. However, if this translates to higher returns, how do farmers make sure they are ready to fully capture this – and not let their cost price follow the sales price, like the trends that exist in the industry today. If the trend of number of farms and cows per farm continues, how are farmers going to operate unless they have well established systems and processes in place?

Research

The scholarship took me around the world over a 18 week period, talking to farmers, advisors and other industry professionals, exploring cost and milk price trends. It took an in-depth view into well run discussion groups, unlocked the mindset of some top operators, and looked at how financial information is communicated between owners and managers. It concluded with a study of surviving severe milk price volatility.

- Outcomes**
- Disciplined monthly reviews of the financial budgets are key to business success.
 - Participation in a discussion group that is challenging and stimulating is a good motivator to continually improve business performance.
 - Never compromising underlying profit drivers within the business, and do not deviate from a winning formula in years of a high milk price.
 - As farm intensity increases, volatility becomes a bigger risk.

Implications

The Australian Dairy Industry is well placed to take advantage of a strong trading environment into the future, however meeting the demands of the affluent consumer is critical if dairy farmers want to maximise dairy-farmer returns. With volatility in business systems set to increase, it is more important than ever that businesses frequently scrutinise their businesses to help ensure they fully capitalise in the good years.